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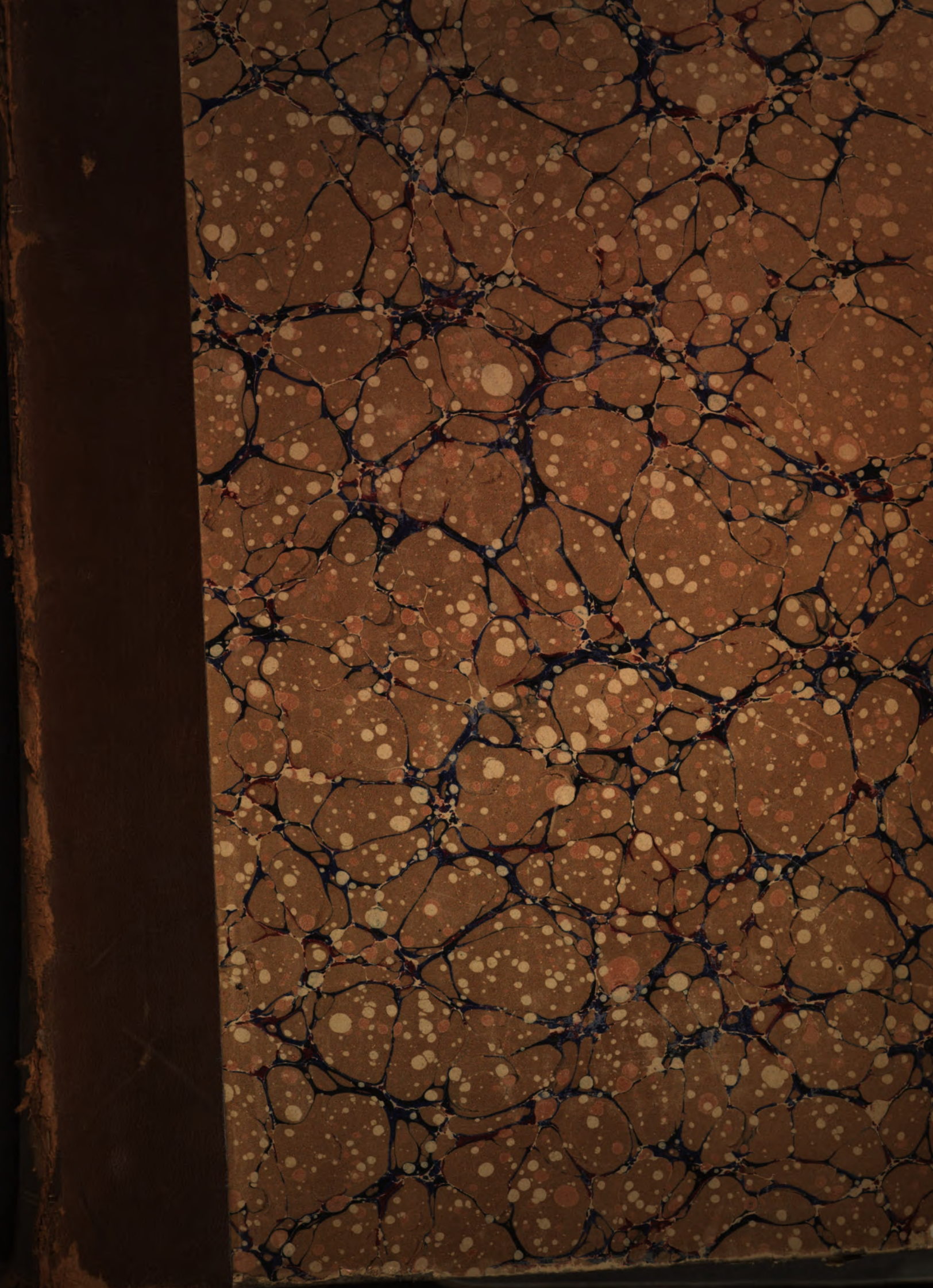
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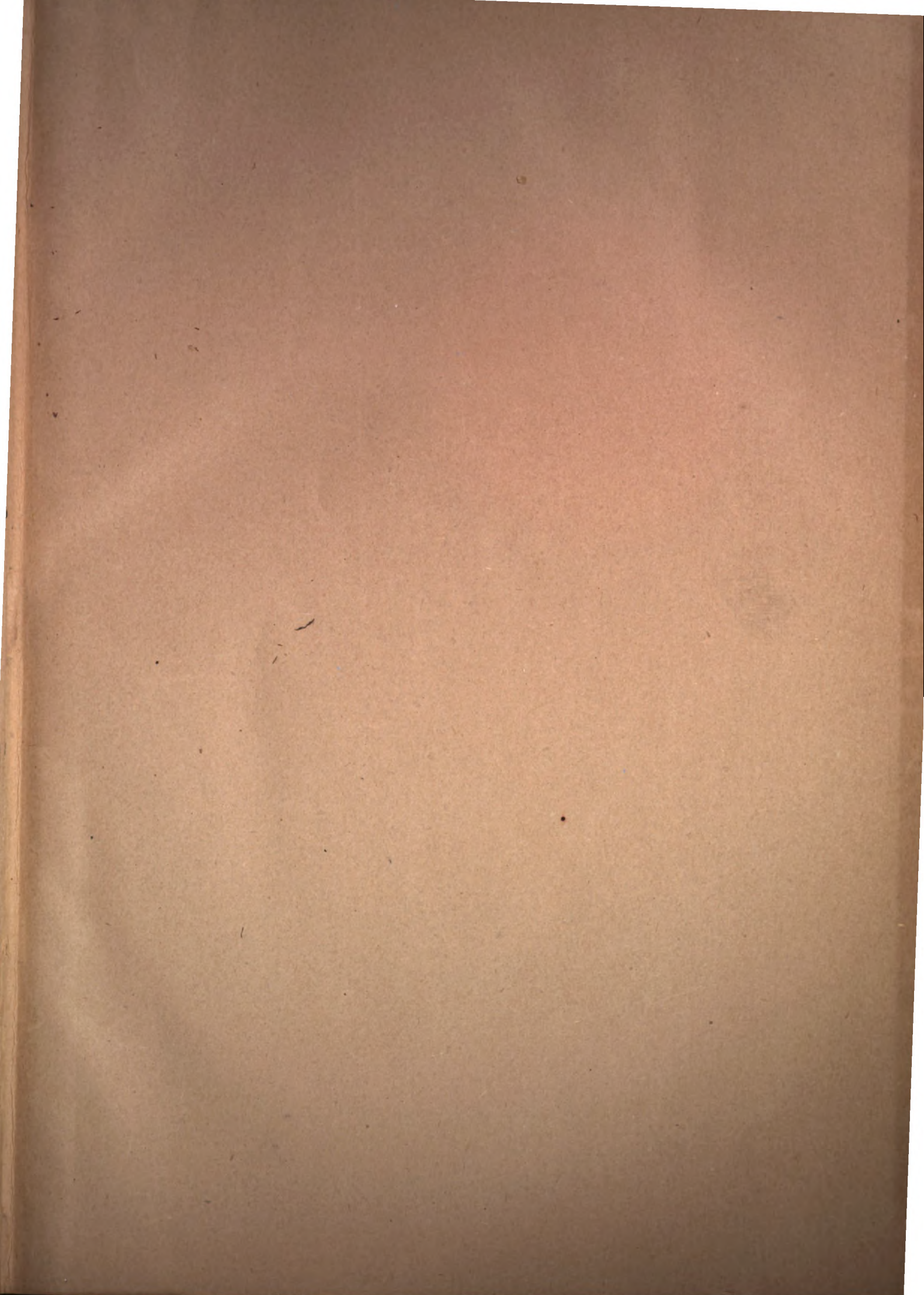
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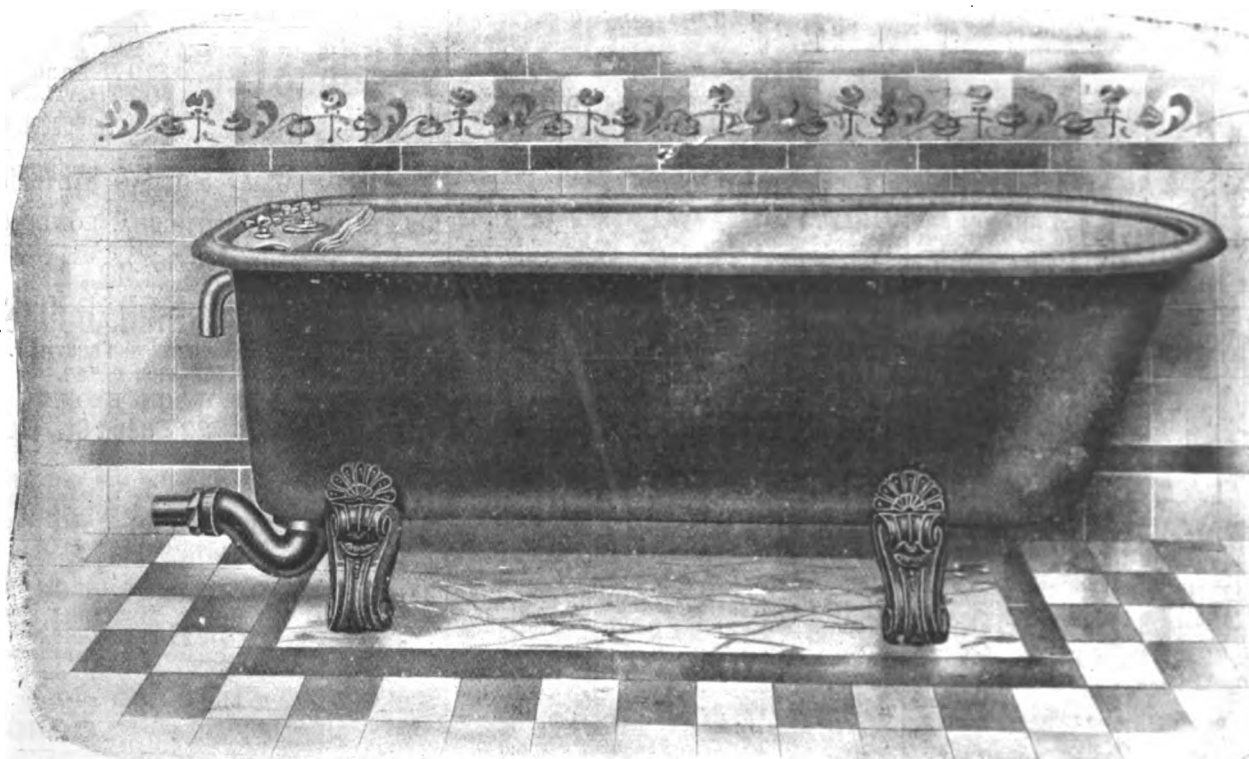
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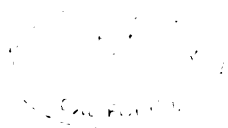
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THE
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A WEEKLY

ILLUSTRATED JOURNAL

OF

ART,

CIVIL ENGINEERING,

AND

BUILDING.

Am I to be told that the "nature" of Attica would be more poetical without the "art" of the Acropolis? Of the Temple of Theseus, and of the still all Greek and glorious monuments of her exquisitely artificial genius? Ask the traveller what strikes him as most poetical—the Parthenon, or the rock on which it stands? The columns of Cape Colonna, or the Cape itself? It is the "art," the columns, the temples which give them their antique and their modern poetry, and not the spots themselves. Without them the spots of earth would be unnoticed and unknown.—LORD BYRON.

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JULY TO DECEMBER 1906.

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THE ARCHITECT AND CONTRACT REPORTER. A JOURNAL OF ART, CIVIL ENGINEERING & BUILDING.

THE WEEK.

ONCE more Messrs. PEARSON, the contractors, have been unlucky in the Irish law courts. We have already described in detail the circumstances of their case. They undertook to construct precipitation tanks and other works in connection with the drainage of Dublin for 94,000*l.* In preparing the tender they were guided by plans prepared for the purpose by the engineers of the Corporation, and on which a harbour wall was represented by dotted lines. As there was no wall the contractors had to perform more work than was contemplated, and they claimed 36,000*l.* in payment. At the first trial the Lord Chief Baron directed that a verdict should be given in favour of the Corporation. Application was made to the King's Bench Division for a new trial, and a majority of the Court decided that judgment should be entered for Messrs. PEARSON with costs. The Corporation appealed, and the hearing occupied several days. Judgment has now been given, and the order of the Lord Chief Baron in favour of the Corporation has been restored. The Lord Chancellor held that dotted lines were to be interpreted as relating to an existing wall, which counsel for the Corporation had denied, and that the original plan could not be carried out. But his Lordship maintained that the specification should be considered with the plans, and in it the contractor was informed that he must act on his own judgment and make his own investigations. Under these circumstances a charge of fraud could not be upheld. Lord Justice FITZGIBBON and Lord Justice HOLMES concurred. As far as the Irish Courts are concerned the litigation may be said to have ended. In the House of Lords a different result might be attained.

THERE was a short discussion at the meeting of the London County Council on Tuesday upon the Greenwich generating station and the Greenwich Observatory. The highways committee reported that no serious interference with the observations had occurred. In order to avoid all risk it was decided that the erection of the chimneys should be suspended for the present. The Admiralty had suggested that a series of tests, extending over a considerable period, should be carried out in order to arrive at a fair estimate of the amount of interference which might be caused by the working of the station to the astronomical instruments at the Observatory. With that object it was proposed that a small committee, consisting of representatives of the Admiralty and of the Council, should be formed to conduct the investigation. The committee recommended that the Lords Commissioners should be informed that the Council would be glad to co-operate in the appointment of such a committee. The recommendation was unanimously adopted, and it was arranged that Sir BENJAMIN BAKER should represent the Council at the inquiry. It is evident that no danger has yet arisen, although absurd allegations were made in newspapers

on the subject. It is only right, for the sake of accuracy in the calculations and observations of the officials at the Observatory, that an investigation should be made into the contingency of infinitesimal probabilities of danger. But at present everything adds assurance to the hope expressed by the chairman of the highways committee, that both the generating station and the Observatory would be at Greenwich a century hence.

THE Board of Management of Henshaw's Blind Asylum, Old Trafford, are desirous to erect a new institution, and they invite designs from architects practising in Manchester. A copy of the plan and instructions can be obtained on payment of a guinea. Manchester is not so large a city as to have many architects who are unknown, at least by repute, to the assessor, Mr. JOHN HOLDEN, if not to the Board. The deposit of a guinea therefore seems unnecessary, and, moreover, it is putting architects on the same footing as builders. Deposits are demanded from builders because it is very easy to assume the title, and men pose as builders and contractors whose experience has been derived from assisting a paperhanger or other tradesman. No doubt it is the custom in municipal works in Manchester and Liverpool to ask competing architects for deposits, which is more honoured in the breach than the observance.

THE amount of money available for the purchase of works for the Irish National Gallery is very limited. According to the report of the director, a portrait of a lady by the Spanish painter, F. GOYA, has been acquired for 600*l.* A chalk study of a nude figure by ALFRED STEVENS cost 17*l.* For a portrait of the late Mr. LECKY, the historian, by Mr. JOHN LAVERY, 100*l.* was paid. A very interesting series of twelve pen and pencil portraits by the late CHARLES GREY, R.H.A., was obtained for the small outlay of 3*l.* The *Dublin University Magazine* imitated *Fraser's Magazine* by publishing portraits of celebrities, and the sketches were made for that purpose. Several engravings of portraits were purchased. Among the gifts were a bronze bust of Mr. LECKY by BOEHM, and a series of sketches by Sir F. W. BURTON, who was director of the National Gallery. One curious incident is mentioned in the report. A miniature portrait of RICHARD BURKE, by BONE, was advertised for sale by auction in Dublin. This miniature having been identified as the one stolen from the National Gallery in 1880, steps were taken through the Law Officers of the Crown for its recovery. The Governors and Guardians having been advised that the recovery of the miniature by legal proceedings would be expensive and by no means certain, consented to purchase it from its holder, a London dealer, for 20*l.*, which was accordingly done. The case suggests the necessity for some arrangement which would not aid thieves who make public galleries and museums their prey.

ST. DAVIDS CATHEDRAL.*

ACCORDING to some archæologists Wales at one time contained several sees. This would not be peculiar if we remember that originally a bishopric was no more than a large parish. In the course of centuries the number was reduced to four—St. Davids, St. Asaph, Llandaff and Bangor. Two are called after bishops. In Ireland the practice of bestowing a saint's name on a district was not uncommon; and there is one instance—St. Andrews—in Scotland, and one now in England—St. Albans. St. KENTIGERN has a better right than St. ASAPH to have his name linked with the see. And it is believed that DUBRECIUS possesses also a prior claim to be associated with the see of St. Davids.

It is now impossible to separate history from legend in the life of St. DAVID. It is doubtful when he was born. It is generally believed, however, that he laboured in the sixth century, some saying that he lived until 601, while others suppose he died in 544. He was the son of a Welsh prince, but was early attracted by monasticism and founded a college or monastery which gained reputation from the number of its missionaries. Afterwards he was made Bishop of Caerleon, but as he considered the place was too near the heathen English he removed his chair to St. Davids. The mention of Caerleon recalls Arthurian legends, and it is related by BROWNE WILLIS that St. DAVID was the uncle of king ARTHUR. Whether he was the first bishop it is now impossible to ascertain.

The position of the building would suggest that it was selected by some prelate who sought after quietude, or, as BYRON said of the founders of Newstead, by those who wished to shield their devotion from the wind. Instead of being placed on a height which would be a beacon to wanderers, the cathedral is in a hollow. We must assume that, as in other places, the site of the earliest church was respected. We can now know nothing about the character of St. DAVID's building. Although it may have been recognised as the metropolitan church of Wales no description of it has survived. In 712 it is related that a cathedral which had been plundered in the preceding century was destroyed by the West Saxons. ASSER, who was the biographer of ALFRED THE GREAT, was a monk of St. Davids. This would show that learning was cultivated in so remote a place in the ninth century.

The Norman invasion brought better order into that part of the country. WILLIAM is said to have visited the shrine of St. DAVID. In 1115 BERNARD, a Norman, was appointed bishop, regardless of the practice of election by the clergy. It was not until the time of Bishop PETER DE LEIA, who reigned from 1177 to 1198, that the present structure was commenced. According to BROWNE WILLIS:—"In the year 1176, when PETER DE LEIA became bishop of the see, the cathedral had been so much ruined by the incursions of the Danes and other pirates that it was thought right to take it down and rebuild it." One important feature—the central tower—fell in 1220, soon after it was erected, crushing choir and transepts. As Professor WILLIS has remarked, there are few central towers of Norman date which have not fallen sooner or later. No tower was restored so injudiciously as this of St. Davids. It continued more or less unstable for six hundred years, and when Sir GILBERT SCOTT reported on it in 1862, the only security it had from falling was the buttressing it sustained from the walls of the transepts and nave.

It will be seen from the illustrations of the cathedral which we shall publish that work was carried on at St. Davids during several periods. Much of it, including the nave, choir and presbytery, may be described as Transitional. The exterior, however, is more suggestive of a Late Decorated character. The north transept is thirteenth-century work. In the fourteenth century HENRY GOWER, the Menevian

WYKEHAM, who was Chancellor of England, was bishop, and he not only built the splendid palace adjoining the cathedral, but carried out many alterations in the interior. To him must be ascribed the rood-loft, which JOHN CARTER described as, without exception, the most perfect work of its class which had survived. Writing in 1804 he said:—"In this charming performance are traced the same mouldings, ornaments, &c., as we were dazzled with in St. Stephen's Chapel, Westminster, before it became the object for unnecessary havoc and dilapidation." In the fifteenth century and early part of the sixteenth the work which had to be executed is of a character which testifies to the skill of the craftsmen, who probably had to be brought from other parts of England.

Sir GILBERT SCOTT was struck by the general effect of the cathedral, although when he was called in a large part of it was in ruins. According to him it did not fall short of contemporary structures in the grandeur of its conception or the beauty and refinement of its details. It lingers, he said, in some degree behind many of them in the extent to which the pointed arch has supplanted the round, but this was probably owing to a desire to avoid undue height rather than to any want of advancement; for in all the details, and especially in the carved foliage, the skill and taste exhibited is of first-rate order, and the execution of the ornamental masonry could hardly be excelled. Its architect, indeed, seemed determined to plant in the furthest extremity of our island the standard of the utmost advancement of his art at the period of its most determined progression. These facts render the building a wonderfully interesting and valuable landmark in architectural history, taking in the extreme west a position parallel to that held by Canterbury in the extreme east of the island. About ten years earlier the cathedral had been described by E. A. FREEMAN, and his opinion is not less favourable to the importance of St. Davids:—

Perhaps there is no church of the same size which exhibits the cathedral type so thoroughly developed in every respect, except one which has no influence on its external appearance. In point of complication of ground-plan it ranks with—perhaps surpasses—Winchester and St. Albans; and the profusion of chapels and surrounding buildings has the advantage of restoring that varied and picturesque effect which might otherwise have been lost by the absence of any high-pitched roof. Besides the ordinary parts of a cruciform church, a succession of three chapels of inferior height is added to the east end of the choir and the aisles of the latter are continued along them during a great portion of their extent. To the east face of the north transept is attached a lofty building of three stages, containing the chapter-house and other apartments. This erection, which is, excepting of course the tower, the highest portion of the whole pile, naturally forms the most prominent feature in the eastern view, and imparts much variety and singularity to the outline. And as this same transept, at present at least, is connected with the ruined chapel of St. Mary's College, another extensive range is added to the main fabric, from which it can hardly be considered as architecturally distinct. . . . Its general effect is extremely striking, from the remarkable richness of the architecture and especially from its great multiplicity of parts, characters sufficiently marked to have been conspicuous anywhere, but which are the more strongly forced on the eye from their utter contrast with the ragged and weather-beaten aspect of the church without. Possibly the circumstances which conduced to the lack of external ornament may have led its designers to counterbalance this deficiency by a superabundance of internal decoration. Certain it is that very few structures of the same size equal this cathedral in the richness and elaborateness of execution lavished upon this portion of the interior. In fact, much of the solemnity of a Romanesque nave is lost, an effect which is certainly far better produced by more massive proportions and a greater extent of unadorned surface.

It seems almost a miracle that the cathedral should have retained so much of its ancient character, especially when we consider its remoteness and the

* See Illustration.

indifference of some of its prelates. One bishop proposed that it should be taken down and rebuilt on a site that would be more comfortable for those who officiated in it. There was a tradition that another bishop stripped the lead from the cathedral and palace in order that by the sale of it he might increase the portions of his five daughters who were married to bishops. If the additions were of the same character as JOHN NASH's west front, they were as destructive as dilapidations. That has been superseded by one of Sir GILBERT SCOTT's, which at least is an effort at consistency. NASH, according to JOHN CARTER, adopted the principle that variety is charming. But whatever he introduced could not be charged as a servile copy of any other part of the building.

The interior is suggestive of wealthy patrons. There is a large amount of carving, and it is assumed that colour was at one time largely employed. There are six semicircular bays on each side of the nave. The arrangement of the triforium and clerestory is not, however, successful. It is supposed that the nave was to be vaulted. But the roof is of oak, arranged in compartments. The stalls are of exceptional interest, and are believed to have been executed in the time of Bishop TULLY between 1460 and 1480. Grotesques are introduced in the ornamentation. The carvers were allowed their usual license, and were often sarcastic in their emblematic figures. The throne is another elaborate production. The base of the shrine of St. DAVID and a part of St. CARADOC's remain. In VAUGHAN's chantry is vaulting of intricate fan tracery. As the illustration shows, a part of the east remains unroofed as it was some seventy years ago, when a visitor said:—"Sad indeed is the sight, and were it not for the interest which antiquaries take in these ruined portions of the cathedral, it would be better to remove them altogether."

THE LILLE COMPETITION.

FIFTY years have elapsed since it was announced that a competition for the proposed cathedral at Lille had ended in favour of English architects. Not only had MESSRS. CLUTTON & BURGESS gained the first prize of 6,000 francs, and G. E. STREET the second of 4,000 francs, but medals were awarded to three provincial architects, viz. MESSRS. HOLDEN & SON, of Manchester; Mr. CUTHBERT BRODRICK, of Leeds; and Mr. R. P. PULLAN, of Manchester; and honourable mentions to Mr. GOLDIE, of Sheffield; Mr. PEDLEY, of Birmingham; and Mr. ROBINSON, of London. In other words, nineteen designs by French, Belgian, German, Swiss, Luxembourg, and English architects were distinguished, and out of that number eight came from this country, the majority being from provincial towns. This was creditable to English ability, and it was also evidence of the attention given to the study of Gothic at that time. But there is no longer one of the competitors among us to recall so remarkable a contest, and after fifty years the whole of the circumstances are not likely to be remembered. It may therefore be not entirely useless to allude to them.

It is only right to state at the beginning that the competition was not entirely a fair one. Shrewd people in Lille realised that the opportunity of building a great cathedral in Mediæval style would excite the ambition of architects in various countries. Lille, although a very important town, was not a cathedral city, and the Imperial Government had no intention of altering its character. Lille formed part of the arch-diocese of Cambrai, and there was no desire publicly expressed by the prelate who ruled the large see for a division. The clergy of Lille had not sought for a bishop who would live amongst them. Some laymen seemed to think that Lille would gain if it were turned into a bishopric; and the POPE, who was in exile at Gaeta, was induced to sanction the project. The people of Lille at the present time appear to be more intent on business than on

ecclesiasticism. There is little doubt they have not changed their character in half a century. It was supposed, however, that the sight of a large number of splendid designs obtained from all parts of Europe would appeal to them and infuse a little enthusiasm among them for a building which was to surpass all others in Lille. The cathedral would moreover be dedicated to Notre-Dame de la Treille, the patroness of the town. Among a people possessing so much wealth it did not seem difficult to raise 3,000,000 francs, or 120,000*l.*, which was the sum specified in the conditions for competitors, although it could not be supposed that the contemplated building could be erected so cheaply unless labour and materials were in a large measure to be obtained gratuitously.

The length of the church was to be from 100 to 110 metres, and it was to be surmounted by one or two towers with spires. There were also to be three deeply recessed portals. The plan was to consist of a nave with two aisles, single transepts, a choir, a sanctuary and apsidal chapels. The choir was to be large enough to accommodate the whole cathedral chapter. Other buildings named as necessary were a large hall for meetings, two sacristies, a hall for catechising and several rooms. A parvis was considered desirable, a crypt was required with easy approaches, also baptistery and funeral chapels. Brick was suggested for use in walls and vaulting, stone for mouldings and sculpture, and grit for basements.

It was stated that there was a desire to entrust the execution of the work to the author of the best design. But there was no formal engagement on that point. In that case he was to receive an advance of 10,000 francs, which was to be deducted at the rate of 1,000 francs per annum from his percentage. The percentage was to be at the rate of 5 per cent. for the first million expended, 4 per cent. for the second, and 3 per cent. on all subsequent outlay. In case the author did not carry out the works he was to receive 6,000 francs. A second prize of 4,000 francs and a third of 3,000 francs were also promised.

The preparation of a design for a cathedral is a costly speculation. Possibly, also, many architects did not like the security. Although efforts were made to have the competition regarded as if it were a sort of crusade, only forty-one sets of designs were sent in. Fourteen were the work of Englishmen. It was said at the time that the collection as a whole was very striking. But it soon became recognised that in many projects the conditions of competition were not fulfilled. A few of the designs, at least, were of a startling kind, at least to those who were only acquainted with architectural drawings which appeared in the Royal Academy. A correspondent of the *Ecclesiologist* described one of the drawings in the following words:—

This is the production of a madman. The design is one entire insanity. It is a mirage done in all sorts of colours. There are radiating jets of coloured material, apparently spinning and twisting like a thaumatrope. Green parapets, yellow tracery, sky-blue arcades, German flamboyant twisted shafts. We can only describe the whole thing as a *cauchemar*. The inventor could only have produced it after diligent training on raw pork and liquid pigments. The west front is guarded by two ruffian angels, apparently of bronze, flourishing big swords, who recall the Oriental *afrits*. Man of woman born could never face these monsters. They look like the angels keeping guard over Paradise and repelling the faithful from church rather than beckoning them into it. Each of them is exactly 10 metres, = more than 30 feet, high. Above these is a whole flight of bright yellow angels, and then a covey of tender green seraphim. Above them is an open book, then a lantern and staff, then a large text, then, above all, scrambling over the gable and projected clear against the sky, the whole group of the Sistine Madonna with the pretty little cherubs lounging with their chins on the parapet. The intersection of nave and transept is crowned with an iron and glass spire, coloured red, blue, green and yellow, and the whole is surmounted by a great gilded metal glory of 7 metres in diameter, which we believe is to be illu-

minated and most likely would be visible at Calais. Blasphemy, folly and impossibility are combined in this insult to common sense and common decency.

The jury prepared an elaborate report. It was not to be expected that the conclusion would be accepted with general satisfaction. The critics of French papers would have preferred one of their countrymen to have gained the first prize. But able as M. LASSUS was as an architect his design was placed third.

MESSRS. CLUTTON & BURGESS had some doubts about receiving fair play. BURGESS liked a practical joke, and he must have enjoyed the precaution of having the lettering done by a Frenchman, and other customs of French architects imitated. The style adopted was likewise French, and the motto, *Federis Arca*, was familiar to Frenchmen from its introduction in the Litany of Loreto. Evidently the jury were captivated by the design, for in describing it they said:—

Let us distinguish here constructional merit from decorative; the work of the architect from that of the ecclesiologist (*archéologue*). If the details of construction in this plan have not always been treated with the same energy and *élan* so remarkable in the preceding design, the artist has nevertheless shown himself to have been constantly guided by a profound judgment and an elevated sentiment of art. In choosing an over-archaic style of getting up the drawings themselves, he has, of course, waived his chance of pleasing the eye; but—we owe it to him to say—the more his design was appreciated, the more the members of the jury, familiarised with the laws of construction, were led to recognise an ability of the highest order.

Simultaneously with our realisation of the purely constructional excellences of the design, as shown in its admirable proportions, our attention was challenged in the department of ornamentation by a most piquant originality and an affluence of ideas which we should look for elsewhere in vain. The author has given proofs in his details of the highest order of archæological knowledge as well as of artistic ability.

Examine his pulpit, so full of character; his font, so novel in its symbolical treatment; the altar and the ciborium, so grand in their outlines, so full of grace in their decorations; and the pavement, of a design so elaborate and so rich. Everywhere there is evidence of the same fertility of invention, everywhere we see the circulation of the abundant sap of a living poetry. Honour to the unknown artist who, in so extensive a competition, from so well-contested a struggle, has gained one of those triumphs which shed a ray of glory on a whole career.

Mr. STREET's design, which was marked *Quam dilecta Tabernacula*, was described as follows:—

To a profound knowledge of Pointed art its author adds a rare power of conception, which is shown as well in the details as in the ensemble. We recognise here at first sight the work of a great master. In particular, we must fairly congratulate the author on having complied with all the requirements of the programme, and on having faced more boldly than any other competitor the difficulties of employing brick as the material of a monumental edifice. If power rather than grace is the general characteristic of this magnificent creation of art, elegance finds its due place in the ciborium, in which it is combined with a true splendour of ornamentation. After a lengthened consideration we have unhesitatingly raised this design to the second place, and little was wanting to its mounting to the first.

It was hardly to be expected that the *entente cordiale* would have the effect of allowing an English architect to carry out an important public building in any French town. In that sense the competition was a fiasco. Nor has Lille as yet succeeded in becoming a bishopric. But a church dedicated to Notre-Dame de la Treille was commenced, and some English elements, especially from the first design, were introduced. The work has not been carried on continuously, and the building, although used every day, is still incomplete. But the competition was not without its effect in revealing that English architects were able to demonstrate to the satisfaction of French judges that in dealing with a style which was peculiarly French they were irresistible.

NEW BOOKS.

THE increase in the number of books on processes or materials connected with building is remarkable. It seems like a revelation in our time of the Spencerian formula of the homogeneous becoming the heterogeneous. Nobody is now surprised by seeing a book on bricks or mortar, glass, paint or nails. In a short time it is not impossible that treatises will appear on subjects which are even more restricted. The old terms builder, general builder and contractor are beginning to indicate something that is indefinite and belonging to a primitive age. What up-to-date people are supposed to require are specialists. As in medicine, surgery and law, we may expect to see a race of men devoting themselves to particular branches of the building trade. The tendency is especially exhibited in regard to concrete. Not many years have elapsed since concrete suggested an immense heap which could only be the work of the humblest class of labourers. Concrete has now assumed so much importance, it has not only special manufacturers, but special designers and mathematicians. Instead of a mass which was concealed from view, we can now have concrete made in numerous patented forms, and it is considered that ornament is not misplaced when raised on one of the surfaces. The treatise on "Concrete Block Manufacture," by Mr. HARMON HOWARD RICE (New York: JOHN WILEY & SONS. London: CHAPMAN & HALL) is the latest addition to the new concrete literature, which is already represented by so many volumes. In the pages the processes of making are described, but care would have to be taken in adopting them, for the author warns his readers that very many of the machines and designs are protected by letters patent. It may appear as odd to talk of designs in connection with a concrete block as of designs for a brick. It is possible to have simple, solid blocks of cement concrete, but to American ingenuity they are wasteful. Some blocks are made in the form of T's, because they are found to be useful for interlocking and are not heavy. Others have the material removed from the interior, and in that way make air-spaces of various forms. Modifications like those we have described are supposed to confer advantages which blocks of stone do not possess, and the Americans are now using concrete blocks both for public and private buildings. Mr. RICE is in favour of plainness, for few things can be more displeasing to the eye than to see a large number of blocks in a wall in which the imitation of dressing is invariable throughout. If the blocks could be gone over by a mason there would be a change for the better in most cases, but the cement is not adapted for working on with tools. The volume contains a large amount of information which will be new to concrete-workers in England.

While we use metals in construction the subject of corrosion may not be neglected without risk. Both iron and steel being artificial materials and produced on a comparatively small scale, cannot be expected to be uniform in character, and unless there is continual observation it is impossible to say when danger begins from corrosion in a beam. The majority of people are satisfied with a coat or two of paint, which is often applied in so careless a manner that the enemy still has an opportunity to continue weakening the material. By treating corrosion as a phenomenon which affects much else besides iron and steel, and which can act through other agents besides the atmosphere, there is a possibility of obtaining greater security. This method has been adopted by Professor HUMBERT SEXTON in his small book on "The Corrosion and Protection of Metals, with special reference to the preservation of Engineering Structures" (Manchester: The Scientific Publishing Co.). There are introduced in it the results of many experiments. As the author is connected with Glasgow, he does not neglect the decay or corrosion of stone in that city. He tells us that in one case a sample of stone contained

.368 per cent. of sulphate, but the parts subjected to atmospheric action contained no less than 1.86 per cent. A mass of sooty matter which hung like a stalactite from a corner of a public building, was found to contain 64.24 per cent. of mineral matter, of which there was 31.46 per cent. of sulphur as sulphates. With such an atmosphere artificial stone alone can contend, and then only when allowance is made for the corrosive power of the atmosphere. With regard to paints, Professor SEXTON says:—"The use of white lead in any form should be absolutely prohibited in paints for use on structures exposed to wet and impure air. If a white base must be used there are several others available, and zinc white is probably the best." He also has an aversion to low-priced paints, which, he says, are often the most costly in the end. Important structures, he considers, should be painted every year, or at least every other year. We can recommend the book as a trustworthy treatise to all that relates to the covering of substances used in construction.

Three years ago we noticed "The Cathedrals and Churches of North Germany," by Mr. T. FRANCIS BUMPUS. That work was soon out of print. A new edition (published by Mr. T. WERNER LAURIE) has been prepared, in which, among other matter, "notes have been added on the celebrated brasses existing at Gnesen, Lübeck, Meissen, Posen, Schwerin, Verden and elsewhere. The illustrations of the cathedrals and churches of Danzig, Osnabrück, Ratzeburg, Strasburg, Werden and Wismar, which now appear for the first time, form with the rest a unique and valuable series of views which no previous work on the ecclesiology of Germany can rival." German Gothic can be considered as a species apart, although it is supposed to be derived from France. The buildings have also the advantage of being more carefully conserved since the Reformation than the churches of England or France. The German mind was always philosophic, and has endured the presence of the signs and tokens of another creed with equanimity. Indeed, among the lower classes who are church-goers in the towns the accessories are looked on as if they had a connection with the mode of worship now followed. On that account there would be a general outcry if a Sakraments-haus were ordered to be removed from any of the Lutheran churches in which one remained. The respect for mediævalism must be admired by all English archaeologists, although it may appear to be less logical than the practice enforced in England and Scotland. Mr. BUMPUS, while fascinated with so much that met his eyes, was not blinded to defects. Stained glass, for instance, which he has a right to judge, he considers on the whole to be less satisfactory than many of the modern examples produced in England. Anyone who proposes to make a tour in Germany during the present season should carefully read the pages before he sets out, and that he will find a very pleasant duty, and the book should afterwards be his constant companion.

A few years ago London used to be compared to a museum of antiquities. Perhaps the relics were not sufficiently appreciated, and now they are vanishing like PROSPERO's vision. Unfortunately, repose seems to go with them. Hereafter posterity will be grateful to the London Topographical Society for preserving records of some of the fleeting characteristics. In their third volume Colonel PRIDEAUX has notes on SALWAY's plan of the road from Hyde Park Corner to Counter's Bridge, which abound in visions. Who could imagine that WILLIAM COBBETT found he could endure London by living in a house which stood on the site occupied by the Metropolitan Railway station in Kensington? Sir DAVID WILKIE lived in Phillimore Place, and it was there he painted *The Chelsea Pensioners*, *The Village Festival* and *Blind Man's Buff*. Counter's Bridge is a modernisation of a more ancient title. It crosses Stamford Brook, and

on the other side of the creek was a famous nursery. The transformations in Marylebone during the last fifteen years seem to be incredible by the extent of the area. Peaceful old houses and gardens have been swept away like dust. Three houses in which GEORGE ELIOT lived have vanished. EDWIN LANDSEER's house and his brother's, HUXLEY's, LOUGH, the sculptor's, Sir GEORGE HAYTER's and many others have suffered under the besom of destruction. Mr. HILTON PRICE has managed to make out an elaborate list of the signs which in the sixteenth century adorned St. Paul's Churchyard and the neighbouring streets. The Society deserves to be supported, for the sooner descriptions and photographs are secured the more coming archaeologists will be gratified.

CULROSS ABBEY.

WHILE preparing for the restoration of Culross Abbey excavations were at first made at the south angle of the east chancel, where the architects, Sir R. Rowand Anderson and Mr. Paul, intended the heating chamber and vestry should be placed. The excavations immediately proved interesting. The soil had all been filled in, hiding a great part of the old wall of the church, which is built with ashlar, forming a strong buttress basement, with splayed intakes, giving to the superstructure the impression of substantial support. The heritors and architects agreed to change the position of the heating chamber and vestry, and to continue the excavations. The south transept originally had had a side aisle, which had been taken down at the destructive restoration of 1824; and the arcade arches, which divided the transept from the aisle, were built up and formed the east wall of the transept. The side aisle, which is included in the restoration, necessitated excavations, and it is of interest that the original foundations were found to be quite suitable for the new structure.

In excavating for the new floor level for this part remains were found close to the surface. In one instance a body had been buried with the head laid just underneath one of the arches, and in closing up the arched opening in 1824 the builders had built the skull into the wall. Beneath the arch which bears the coat-of-arms of Roger de Quincy, Earl of Winchester, was found the earliest form of stone coffin, which is composed of rough stones set edgewise on the sides and ends, and covered over with one or more of the same. A stone coffin completely shrouded in leather was also found underneath one of the arches, and the leather, which has retained the shape of the body, is in a good state of preservation. The body had been swathed in a heavy woollen shroud, which is also wonderfully preserved. It is supposed that the inhabitant had been a dignitary of the Church, probably a Cistercian monk. Opposite the foot of the coffin was found the foundation of a side altar. In order to ascertain the condition of the foundation of the centre pier of the south transept excavations were made on its south side to a depth of 10 feet. There a great bed of shells was found, chiefly of the mussel variety, besides fragments of ancient delf, glazed, unglazed and rudely ornamented, besides the bones of the horse, ox, sheep and hog. Further excavations were agreed upon with the heritors, and part of the south boundary-wall was taken down for that purpose, and with the material excavated a broad terrace was formed before the mansion-house of Lord Bruce. It was then considered necessary to form a walk from a fourteenth-century doorway in the east wall of the garth or garden leading down to the lower level of the excavations. In doing so part of an octagonal column and base occupying its original position were discovered. Lord Bruce and Sir James Sivewright were much interested in this discovery, and gave orders for further excavations to be made. In taking down part of an old wall at the side of this column, on which stood the sacristy or vestry, the top of a finely-splayed Gothic arch was revealed. The work became most interesting as the made-up ground was being removed. The arch deepened and broadened until the moulded capitals were seen. The first one examined was directly underneath the octagonal column and of the same detail. Unfortunately the capital was broken. The break testified to the unstable conditions of the foundation, and also to the crushing weight that had been built upon the too slender shaft. An examination of the springer over the capital suggested the existence of other crypt

arches. The column to the east of this one is of a different design, having a partly round and pointed column, or keel-moulded column, as Bloxam calls it, attached to an octagonal one. This clustered column had evidently been intended to carry an enormous weight, judging by the very thick walls and buttresses which had served as thrusts to its arches. At the early stages of the restoration it was deemed necessary to erect a substantial buttress a few feet to the north of these two columns, in order to withstand the thrust of the arcade which divides the side aisle from the south transept. In so doing a thick wall was cut into, which occupied part of the space required for the foundation of the buttress. Excavations were made down to a depth of 12 feet below the level of the church floor, and the ashlar faced wall of the south transept continued down to that depth. Portions of human bones were found all the way down until a satisfactory portion of the old wall was reached. The foundations of great columns and bases have since been laid bare at a great depth, and each column is of different design. At one spot there has been a floor laid with small red paving tiles; it may have been a paved court in the eastern entrance to the crypts. There is a thick layer of oyster shells upon it.

SHAKESPEARE'S ENGLAND.

A PARTY of members of the Architectural and Archaeological Society for the archdeaconries of Northampton and Oakham last week visited Stratford-on-Avon. A paper was read by Mr. Alfred Ewen on "Shakespeare in the Country and in the Town." In the course of it Mr. Ewen said Shakespeare was the son of a dealer in agricultural produce, and after receiving the ordinary education at the grammar school, he engaged as a boy in his father's business. Fired by literary ambitions, he was especially fascinated by the drama which was then first developing in England. Having started upon his journey to London, Mr. Ewen pictured the look of some of the country through which he would pass. One of the most interesting books to be found amongst the byways of Elizabethan literature was Harrison's "Description of Britain and England," which contained, amongst other illustrated matter, a map of Shakespeare's road to London. Dr. Furnivall, who edited the book, thus alluded to the map:—"Not being able to find any country maps of Shakespeare's time, with the roads laid down on them, I got Mr. Emslie to make from the Ordnance map a smaller one of the country between Stratford and London, and to colour on it the roads that I supposed Shakespeare would be most likely to travel by. That on the right hand over Edge Hill, through Drayton, Banbury, Buckingham, Aylesbury, Amersham and Uxbridge is the shorter road, and is given by our earliest road map-maker, Ogilby, in 1675, and his successors, as the London road. On the other hand, the traditions of Shakespeare's connection with the lively landlady of the Crown, at Oxford, point to Shakespeare's use (in June 1605, at least, if not 'commonly in his journey,' as Aubrey says) of the left-hand road through Shipston, Long Compton, Woodstock, Oxford, High Wycombe, Beaconsfield and Uxbridge, with the alternative of taking the Henley Road between Oxford and Uxbridge." Some extracts from Harrison and others, contemporary writers, quoted in Dr. Furnivall's edition, gave a vivid impression of the varied country sights and sounds which attracted the eyes and ears of the youthful Shakespeare as he journeyed along to seek, like another Dick Whittington, his fortune in London. A traveller, writing in the year 1592, said that between London and Oxford the country was in some places very fertile, in others very boggy and mossy, and "such immense numbers of sheep are bred on it round about that it is astonishing." Of game he wrote:—"England has great store of fallow deer of various colours, as well in the woods as in enclosed parks; likewise red deer, stags and other game, though few and small, but no wild boars nor wolves are met with in this island, and no roes; but there are foxes and hares, vast numbers of rabbits and coneyes." Harrison wrote that in every shire in England there was great plenty of parks, and of gardens he said:—"If you look into our gardens annexed to our houses, how wonderfully is their beauty increased, not only with flowers, but also with rare and medicinable herbs." Mr. Ewen confessed that he was tempted to wander at this stage, and to call attention more particularly to the way in which, from those extracts of the raw material, the imperishable poetry of "As You Like it" and "A Winter's Tale" had

been extracted. Proceeding, he could not refrain from adding a quotation from Hentzer, who, writing in 1598, described in picturesque language a Berkshire "harvest home." Such a sight was doubtless seen by Shakespeare as he journeyed through Merry England, and his exquisite recollections of it in "A Winter's Tale" were thoroughly English, although the scene was laid in Bohemia. Shakespeare must have had an extensive acquaintance with the places of public entertainment between Stratford and London, and they had only to recall scenes from the "Taming of the Shrew" and "Henry IV." to convince them that he was equally at home in the village alehouse and the London hostel. "Those towns," said Harrison, "that we call thoroughfares have great and sumptuous inns builded in them for the receiving of such travellers and strangers as pass to and fro. Every man may use his inn as his own house in England. Our inns are also well furnished with napery, bedding and tapestry, especially with napery, for besides the linen used at the tables, which is commonly washed daily, is such and so much as belongeth to the estate and calling of the guest. Each comer is sure to be in clean sheets, wherein no man hath been lodged since they came from the laundress. If the traveller have an horse his bed doth cost him nothing, but if he go on foot he is sure to pay a penny for the same." Then Harrison went on to tell particulars which were not quite so satisfactory. He related how the guests' horses were attended by ostlers who often cheated the horses of their food and were, in company with the tapsters, in league with robbers. Either the ostler or the chamberlains would try the weight of the traveller's packet and tell the highwayman of it. "If you give your packet to the landlord to keep that is evidence to the servants that it is valuable, and you are sure to be robbed," was another of Harrison's impressions. Soon after his arrival in London Shakespeare seems to have obtained a situation with James Burbidge, the proprietor of the first regular playhouse erected in England, which was known by the name "The Theatre," and was in Shoreditch. In consequence of a dispute with the ground landlord, Burbidge pulled down "The Theatre" and erected the celebrated Globe playhouse on the Bankside. An interesting description followed from Mr. Ewen of the neighbourhood of the Bankside and a description of the interior of the Globe.

DEVIZES CASTLE.

THE members of the Berks Archaeological Society and the Newbury District Field Club visited Devizes last week. At the castle Mr. Walter Money read a paper of which an abstract is given in the *Reading Mercury*:—

The *castrum de Divisis*, or *ad Devisis*, i.e. the castle at the "points of boundary," which from peculiarity of situation on the dividing line between two hundreds and at the meetings of three manors gave the name to the modern town of Devizes, has been the scene of several important historical events. Although the origin of the town has been variously ascribed to the Britons, the Romans, and even to Alfred the Great, there is no authentic history until the reign of Henry I., when its Norman castle was erected by Roger, the third bishop of Old Sarum. This worthy was originally in charge of a little country church near Caen, and the English king while warring in Normandy attended his church for mass. His prompt method of conducting the service pleased the king to such a degree that he at once installed him as his own chaplain. Appointed to this office, Roger brought to the help of the Prince, who was harassed with that "eternal want of pence that vexes public men," the ability of a fine financier, and when he became king Henry quickly advanced him to be Chancellor of England, in which office he did for his master in his public what he had done for him in his private capacity, namely, "put him on a business footing," so that eventually Henry became possessed of great wealth. He was appointed Bishop of Old Sarum in 1102. The erection of Devizes Castle seems to have been his principal work, and it had not long been built before its massive walls were found very convenient as a State prison. King Henry imprisoned his eldest brother here for some time, and subsequently the castle passed into the hands of Stephen, who placed his own son-in-law, Hervey of Britain, in charge. He held it with the utmost courage, but eventually the fortress fell into the hands of the partisans of Matilda and Hervey was obliged to fly from England. Then came Matilda herself. She had made her escape from

Winchester to Ludgershall Castle, from whence she hastened on horseback in male attire, attended by her faithful Brian Fitz Count and a few followers, to Devizes Castle, and here, one authority says, she was placed on a litter and carried to Gloucester. The tide of events subsequently turning in favour of the Empress Matilda, she came again to Devizes, and held two Councils there in 1142. During the absence of Richard I. in the Holy Land the castle fell into the hands of Prince John, who on succeeding to the throne, regarded it as one of his principal strongholds, for it became the receptacle of much of the Royal treasure. In the reign of Henry III. the castle was the scene of another adventure. In 1233 Hubert de Burgh, Earl of Kent, who had been Prime Minister to Henry, was confined here, but with two of his attendants contrived a plan of escape. They carefully watched their opportunity, and on the night of Michaelmas Eve, the garrison being asleep, one of them kept watch while the other took Hubert on his shoulders, fettered as he was, and descending from the tower, they passed through the castle unnoticed till they reached the great gate, where they went out and made their way to the adjoining church of St. John, where Hubert was safely deposited before the high altar. His flight was discovered and he was dragged back to the castle, but the privilege of sanctuary had been violated, and the Bishop of Salisbury succeeded in getting him again replaced in the church, the king at the same time giving strict orders to the sheriff of Wilts to blockade the church and prevent his escape. However, a strong body of Hubert's friends appeared on the scene, and having scattered the sheriff's men carried Hubert off in triumph into Wales. For several following reigns the castle of Devizes remained peaceably in the hands of the Crown under the command of successive governors. In the reign of Henry VIII. a great part of the castle had fallen into ruin. Leland says:—"The keep or dungeon of it, set upon a hill cast by hand, is a piece of work of an incredible cost. There appear in the gate six or seven places for portcullises, and much goodly building was in it." Part of the towers of this castle were carried away to the building of Old Bromham House, but "there remained yet divers goodly towers in the outer wall of the castle, but all going to ruin." Some part of the building, probably the keep, seems to have been left, and was to a certain extent defensible even a century later, for in the Civil Wars it was held for the king by Sir Charles Lloyd, and surrendered September 24, 1645, after which it was utterly demolished and passed from the Crown into private hands. In 1643, it may be mentioned, Waller, the Parliamentary general, had a crushing defeat here at the hands of the Royalists on Roundway Hill, when 2,000 of his men were either slain or taken prisoners. The ruins evidently furnished a quarry for the townspeople, for in pulling down old houses stones are found among the foundations with Norman mouldings, which evidently came from the castle. The fortress was a place of immense strength and the costliest workmanship. It stood on a kind of promontory strongly defended by nature. The keep or central tower was surrounded at a convenient distance by a wall 12 feet high, and without this wall was a deep moat and drawbridge protected by a tower, called the barbican, on the external margin of the moat. To an old French word "bretesque," a word used for a wooden tower placed over a drawbridge at the entrance of a castle, the town of Devizes owes the singular name of Brittox, still retained in one of its streets, which probably communicated with the ancient entrance to the castle.

COLLAPSE OF TOWER, OTTAWA.

ON April 5 last the tower on the new wing of the Western Departmental Block on Parliament Hill, Ottawa, Can., collapsed at 11.45 o'clock, and is even yet (end of May), says a correspondent of the *American Architect*, a heap of ruins, a source of mortification to the Government and a serious loss to someone—the contractor probably. As if by miracle no one was hurt, although four men were working on the tower at the time. The new wing was built from east to west, from one of the older wings of the building to another. Its style of architecture was exactly the same as that of the older part of the building, and the outer surface of the wall, like that of the rest of the building, was of Nepean stone, trimmed with drab sandstone. At the north-western corner of the wing was a square tower rising to the height of about 100 feet and capped by a copper roof of pyramidal form.

Work on the wing was continued through the winter, and at the time of the collapse was about complete. Suddenly two blocks of stone slipped and fell to the ground. This was a providential warning to the men, and probably saved their lives. While they were in the act of swinging themselves by ropes to an open window in the adjoining old part of the building two-thirds of the tower and the entire top fell—a mass of cut stone, crumbled cement, twisted iron beams and crumpled sheets of copper. Mr. George Goodwin, hitherto considered a responsible man, was the contractor. The accident ruined about one-fourth of the new wing.

To learn authoritatively where the blame lay, the Canadian Government appointed a commission composed of two well-known Toronto architects, Messrs. Cury and Hutchinson, to investigate and report on the collapse. Their findings are as follows:—

"1. That the walls as built by the contractor were not according to the specifications prepared for this work, and that the bad quality of the work was sufficient cause for the collapse of the tower.

"2. That the plans and specifications prepared for this work were not as explicit and clear as they might have been; they were, however, reasonably and sufficiently clear to enable a contractor to determine the quality of the work required.

"3. Your Commissioners consider that the constructional design of the tower at and above the quatrefoils and water-tables and the introduction of steel beams in the manner shown on the drawings was faulty and defective in that the quatrefoil openings weakened the wall at a point where the full strength should have been maintained, and the steel beams brought a concentrated and eccentric load upon the wall at its weakest point, the more serious defect of the two being, in our opinion, the construction of the steel beams.

"4. That there was no proper and efficient supervision of the works by the Department from the level of the ground upwards.

"5. That the main building, owing to the use of block stone in the backing, is safe, the work being of substantial character. It may be that the facing is not properly bonded with the block stone backing. This we have no means of satisfactorily determining, as it would not be advisable to take down any of the Nepean-stone facing.

"6. That it was inadvisable to proceed with the erection of the upper portions of the tower in the months of November and December, especially as the walling at and below the water-table had been built late in the fall, and the lime mortar had not had opportunity to set.

"7. That the contractor must be held responsible for the collapse of the tower in that he did not carry out his work in a good and substantial manner in accordance with the plans and specifications, or take any precautions to see that the work was thoroughly well built at all points, when it should be self-evident to any intelligent or practical builder that the construction shown required special care and attention.

"8. That the Department of Public Works is also responsible in that it did not properly supervise the work and detect and correct faults of construction as the work progressed."

The Commissioners discuss the nature of the work at considerable length. They say, among other things, that if 3 tons per square foot would be a safe load on walls as built in this tower, then from ten to fifteen tons would be an equally safe load on walls built according to the specifications. They declare, however, that the masonry used in the tower was of such a character that it would have been overloaded with even three tons per square foot, and that had it been of the quality required by the specifications it could safely have borne a load of at least ten tons per square foot. The Commissioners further believe that the tower could and should have been built in a safe and satisfactory manner if reasonable intelligence and care had been exercised by the contractor, notwithstanding the defects in the constructional design. The Commissioners are severe upon Mr. L. F. Taylor, the Government architect who was placed in charge of the work and was responsible to the chief architect. The defective constructive design does not appear to have come under the notice of the chief architect, Mr. Ewart, as he stated that he was not aware that any changes had been made from his instructions to make the tower the same as the two towers on the south elevation of the west block.

NOTES AND COMMENTS.

IF Mr. CARNEGIE should hereafter decide about the erection of another class of buildings in addition to his libraries, we hope that as he has had the advantage of experience, he will stipulate that proper arrangements should be made about the designing of them. In a great many places the existence of architects has been ignored, and the plans have been prepared by hands that were accustomed to never go beyond arrangements for drainage. But then committees were able to boast that as they had prepared shelters at a cheap rate, Mr. CARNEGIE'S grant was applied to other purposes connected no doubt with the library. An instance of the injustice to architects is now exhibited in Northampton. Mr. CARNEGIE has generously offered to give 15,000*l.*, which it is proposed to divide into five parts—four being assigned to the building and one to the heating, lighting and furnishing. In Northampton there is a large amount of energy, and it is now being exerted to have the arrangements concluded before public opinion has been able to assert itself. There are several architects in the town, and they have sent a petition to the Mayor and Town Council in order that the library might be made the subject of a competition among local architects. They say that "the proposed library building affords a fine opportunity of adding to the architectural features of the town, and we respectfully beg to suggest that to obtain the very best ideas both as regards convenience of plan and excellence of design the whole of the architects practising in Northampton should be invited to submit competitive designs." The principal objection to obtaining the aid of an architect is that it would be necessary to pay him his fees. May we ask Mr. CARNEGIE, does he approve of an evasion of an economic law, and whether he would have gained the wealth which he so generously distributes if people in America dispensed with steel and adhered to obsolete methods of construction?

IF the fire enemy was to have a victim from Hamburg English architects would join in imploring that the church of St. Nicholas should be spared. That was erected after the great fire of 1842, and GILBERT SCOTT'S design demonstrated to foreigners that German Gothic was not a mystery to Englishmen. The church of St. Michael, which may be said to be destroyed by the fire this week, was almost in a line with the church of St. Nicholas. Although on the site of an older building, which was destroyed by lightning, the church which suffered dates only from 1762. It was remarkable for its steeple, which was 432 feet high, and from whence a wide view of the surrounding country could be obtained. The length of the church is 229 feet, and it has a breadth of 179 feet. Until the erection of St. Nicholas the church of St. Michael was the most admired of all in Hamburg, and during the French invasion it was the only one which the people were able to save from desecration. On that account St. Michael's is likely to be rebuilt. But it is doubtful whether another chance will be offered to English architects to gain a victory.

WHAT is the use of a minister of fine arts unless he can provide public commissions for artists? Evidently M. BRIAND is of that opinion, for he allows his second-in-command, M. DUJARDIN-BEAUMETZ, to seek occasions and places where art can be turned to account. His latest project will receive general commendation in Paris. All visitors are aware of the great group facing the Place du Carrousel, which is the memorial of GAMBETTA. Behind the group is an open space where grass grows, and which is described as a garden. The ministry have had the happy idea of introducing four great groups of sculpture which are to occupy the four corners. One is already arranged for; it will be a work by M. LANDOWSKI, typifying music and poetry. The others

will be devoted to painting, sculpture and architecture. Busts of representatives of the arts will be placed between the groups. In the centre it is proposed to place a group which will recall the landscape art of France, and which at first was destined to be placed in the Champs-Élysées. A project of that kind cannot be realised in a hurry, but as a plan has been prepared by M. REDON, the architect to the Louvre, commissions can be given to a large number of sculptors. The question must arise whether the GAMBETTA group may not be out of place in such a company. Oratory is recognised as one of the oldest of the arts, and he represented it most effectually. However inappropriate the group may be it is not likely to be removed so long as Republicanism holds sway in France.

ILLUSTRATIONS.

CATHEDRAL SERIES.—ST. DAVIDS: VIEW FROM SOUTH-EAST.

LIBRARY. HERNE HILL.

THE new Carnegie Library, erected in Herne Hill Road, S.E., for the Council of the Borough of Lambeth, is to be opened on Monday next, July 9. The site is sufficiently large to allow the chief rooms of the building to be placed upon the ground floor, and the building is planned so that all the departments are entered from a spacious central hall with vestibule. The walls dividing the principal rooms are fitted with glass screens, and efficient supervision from the inner desk is obtained thereby. Owing to the fall of the ground, and also for general architectural effect, the two wings of the library were designed higher than the main building. Advantage has been taken of this to provide in the east wing apartments for the librarian, who will thus be resident caretaker, and in the west wing (over the children's room) a lecture hall which will comfortably seat 200 adults. This hall, it is expected, will form a most valuable and useful adjunct to the library. The buildings externally are faced with terra-cotta of a light colour and Istock red bricks, the roofs being covered with Tilberthwaite light sea-green slates. The walls internally are finished with Sirapite plastering for distemper, and eventually for paint. The principal rooms have dadoes 4 feet high, finished with dado moulding and skirting. The halls and staircases have tiled dadoes. The ceilings throughout are of plaster with the usual cornices, mouldings to beams, &c. These are partly shown on the plan by dotted lines. The floors generally are finished with pitch pine wood blocks, and the halls with terrazzo paving. All the floors, except that to the second floor of librarian's house, are of fireproof construction. The main staircase leading to lecture hall is of stone. The lending library is arranged upon the "open access" principle of allowing the readers to go to the shelves and choose their own books. This room contains 3,000 square feet, and is sufficiently large for the shelving of 50,000 volumes. The reading-room for children contains 1,197 square feet. This room has also the great advantage of a separate entrance from a side street, thus minimising any inconvenience which might be caused to the adult users of the library by the entrance and exit of the children. The contractors were Messrs. HOLLIDAY & GREENWOOD, LTD., of Loughborough Park Works, Brixton; the heating and ventilation by Messrs. R. CRITTALL & Co.; the wood block floors and tiling by the Art Pavements and Decorations, Ltd.; the lead glazing by Messrs. JAMES & Co., of Kentish Town; and the library fittings by the Library Supply Company. Mr. A. ROBERTS was clerk of the works, and the architects Messrs. H. WAKEFORD & SONS, of 267 Clapham Road, S.W.

NEW OFFICES FOR THE HEARTS OF OAK BENEFIT SOCIETY, EUSTON ROAD, N.W. ENTRANCE HALL FIREPLACE IN COUNCIL CHAMBER. DETAIL OF DOORWAY ENTRANCE LOOR TO DELEGATES' HALL.

1875
1876
1877

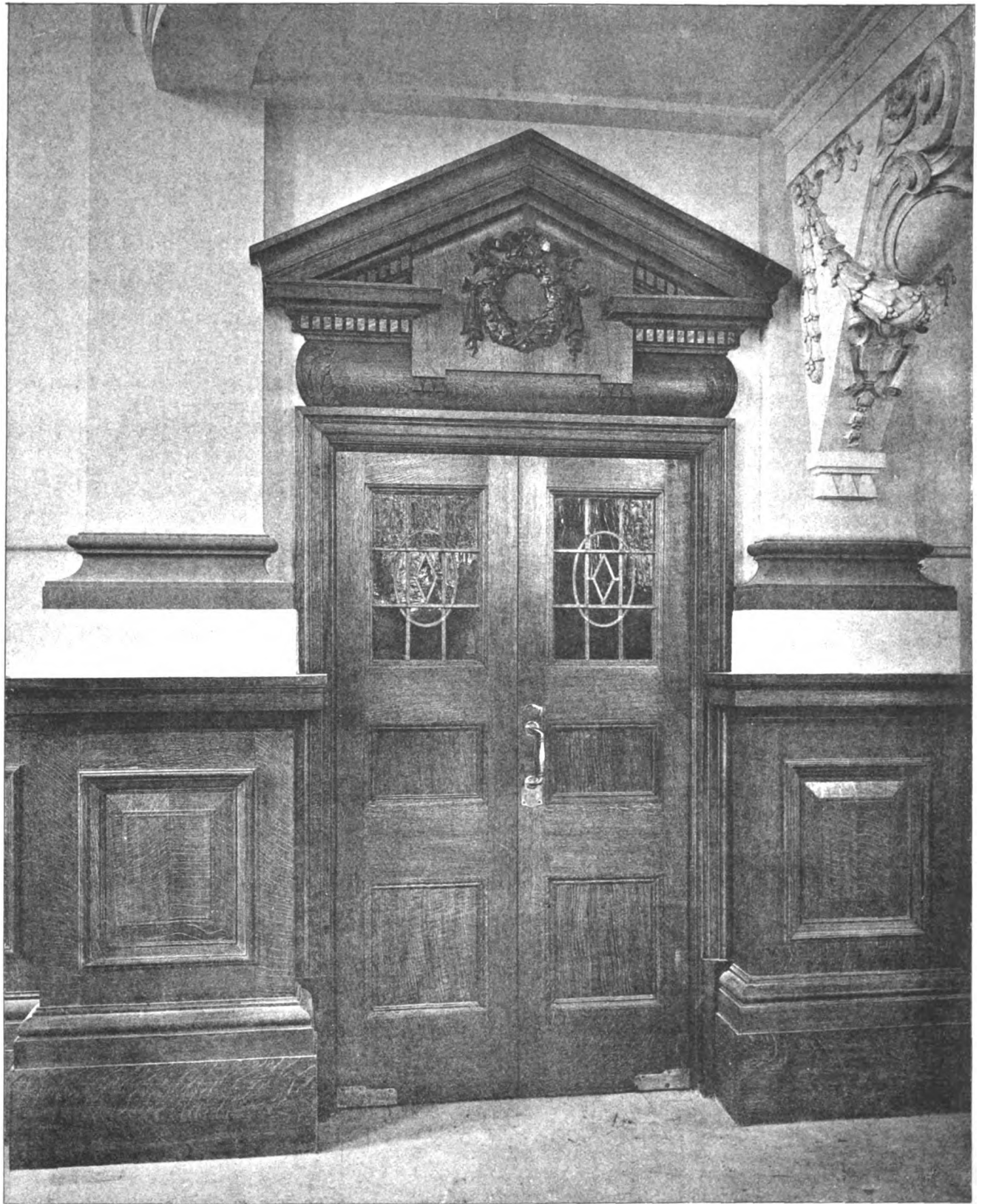


PHOTOGRAPHED BY S. B. BOLAS & CO. 68, OXFORD STREET, W.

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NEW OFFICES FOR THE HEARTS OF OAK BENEFIT SOCIETY, EUSTON ROAD, N.W.
DETAIL OF DOORWAY.

Messrs. ESSEX, NICOL & GOODMAN, Architects.



PHOTOGRAPHED BY S. B. BOLAS & CO. 64, OXFORD STREET, W.

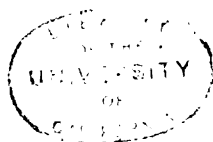
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NEW OFFICES FOR THE HEARTS OF OAK BENEFIT SOCIETY, EUSTON ROAD, N.W.

ENTRANCE DOOR TO DELEGATES' HALL.

Messrs. ESSEX, NICOL & GOODMAN, Architects.







THE PHOTOGRAPHED BY A. B. BAKER & CO. 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

NEW OFFICES FOR THE HEARTS OF OAK BENEFIT SOCIETY, EUSTON ROAD, N.W.: ENTRANCE HALL.

Messrs. ESSEX, NICOL & GOODMAN, Architects.



PHOTOGRAPHED BY S. B. BOLAS & CO. 15, OXFORD STREET, W.

THE PHOTOGRAPH BY S. B. BOLAS & CO. 15, OXFORD STREET, W. 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

NEW OFFICES FOR THE HEARTS OF OAK BENEFIT SOCIETY, EUSTON ROAD, N.W.
FIREPLACE IN COUNCIL CHAMBER.

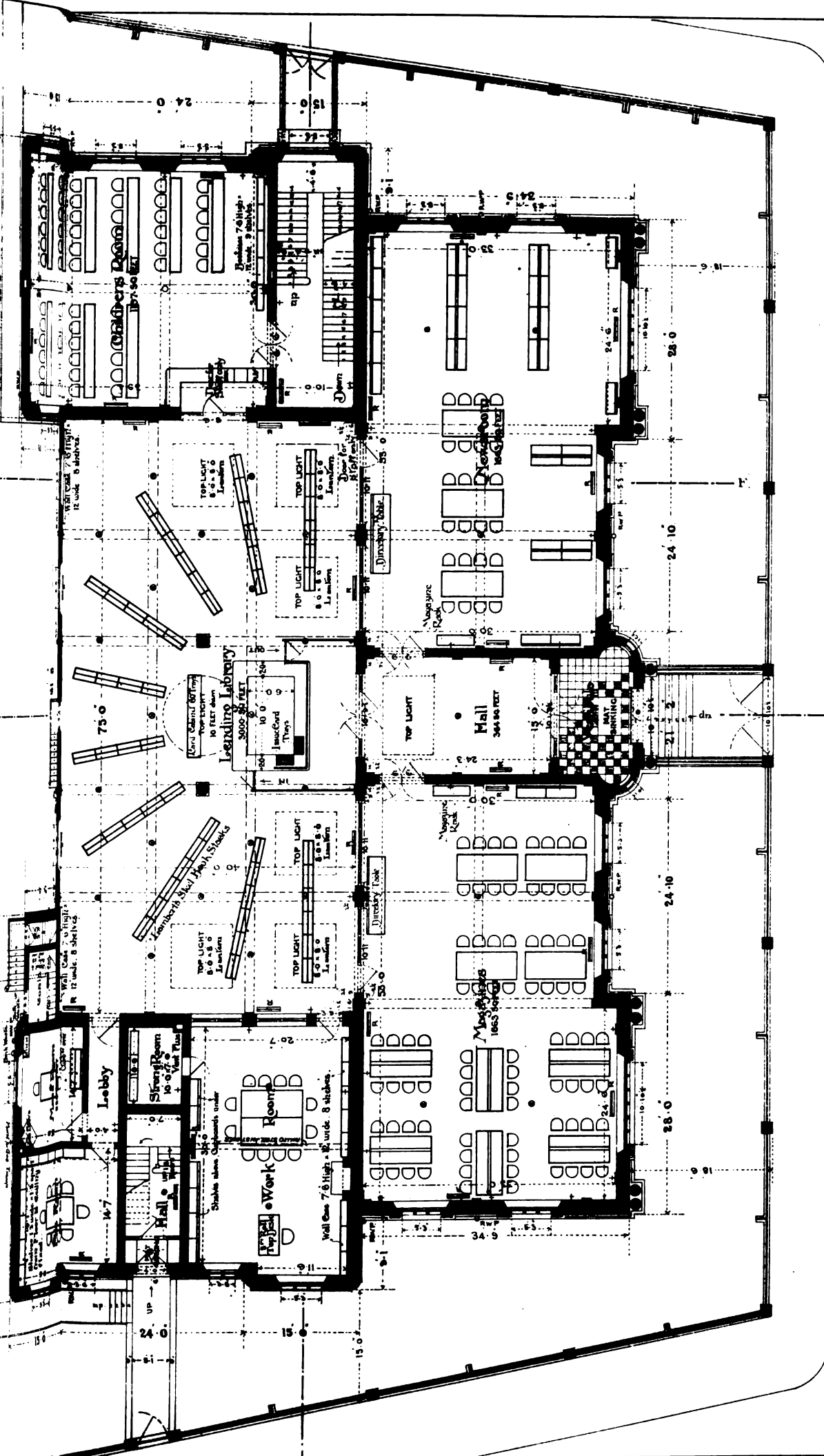
Messrs. ESSEX, NICOL & GOODMAN, Architects.





A black and white photograph of a large, ornate, multi-story building, likely a government or institutional structure. The building features a prominent central tower with a gabled roof and a small cupola. The facade is characterized by numerous windows, some with decorative frames, and a series of gabled roofs along the top. The building is situated on a street with a sidewalk and a fence in the foreground. The overall style is reminiscent of late 19th or early 20th-century architecture.





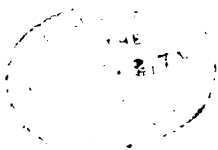
NOTE :-
 • - Gas points for Pendants.
 + - Gas points for Brackets.
 R - Radiators

H E R N E H I L L R O A D

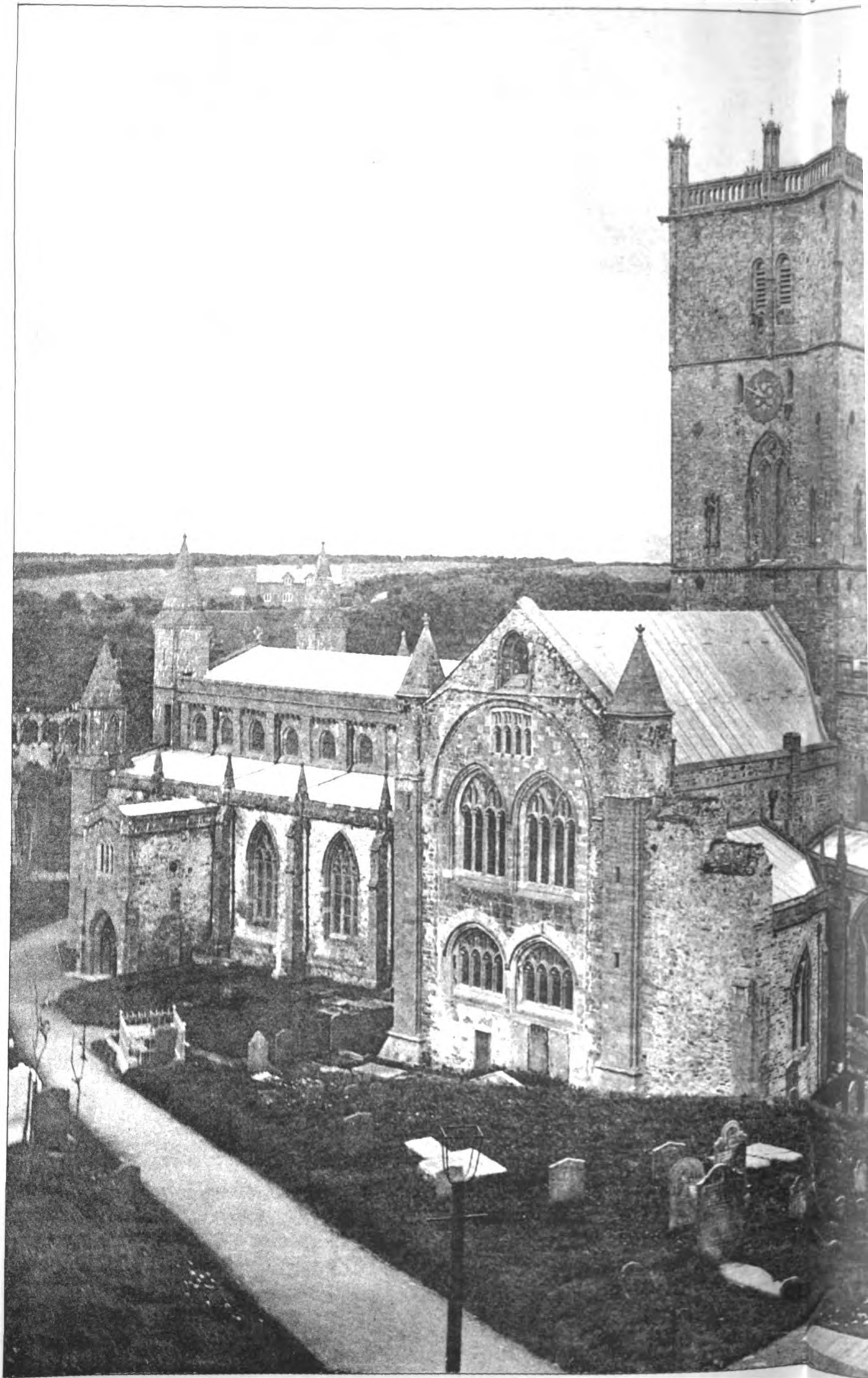
GROUND FLOOR PLAN

SCALE OF 1" = 10' 0"

LIBRARY, HERNE HILL,
 Messrs. H. WAKEFORD & SONS, Architects.







CATHEDRAL SERIES, NO. 564.—ST. ANDREWS: VIEW

Printed July 6th 1906.



"INK PHOTO" SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

ST DAVID'S: VIEW FROM SOUTH-EAST.



LITHOGRAPHY IN ENGLAND.

THE death of William Day, which occurred on June 25, removed the last of the old lithographers. The firm of Day & Son may be said to have been associated with the art from its introduction into England. Out of the premises in Gate Street have issued such creditable works as Owen Jones's "Grammar of Ornament," Digby Wyatt's "Industrial Arts," David Roberts's "Sketches in the Holy Land and Syria," William Simpson's "Crimea," &c. There were also several plates produced in the establishment of Day & Son, and for a time lithography appeared to be a rival to engraving. In its turn it has had to give way to photographic reproduction in several forms. William Day, who was in his eighty-third year at his death, was connected with the business before the Exhibition of 1851, and he was able to aid in the promotion of that enterprise and to publish several records of it after its closure.

The art of lithography, as is generally known, was discovered through accident by Alois Senefelder. It was at once adopted eagerly both in Germany and France. The education of artists in those countries and their facility in drawing rendered chalk lithography an easy and delightful mode of multiplying their productions, and in their practised hands susceptible of greater beauty, richness and feeling than the process of engraving. They had little else to do but to use stone instead of paper, and grease instead of chalk to produce the same effects, and by means similar to those they had been learning during the whole course of their studies, and they had the additional satisfaction and advantage of seeing facsimile impressions of their drawings multiplied to the extent of thousands. If they had been purposely educated with a view to the practice of lithography the painters could not have been more competent to avail themselves of its advantages and to develop its capabilities, more particularly in the production of designs of figures and portraits, which the taste and fancy of the French artists quickly put forth to a numerous extent.

Lithography being far cheaper than engraving was well adapted to popularise the fine arts. The "Munich Gallery," which was the first grand work in lithography, not only afforded an instance of the efficient patronage of Maximilian Joseph, king of Bavaria, under whose auspices that magnificent work, consisting of copies of the pictures in his collection, was commenced and carried on, but it enabled people to realise some of the characteristics of the great masters. The "Stuttgart Gallery" followed. The quaint style and the hard manner of the early Flemish and German painters seemed to be adapted to lithographic reproduction.

In France there were still more facilities for practising and extending the art. Caricatures were an institution in that country and lithography enabled designers to exhibit plates of incidents a few hours after they occurred. Charles Vernet and other artists took advantage of the popularity of the army by their military scenes. At the same time the art was employed in important works. Baron Taylor's "Voyages Pittoresques" was a revelation of the French provinces to Parisians. It is remarkable that although there was little encouragement for lithography in this country, yet plates by Harding, Prout, Haghe and others were included in that great work. The drawings were made in London and printed at Hullmandel's establishment, whence they were sent for publication in Paris. In purity and brilliancy the English surpassed the French drawings, owing to some extent to the care of the English printers.

The first work of importance published in England illustrated by means of lithography was "Belzoni's Travels." The traveller, having seen the sketches drawn and printed by Hullmandel, applied to him as a friend to lithograph the plates illustrating his researches. This successful and interesting specimen of lithography had the effect of recommending the art, and from that time the number of artists who made trial of its capabilities daily increased. Among the first after Hullmandel were Nicholson, Prout, Harding and William Westall. Nicholson drew a series of sketches of romantic scenery in England, which, though evincing great skill and feeling for the picturesque, were misty and undefined, and not calculated to produce that decidedly favourable impression of the powers of lithography made by the vigorous boldness of Prout's and the force and brilliancy of Harding's drawings.

It is the peculiar advantage of lithography that the practice of drawing on the stone may easily be acquired, and thus the artist is enabled to produce multiplied facsimiles of his own works, wherein the style, the effect and the peculiar touch of the master shall be preserved. Litho-

graphy is not merely another mode of engraving in addition to the others out of which the artist may choose a skilful draughtsman to copy his works; he may with a little previous study and practice be his own draughtsman, and thus the admirers of his style may possess his original drawings at the price of prints. This advantage has not been rendered available by painters to that extent which one would suppose, owing to a want of commanding skill in the use of the pencil or crayon. Among those, however, who have successfully employed lithography with success to this end was James Ward, R.A., the animal painter, who produced a series of drawings of horses and dogs, characterised by all that boldness and vigour, truth of nature and identity of character which distinguish his paintings. Lithography in the hands of Samuel Prout also was made to produce some masterly specimens of his broad and rapid touch and picturesque style, more particularly in his "Views on the Rhine," of the quaint architecture in the old towns in Germany, and the tottering dilapidated houses in their narrow, sinuous streets. His works are also scattered up and down the series of lithographic drawing-books from 1824 to the present time, and he contributed jointly with Hullmandel, Harding and Westall to the "Britannia Delineata," of which Kent was the only county illustrated. In the drawing-books just mentioned will be found also a great number of original sketches by J. D. Harding, many of them of great beauty, and all partaking of that sparkling effect, free and glancing touch and picturesque character which give such grace to his sketches from nature. They contain also some admirable heads by Carbonnier, one of the most perfect masters of the crayon in England; and many clever bits of scenery, coast scenes, figures and craft, by Hullmandel, plain, bold, simple and artist-like, and most useful as examples for imitation, especially in the working of tints, which are evenly and firmly laid—a point of great importance in lithography.

Harding was not only one of the first to avail himself of the advantages of lithography and to develop the capabilities of the infant art, but he contributed in a great degree to its popularity by the number, variety and excellence of his drawings. His fame as a lithographic draughtsman vies with his reputation as an original artist, for he not only produced pictorial effects which were unrivalled, but he made every subject his own, lending to it an air of originality and a painter's feeling. His talent was not, however, confined to landscape; he produced several elaborate and highly finished drawings from popular pictures, such as "Portia and Bassanio," from Briggs; "Macready as Henry the Fourth," from Jackson; "The Law," one of Bristowe's monkey pictures (a brilliant and forcible drawing); "The Robin," from J. Hayter; "The First of September," from Farrier, &c. But the most interesting, as it is the most varied and excellent of his works, is the "Series of Sketches by Bonington," the young artist who died in the very dawn of his fame.

Richard Lane, who was afterwards lithographer to Queen Victoria, abandoned engraving for lithography, and the brilliant success that attended his efforts in this new art gained for him the distinction of Associate Engraver of the Royal Academy. His excellence consisted in the extreme neatness and delicacy of his drawing and the high degree of finish which he attained, combined with purity and brilliancy of tone and effect. One of his first works was a "Series of Sketches by Gainsborough," a picturesque and delightful work, the feeling and truth of which are admirable; in these respects he has not surpassed that work in his series of "Imitations of Sketches by living British artists," though in elaborate finish he has gone far beyond it. The most remarkable specimens of his talent in that work are the "Don Quixote and Sancho," from Leslie, a rich, brilliant and forcible print, and one of the finest specimens of finished lithographic drawing that has ever appeared. It is only surpassed by his celebrated drawing of "The Rivals" from the same artist. The union of softness and sharpness, of force and delicacy, of richness and brilliancy, of depth and purity, exhibited in that inimitable performance render it almost unique as an example of the powers of lithography. Popular prints, "The Girl at her Devotions" and "The Girl at her Studies" from Newton, also extended the reputation both of Mr. Lane and lithography. One of the latest prints of the series of "Imitations of Sketches," and the most popular, is a delightful picture by Edwin Landseer of Lord Cosmo Russell on a Highland pony. Lane's "Imitations of Sketches by Sir Thomas Lawrence" are remarkable for beauty of drawing. Had

Lawrence lived, lithography would in all probability have received a great acquisition of popularity from the favour with which he regarded the art in consequence of this successful trial of its capabilities; and in all probability he would have made some drawings upon the stone, for which his skill in the use of the crayon qualified him. To have been able to purchase a sketch by Lawrence himself for a few shillings would have opened the eyes of the public to the peculiar advantages of lithography, and have induced other eminent artists to make it the medium of multiplying their original sketches. So much has fashion to do with the success of an art whose utility is even obvious. Lithography, indeed, has had to contend with the prejudices of too many English artists, merely because their deficiency of skill in handling the crayon has rendered its advantages only partially attainable by them.

There was no artist sixty years ago who surpassed Louis Haghe as a lithographer. No subject came amiss to him; he rivalled Harding in landscape (trees excepted), and drew marine subjects with technical correctness. He drew on stone with his left hand. His lithographic drawings are singularly brilliant and effective, owing to the facility of his handling and the rapidity and certainty with which he worked. His foreign education as an artist enabled him to produce with the greatest quickness and certainty any effect he required, so that he made a drawing offhand. The greatest effect with the least labour is the ultimatum of lithographic drawing. He was admirable in representing Belgian and other continental buildings, and it is interesting to compare his method with Prout's.

According to a common saying, there is no accounting for tastes, and it is a puzzle to discover why a kind of representation which French and German amateurs continue to prize should find so little favour among Englishmen. There is less of mechanics in lithography than in engravings, but in the auction-room the former alone attract bidders. Hereafter there may be a change, and without entering into the question of money value, it will be found that lithographic plates can afford much pleasure at a limited outlay. They are consequently well deserving of the attention of collectors. Examples of the plates produced by such a firm as Day & Son would by themselves form an interesting gallery.

KEATS-SHELLEY MEMORIAL.

SOME three years ago a group of British and American literary men in Rome, at the initiative, to their honour be it said, of the American members, organised informally a movement to purchase by popular subscription the house on the Piazza di Spagna in which John Keats died, and to establish therein a permanent memorial of Keats and Shelley, consisting of a library of their works in various editions, together with portraits and manuscripts connected with them. The trustees of the memorial would also assist in protecting from future disturbance the graves of the poets and of their two companions, Severn and Trelawny, who are buried beside them in the beautiful cemetery outside the Porta San Paolo.

Committees have been formed in England and the United States to give effect to the project. His Majesty King Edward, to whom the scheme was early submitted, has been graciously pleased to signify his sympathy with the labour of love which united the two great branches of the English-speaking race in doing honour to the poets' memory. The President of the United States has also given warm-hearted testimony to his anxiety to see the project realised. It is a further matter of special gratification to know that King Victor Emmanuel has chivalrously extended the hand of welcome to the proposed institution.

The first great difficulties which beset the acquisition of the house have been surmounted, and the British and American committees are at length able to announce publicly that they have secured an option on the property, thanks to the support which has been privately enlisted. They now trust to the generosity of all lovers of English poetry to enable them to complete the purchase and place the house beyond danger of destruction or absorption (as at one time threatened) into a big hotel. The time available for the completion of the purchase is necessarily limited, and the response must be prompt and generous if this appeal is not to be made in vain. It is hoped, too, that the humbler contributions of less wealthy admirers of Keats and Shelley will help to reinforce the contributions of those who are better able to afford larger sums. Up to now the

amount raised privately has been on a much more generous scale in America than on this side of the water, and Great Britain owes it to herself, as the birthplace of these two immortals, to redress the balance.

The sum required for the actual purchase of the house is slightly over 4,000*l.*, but it is hoped that it may be possible to collect more than the sum necessary for the mere acquisition of the house, in order that sufficient means may be provided to equip it worthily, to provide for its structural maintenance, caretaking, &c., and possibly to make it hereafter a centre from which a love of poetry and literature in our language may be diffused.

The committees appeal, therefore, not only for the purchase money but for enough to provide an ample endowment fund, and in such a cause they do not think that they will appeal in vain to the many thousands of their fellow-countrymen and women who cherish the memory of the two poets and are grateful and devoted admirers of their works.

Donations may be sent either to Mr. Harould Boulton, the honorary secretary, 120 Victoria Street, or to Messrs. Child & Co., bankers, 1 Fleet Street, for account of the Keats-Shelley Memorial.

CONCERNING SLATES.

AMONGST the manufacturing industries which during the last one hundred years have expanded into large proportions is the production of roofing slate. Before the introduction of canals and railways into the British Isles the use of the slates of Wales, Cumberland, Scotland and Ireland was restricted to the immediate neighbourhood of the quarries from which they were extracted, and buildings in various parts of the country far removed from these quarries were supplied with roofing materials from other sources.

In many districts tiles of burnt clay formed the only available material, while in others flag stones and tile-stones from the carboniferous, triassic or oolitic formation were extensively used. In the eastern and central districts of England the tile-stones of Stonesfield, near Oxford, those of the Cotswold Hills and of Colly Weston formed an available source of supply, and it must be admitted that their greyish colour and general appearance harmonise well with the prevalent Gothic or Tudor styles of architecture of those districts.

To such an extent is this admitted that these tile-stones (erroneously called "slates") are still largely used in the counties of Northampton, Oxford and Gloucester, even when the Welsh slate might be obtained at an equal or less cost, and owing to their heaviness, the high-pitched roofs, which are so ornamental, and add so much to the appearance of buildings, became a necessity.

In no country of equal extent has the art of slate quarrying reached such proportions as in the British Isles, and especially among the mountains of North Wales.

The slates from the Pass of Llanberris are generally purple or greenish, locally becoming greyish, and are amongst the smoothest and strongest in Wales.

As to the origin of the cleavage structure, Mr. Davis adopts the "mechanical theory," which ascribes the structure to the enormous lateral pressure to which the rocks have been subjected when undergoing contortion.

Names of Slates.

The whimsical names now in use, "Princesses," "Duchesses," "Countesses" and "Ladies," were said to have been given by General Warburton, the proprietor of some of the great quarries in North Wales about a century ago. Perhaps it is not generally known that before that time names still more whimsical were used. The following list is taken from that very extraordinary collection of curious information, a "Portable Library," by Randle Holmes. As he was a Cheshire man, we may be pretty sure that he gives us the names then used in the slate districts:—

Names of Slates according to their several Lengths.

Short hag hattee.	Warnetts.
Long hag hattee.	Shorts. [won.
Farwells.	Shorts save one, or Short so
Chits.	Short backs.
Long backs.	Short twelves.
Batchlers.	Long twelves.
Wivetts.	Jenny why jettest thou.
	Rogue why winkest thou.

"The shortest slate is about 4 inches; all the rest exceed

an inch one in length from the other; sometimes less or more—according as the workman pleaseth."

According to this explanation, the "Long twelves" were about 16 inches in length, or 12 inches longer than "Short hag hattees," hence probably the name "Long twelves."

The largest slates, "Rogues," must have been about 18 inches long; there is nothing said about the breadth.

The names given to the various sizes of slates in Wales, "Queens," "Duchesses," "Countesses," "Ladies," &c., according to a newspaper cutting of 1839, drew from the pen of the late Mr. Leycester, who was many years a judge on the Welsh Circuit, a very witty poem, of which the following lines will serve as a specimen:—

This countess or lady, though crowds may be present,
Submits to be dressed by the hands of a peasant;
And you'll see when her Grace is but once in his clutches
With how little respect he will handle a duchess.

How did slates acquire these new names? In "Antiquities of Llanllechid and Llandega," by Hugh Derfel Hughes, we read:—"About the beginning of this century a slate merchant of the name of Docer, going through the quarry with Lord Penrhyn, advised him that all the slates should be made of such and such a size, and this is the origin of the name 'Docers.' By this time the skill of the quarryman and the slater found some new plan continually. One wanted to do this and another that, and his Lordship failed to please everybody. His lady, however, seeing him in this plight and in continual trouble, advised him to call the slates after the names of the degrees of the aristocracy. He took up the suggestion, and called the 24 by 12 slate a 'Duchess,' the 20 by 10 a 'Countess,' and the 16 by 8 a 'Lady.'"

The following quotation from an article in a Plymouth paper on "Old Delabole" says:—"Each size has its name, and this is where 'Ladies' come in. For instance, slates measuring 24 by 12 are 'Princesses,' and after them each size shorter by a couple of inches than its predecessor come in order named 'Duchesses,' 'Countesses' and 'Ladies.' Promiscuous sizes, larger than 'Princesses' and smaller than doubles, are called respectively 'rags' and 'scantles.'"

The First Slate Quarry Lit with Gas.

The following, from the *Dublin Local Advertiser*, November 10, 1858, is worthy of notice:—"This slate quarry is situate near Festiniog, North Wales; it belongs to Mr. Samuel Holland, and is worked through different levels into the inside of the mountain to the distance of more than 1,000 feet, the mode used being to make openings in the solid slate rock at the end of the tunnels 30 feet wide, high and long, and then leaving a pillar of slate of the same dimensions before making another opening. In these excavations no daylight can enter, the light of candles being found the only source through which the men worked up to last spring, when the proprietor employed Mr. John Walcott, engineer, to erect gasworks and fit up the slate quarry with gas. These works have now been in operation two or three months, and have given every satisfaction to the owner."

Blewe Slate, Cornwall.

Old Fuller in his "Worthies of England," first published in 1662, writes:—

"These are commonly found under the walling-slate when the depth hath brought the workmen to the water. They are thin in substance, clear in colour, light in weight and lasting in continuance. Generally they carry so good a regard that (besides the supply of home provisions) great store of them are imported into parts of the land, and transported into France and the Low Countries. All that I have to say of slate is that Cimyr, the son of Agiopaë, is said first to have found them in Cyprus for the covering of houses."

Slate Making.

The business of making slates is an exceedingly simple operation, one, however, which nevertheless demands from the workman no small amount of intelligence, exactness and dexterity, besides a good deal of practical acquaintance with the nature of the materials with which he has to deal. It consists in detaching the slate formation in blocks from the mountain side, in sawing the blocks when thus detached into suitable sizes, lastly, in splitting and dressing so as to bring them into proper shape—a process which is performed sometimes by machinery, but more generally by hand labour. It is to the industrial arrangements by which this operation is carried out that it is desired now to invite the reader's attention. They are as follows:—

"The portion of the slate which it is proposed to work is divided into sections carefully marked out, which are let out as 'bargains' to as many small co-partneries, consisting generally of three or four working men. The co-partneries 'contract' to produce slates, each from the section of the rock assigned to it, according to sizes and shapes at so much per thousand. The men who take part directly in these contracts form perhaps a third of the whole quarrying population; they are, as might be expected, the older, more experienced and better-off portion of it; the remainder are employed by them as labourers at fixed wages under the name of 'germyms,' apparently the Welsh equivalent for 'navvies.'"

Slate in America.

Few people have any idea of the magnitude of the slate industry in the United States. At present the total amount produced of roofing slate alone is about 500,000 squares a year. A "square" is 100 square feet, or sufficient to cover a space of 10 feet by 10 feet when laid on the roof. As a roofing material slate is becoming more generally used, as it lasts a lifetime, is fireproof, needs no painting and renders rain-water pure and untainted. Most of the quarries are in Eastern Pennsylvania. More than one-half of the total product of the United States comes from that region. The quarries at Bangor, Pennsylvania, are considered superior to any, as the slate is tough, durable, and of an unfading dark, blue-black colour. Over 3,000 men are employed in Eastern Pennsylvania; the workmen are mostly Welsh and English. They earn good wages, have comfortable homes, and are a happy, sober and industrious class.

The slate is first blasted out, then hoisted by steam power in irregular shaped blocks to the bank; they are then broken into smaller blocks, then split into sheets of required thickness. For that purpose a chisel or knife about 18 inches long, resembling a large putty knife, is used. The slate splits readily whenever the knife is put in if inserted when the block is wet or "green," as it is called. The workmen speak of the original moisture in the slate as "sap." After the blocks are dry they harden and cannot be split. After the blocks are split the sheets are dressed or trimmed with a machine to the required size, which is from 6 inches by 12 inches to 14 inches by 24 inches; they are then shipped to all parts of the States and to the Old World, and a great deal goes to Australia.

Slate, Slite, Slote, Slitten.

Of late years it has been common to say that a book severely reviewed has been "slated," and to call the review a "slating." This has produced the jocular phrase, a "slating with slates." In the September 1891 number of the *Author*, Professor Skeat solemnly rebuked all such as do vainly talk of "slating with slates." And now we may jest with a good conscience. Mr. Skeat asserts that the verb "to slate" is the causative form of "slite," or rather "slitan," the strong verb of which the modern "slit" (once "slitten") is a weakened form. *Slitan*, *slat*, *sliten*, or as Mr. Skeat writes it for the modern public, is what should have been its modern form had it survived *slit*, *slote*, *slitten*, signifying to tear, to rend. An excellent good verb, a most expressive verb, and if anybody will restore *slote* and *slitten* to our *slit*, which lives all weak and forlorn, we shall be delighted.

Slate, says Mr. Andrew Lang, is noun first and verb afterwards; and the noun is originally *slat*, a narrow board of wood with which a person might be beaten. Even nowadays we may hear of the slats of a bedstead.

Marston, the dramatist, who lived in 1600, wrote:—

How did you kill him? Slatted his brain out.

"Slate" is nothing but a special application of the French *esclat*, a splinter or chip. The Elizabethan and still living "slat," a board or lath wherewith one may be beaten, is obviously the same word not yet fully specialised. And so with slats, but not with slates, "books that bin evil written, by doom of the most equal fates shall evermore be slitten."

The Liverpool Architectural Society recently issued a circular letter proposing the formation of an organisation for the promotion of beauty and dignity in the city's development. A large number of replies have been received signifying accord with the movement. Among them are the Liverpool Academy of Arts, the Garden City Association and Liver Sketching Club. The preliminary arrangements will be shortly completed.

CONCRETE BLOCKS.

A REPORT has been prepared by a special committee of the National Fire Protection Association of the United States, which says:—

During the past year there has been a great increase in the use of cement in building construction or, more broadly speaking, in the use of concrete construction of various forms. Engineers, architects and builders are becoming more and more familiar with the material and are now more nearly in agreement on general principles of design and method of handling (from a purely structural view-point) than ever before.

The rapidly extended use of concrete for a great variety of purposes, such as embankments, bridges of intricate design, reservoirs, standpipes, sewerwork, grain tanks, coal bins, piers, fence posts, railroad ties and buildings or almost any part thereof, even including shingles, has naturally resulted in bringing to the study of the subject a great many men of ability, and has called forth interesting and instructive discussion in the Press and in conventions, all of which is tending toward more uniform and intelligent practice of the art, and is rapidly reducing that hitherto widespread and well-founded objection of uncertainty as to quality of material and workmanship entering into a concrete structure. This important objection has by no means been entirely removed, and we are still far from perfection in matters of design and workmanship. However, a very gratifying progress has been made, and the average concrete building of to-day is much less open to criticism on this point, and is a correspondingly better fire risk, than the building of a few years ago.

Your committee has endeavoured to participate in this general education and has collected much data of various sorts, and now has plans under way for more thorough and original investigation on various phases of the subject, chiefly through our connection with the work of the structural materials testing laboratories at St. Louis, where extensive tests are being made under the direction of a general advisory board, comprising representatives of the United States Government, various engineering associations, the National Board of Fire Underwriters and our own Association.

This St. Louis Laboratory is an established and well-equipped institution, maintained chiefly by the Government through the Geological Survey Department, and is engaged among other things in the examination of Portland cements and concrete of various sorts. They are at present at work on a series of hollow concrete blocks, which will soon be tested by fire at the Underwriters' laboratories in Chicago, the result of which will be published in due course. Pending the completion of these tests we are not prepared to recommend a definite standard for hollow concrete block construction, but a brief review of conditions relating to this particular part of the subject may be of interest as a part of this report.

The use of concrete blocks has rapidly increased until now they are common in practically every part of the country, and there are at least one hundred, and probably more, kinds of machines on the market for making blocks of one sort or another. These machines are, in effect, simply adjustable moulds made of metal into which the prepared concrete in its wet condition is placed and tamped down either by hand tools or by a pneumatic machine. As soon as the blocks are formed they are removed from the machine or mould and set away to harden, a practice which necessitates using a concrete mixture which is dry enough to retain its form from the very beginning before the cement has begun to set. It must not be too dry, however; there must be enough water to properly hydrate the cement, and the difficulty of correctly determining the amount of water so that the cement will all be thoroughly moistened, but will not be too wet to stand up on removal from the machine, is a serious matter for inexperienced manufacturers. After being formed these blocks are laid away in a shed or open yard and allowed to harden for about a month and are then laid in the wall in practically the same manner as stone.

These blocks vary in size from small pieces for corner and other trimmings up to blocks of 12 by 36 inches, and from 8 to 12 inches in thickness, and generally have a thickness of 2 to 3 inches of shell all around.

There are several quite distinct types of block in use. Hollow blocks with a single air space or cell are the most commonly used, and are the type for which a very large proportion of the machines are designed. Similar blocks, but with two parallel cells, are also used, and claim an advantage over the others of being less liable to transmit

moisture from outside to inside of wall. A so-called "two-piece block," with which the outer and inner shells of the wall are built of separate pieces, is claimed to be more moisture-proof, and it is asserted that the position in which this sort of blocks can be moulded allows the use of a wetter mixture, and consequently a denser and therefore stronger and better appearing product.

Another style of two-piece block has metal tie-pieces inserted as the block is being formed, to hold the outer and inner walls in their proper places.

Another quite different type of block is commonly called "cast stone." These blocks are made in plain or ornamental form by pouring very wet concrete made of cement and finely crushed stone into a sand mould, where it is allowed to harden a day or two before removal. This method produces an excellent imitation of natural stone, and allows the duplication at a low cost of ornamental blocks for cornices, columns and other decorative portions of buildings, which if carved in natural stone would be very expensive.

Blocks of all these types except the last one are quite generally faced on the outside with a richer mixture of fine sand and cement in the proportion of 2½ or 3 to 1, for the purpose of rendering the block more waterproof as well as to improve its appearance.

Waterproofing is also accomplished quite satisfactorily by the use of various special preparations which are added to the concrete as it is mixed.

Various colours are imparted to concrete by the mixture of certain mineral pigments, which, with proper care, are made to produce pleasing effects and do not appear to have a bad effect on strength or durability.

Thoroughly satisfactory methods of both waterproofing and colouring are still undeveloped, and the possible effect on the fire resistance of the block of treatment for these purposes is somewhat uncertain, though no serious objection on that score has developed thus far.

Another feature of block making which is still in process of development is the best method of curing or ageing them. The common way has been to store them in a shed or open yard for a month or so and sprinkle them with water once or twice a day to prevent too rapid drying at the surface. Recently some manufacturers have practised a quick method of curing by placing the blocks in a tightly closed receptacle and subjecting them to live steam under considerable pressure.

On account of lack of experience of their manufacturers the concrete blocks as found to-day throughout the country vary largely in appearance, strength, waterproof quality and doubtless also in fire resistance. Some of those examined by members of this committee have every indication of being strong and durable and at least the equal in fire resistance of natural limestone, but many others appear very porous and weak, and some which have been submitted to members of this committee for fire tests have actually disintegrated in the course of a few months while waiting for trial.

The form in which most of these small blocks are made involves a certain weakness under severe temperatures which, while by no means fatal to the fire-resistance, places a limitation on that quality which must be recognised, viz. they are subject to breakage by unequal expansion under heat the same as is hollow tile or any other similar hollow material. Hollow blocks of concrete or tile as set in the walls or floors of a building usually present only one surface to the direct attack of fire, and the consequence is that that side or face of the block expands readily and irresistibly under the influence of the heat, while the other three sides, receiving much less heat, do not expand nearly as rapidly, with the result that the hottest side breaks away from the others. This has been demonstrated in actual fires and experimental tests for both concrete and tile. Failure from this cause would naturally occur soonest in blocks having a thin shell, inasmuch as the thinner the shell of the blocks towards the fire the more quickly it will heat through and consequently expand. This breaking by unequal expansion has sometimes been referred to as a bursting due to pressure of steam or gases generated in a large hollow space or cell of the block, but a very brief analysis of the conditions will easily disprove any such statement. In the first place there is generally no means of getting water into the interior of a block and no probability of gases from other sources being introduced therein, but if it were possible to get gas or steam into the interior, these cells are so continuous in a wall or floor and have so many vents to the atmosphere at the top

of the wall or through mortar joints that the accumulation of the number of pounds' pressure necessary to burst an ordinary small block would be an impossibility under working conditions.

As already stated, this committee does not feel justified in presenting a standard for concrete blocks until the investigations now under way are completed, but shall hope to do so in another year; in the meantime trust the foregoing brief review of the progress of the art may be of some interest.

REGENT STREET IMPROVEMENT.

THE Building Act committee of the London County Council, in their last report, say that they have had under consideration an application made by Mr. J. Murray on behalf of the Commissioners of Woods and Forests for consent to a proposed rearrangement of the building lines on both sides of Regent Street between the northern end of the Quadrant and Oxford Circus. The scheme involves the ultimate rebuilding of nearly the whole of the houses and shops on both sides of the street, and the widening of the street to a uniform width of 85 feet throughout. It was originally proposed to alter the existing frontage lines in some of the side streets leading out of Regent Street and also in Oxford Circus, but the applicant has at the request of the committee agreed to adhere to the existing frontage lines with the exception of certain specified projections which may be allowed under the provisions of Section 73 of the London Building Act, 1894, and wherever possible to round off the corners at the ground-floor level at the junctions of the side streets with Regent Street. The applicant has also undertaken to recommend the Commissioners to consider favourably any suggestion which may be made by the Westminster City Council with a view to facilitating any future widening of Argyll Place, Chapel Court and Beak Street. The following statement shows the general effect of the scheme in Regent Street:—

	Sq. Feet.
<i>Area of land to be left open to the public—</i>	
Land now occupied by buildings of more than one storey	1,436
Land now occupied by one-storey projections	2,034
Land now occupied by forecourts, of which 386 square feet is either enclosed by railings or raised above the footway	4,893
Total	8,363
<i>Area of land to be covered by buildings of more than one storey—</i>	
Land now occupied by one-storey projections	6,407
Land now forming part of public way	44
Land now occupied by forecourts	43
Total	6,494

The consent of the local authority will be necessary to the proposal to build upon the small areas now forming part of the public way in Regent Street and in the side streets; but inasmuch as the scheme has been generally approved by the Westminster City Council it will probably not be difficult for the applicant to obtain this.

It will be observed that a considerable area of ground at present covered by one-storey projections will be built upon to the height of the main buildings; but on the other hand it should be noted that one of the results of the scheme will be the reduction of the area at present occupied by buildings by about 3,400 feet. Having regard to this fact and to the importance of the proposed widening and rectification of the lines of the street, the committee think that the Council should consent to the application, and they recommend—

"That the Council, in the exercise of its powers under Section 22 of the London Building Act, 1894, but in no way otherwise than under such section, do consent to the erection of main buildings on the eastern and western sides of Regent Street, between the Quadrant and Oxford Circus, to the red lines shown on the plan, dated June 16, 1906 (Registered No. S.A. 32730), submitted with the application of Mr. J. Murray, on behalf of the Commissioners of His Majesty's Woods and Forests, such consent being subject to the following conditions: that no projection other than cornices as permitted by Section 73 of the London Building Act, 1894, be erected or made in advance of the buildings on either side of Regent Street and Oxford Circus; that as and when any of the proposed buildings are erected the

whole of the land in front of such buildings in Regent Street and any of the side streets be left open for the use of the public, and that no pier, pilaster or other projection be placed on such land; that no vault, arch, cellar or other construction be made in or under the said land coloured blue on the said plan without the previous consent in writing of the local authority; that the existing lines of main frontage in all the side streets be adhered to in the erection of the proposed buildings; that no projection other than two-storey shop fronts of the projection permitted for shop fronts by Section 73 of the said Act be erected or made in advance of the existing lines of main frontage in the side streets; that each of the angles of the proposed buildings at the corners of the side streets be rounded off to a quadrant with a radius of not less than 5 feet; that no buildings be erected upon any portion of the public way without the consent of the local authority having been first obtained thereto; and that the buildings be erected in exact accordance with the application for the consent, and with the plan and particulars which accompanied such application."

TESTING A TIE-BAR.

THE following interesting account of the process which Mr. W. G. Kirkaldy had to adopt in order to determine the cause of the fracture of the tie-bar of the Charing Cross terminus is appended to the report of Major Pringle, inspecting officer of the Board of Trade:—

I received first the west end fracture of the tie-bar and afterwards also the east fracture with a moving coupling attached. I was asked to make examination tests. First I examined the bright fracture. It had to me every appearance of a weld and of being defective in the centre part. There is a trace of cinder in the very centre of the fracture. I felt that although it had all the appearance of a weld I must keep an open mind and endeavour to prove conclusively that it was a weld. There was, perhaps, I thought, some other explanation of it. The line of fracture is at a blunt angle, and that is one of the reasons why I considered it likely to be a weld. I cut off the bright fractured bar about an inch behind the actual point of fracture, I then took a piece off the stump end that was left and treated it with acid. This showed to me the method of manufacturing the bar. There were eight slabs of iron piled one on top of the other. This constituted the bar itself. On the face of my cut nearest the fracture I found, after treating it with acid, there was a disturbance in the layers of iron which made the bar, and it appeared as if this was a continuation of the line of what I considered was the weld. This disturbance was not visible at cut No. 2, which simply showed the marks due to the piling of the rod. The disturbance shown on the cut nearest the fracture strengthened my idea that the fracture had taken place actually at the weld. I still had to bear in mind that although this was evidently a weld it might not have been an intentional weld. I thought that if it had been an intentional weld I should find traces of a similar weld at the other end of the bar near the coupling; on the other hand, if it was only a chance weld the other end of the bar would not show any sign of welding. The result of my first careful examination of the exterior of the other end of the bar was that I could find no sign of any weld. Then I cut off about 20 inches of the bar and turned a portion of it in a lathe. After reducing the diameter in the lathe considerably, I found distinct traces of a weld. The result of this examination in a lathe was to prove to me that the bar was of set purpose welded at both ends. I thought it was quite possible for the smith to have set up both ends of the bar from the solid for the screw ends, but having found welds at both ends I thought it was clear that, owing to the length of the bar (about 18 feet), it was not possible in those days to turn the bar in a lathe, and that for that reason the screw ends were first of all manufactured and these ends then welded on to the bar. When I had an opportunity, before making these tests, of seeing the ironwork that had fallen, I examined several of the bars very carefully, but could find no signs of any weld on any of them, and this was the reason that, though I had made up my mind that the actual fracture was at a weld, I was concerned to find out whether it was a chance weld or an intentional one. I obtained from the engineer of the company several additional bars with which to continue my investigations. In the case of the three bars that I examined, by scraping off the rust down to the clean surface of the metal, I found at one end only of each of the bars

traces of a weld. The marks were 1 inch to $1\frac{1}{2}$ inch in length, and had the appearance of a raised fibre on the surface. In no case was there anything of a crack at the weld. I failed altogether to get any trace of a weld at the other end of each of these bars. I turned off a portion of the metal in a lathe, and I then found the mark of a weld on the bright surface of the metal that was exposed by the tool, but in no case was there any visible crack or cavity. The result of the examinations that I made of these bars clearly proved to me that they all had welds at each end. Possibly, therefore, it is a fair inference that all the other tie-bars in the roof were similarly manufactured, for until I had examined these other bars there was always the possibility that the welds in this fractured bar were due to chance only. Looking at the west fractured end of the bar, the clear crystalline portion was solid at the time of fracture. This bright metallic surface was approximately the upper side of the bar in position. I think that in addition to the bright surface the remainder of the discoloured surface round the circumference was at some time or other also in contact and adhering. I gather this from the fact that this discoloured portion has still a sharp grain when touched, and in addition to this you can see spots here and there on the circumference and nearer the centre of a metallic brightness. The actual centre of the bar has a different appearance, and has evidently never been in contact. This portion is defined by the ash which surrounds the core, and the core itself has a smooth undulating surface with a fire skin on it. The iron of which the bar was made may be described as good quality iron. I cut out two round iron test-bars from the bar that broke, about 6 inches behind the fracture, and tested these for tension. These two bars broke under an approximate tensile stress of about 20.6 tons per square inch. The contraction of area in each case was over 40 per cent. The solid portion of the bars had all the character of new iron. There was no sign of any deformation or deterioration due to fatigue. The result of a number of measurements of the circumference of the bar that broke showed that 4.4 inches would represent the mean diameter. The waste due to rust or corrosion amounted therefore to one-tenth of an inch on the mean diameter. I made other tests of the metal surrounding the weld at the other end of the broken bar, and found generally the same results, namely, high tensile strength in the solid portions, and nearer the centre, where the welding was less perfect, the tensile strength diminished, until quite in the centre where the cavity existed there was no tensile strength. I tested two other tie-bars after reducing the areas in a lathe to 8 square inches, and found that the breaking tensile stress of these two specimens, each of which contained a weld, was 11.15 and 12 tons respectively on the square inch. In these two cases there were similar pockets to those found in the tie-bar which broke. Two other specimens, also amounting to 8 square inches of the central portion of the bar, broke at 14.1 and 17.3 tons per square inch respectively. The fracture in these cases was also through the weld. In these four cases the metal that was turned off in the lathe to reduce the area of the bar was in each instance sound and good. I do not think any heat such as would be necessary to burn off paint would have any deteriorating effect upon the quality of the iron of the tie-rods. I think that the centre portion of this tie-rod was never in contact. I am sure that if the outside of the bar had been scraped clean, it would have been impossible to detect the bad flaw when it was in position in the roof. I could discover none of the places where the rods had been welded in my laboratory until some of the metal had been turned off in a lathe, and then there was only the indication afforded by the shadow on the metallic surface. I do not think it would have been possible to discover the bad weld in the fractured rod by tapping. If the bars had been sent to me for examination and general report I should have said they were in excellent condition as regards welding. By this I mean I should not have known there were welds in the bars. The examination that I made of the broken tie-bar, and of the others which were subsequently received by me, was one that it was quite impossible to have made in the roof. I am quite certain that if I had been called upon to examine this particular broken tie-rod before it snapped, and as it was placed in the roof, I should not have been able to discover that there was anything to be suspicious of. I should not have found any crack or opening on the surface. The development of the flaw has occurred from the interior and not from the exterior.

COAST EROSION.

HIS Majesty the King has graciously approved of the appointment of a Royal Commission to consider certain questions affecting the erosion of the coasts of the United Kingdom. The Royal Commission is to inquire and report:—(a) As to the encroachment of the sea on various parts of the coast of the United Kingdom and the damage which has been or is likely to be caused thereby, and what measures are desirable for the prevention of such damage. (b) Whether any further powers should be conferred upon local authorities and owners of property with a view to the adoption of effective and systematic schemes for the protection of the coast and the banks of tidal rivers. (c) Whether any alteration of the law is desirable as regards the management and control of the foreshore; and (d) whether further facilities should be given for the reclamation of tidal lands.

As announced by the Prime Minister on Monday, the members of the Royal Commission are as follows:—The Hon. Ivor C. Guest, M.P. (chairman), Sir William H. Browne Wilkes, Sir Leonard Lyell, Mr. William Matthews, C.M.G., Mr. W. Phipson Beale, K.C., M.P., Commander G. C. Frederick, R.N., Mr. H. Rider Haggard, Mr. T. J. Jchu, M.A., professor of geology at St. Andrews University; Mr. A. L. Lever, M.P., Mr. R. B. Nicholson, town clerk of Lowestoft; Mr. Patrick O'Brien, M.P., Mr. T. Summerbell, M.P., and Mr. A. Stanley Wilson, M.P.

Mr. Charles H. Grimshaw, of the Board of Trade, to whom all communications should be addressed, will act as secretary, and Mr. Daniel R. Daniel as assistant secretary.

TESSERÆ.

The Perpendicular Style.

TOWARDS the end of the fourteenth century a great change came over the architecture of this country. It began to decline, and this change first manifested itself, as indeed was likely, in the feature which more than any other was characteristic of all the styles—the window. The graceful, flowing lines of Decorated tracery began gradually to lose their elegance and freedom, and to become more and more rigid and stiff. And this stiffness was not confined to windows, but soon spread over every detail, waving lines being exchanged whenever possible for perpendicular ones; hence the very appropriate name assigned to the style by Rickman—Perpendicular. The date at which this came into general use was the year 1377, or perhaps a little earlier. But, as was the case with the previous styles, the sign of transition—in this case the Perpendicular line—had appeared some years before. The earliest instance known of a Transitional church is the very remarkable one of Edington, in Wilts, which was consecrated in 1361. It was built by William de Edington, Bishop of Winchester, and some have supposed that his successor in that see, the famous William of Wykeham, taking the idea from Edington's innovations, invented the Perpendicular style. Whether this theory be true or not, this much at least is certain, that Wykeham was the greatest architect of his day, and that his own foundation of New College is the earliest pure building of the style. It was begun in 1380 and finished in 1386. But to return to the church of Edington. It is Transitional throughout, not merely showing signs of a change here and there, but begun and finished within the period of transition; in general design and effect Decorated, in detail a remarkable mixture of the two styles between which it stands midway. For instance, the west window, which is large and of eight lights, appears at a distance to contain Decorated tracery, and the Perpendicular lines are scarcely noticed though they occur at every opening. This is probably accounted for partly by the fact that not one of the mullions is carried up into the head of the window, and thus, the Perpendicular lines being broken and scattered, the idea of perpendicularity is only imperfectly expressed. The doorway beneath exhibits a still more singular mixture of styles. The arch is segmental as in ordinary Decorated work, but the upper part, forming a kind of tympanum over two doors, is filled with Perpendicular panelling, and the whole is surmounted by a square hood-moulding, which is of very unusual occurrence in Decorated work, though a similar example occurs in the north aisle of Dorchester Abbey Church. William de Edington began and Wykeham continued the alteration of Winchester Cathedral, and although the new works are, of course, in the Perpendicular style, at least those of the former prelate are not

wholly free from traces of the preceding style. In 1380, however, we find the new style thoroughly established and the flowing line of the Decorated period utterly abandoned.

Bernard Palissy.

Originally Bernard Palissy was a glass painter, and seems to have followed that profession, at all events, till 1538, when he married and settled in the city of Saintes, the chief place of his native district, in the south-west of France. Thenceforth his attention was directed to the potter's art, owing to the accidental sight of a fine enamelled cup of some foreign manufacture. Of whatever ware this cup may have been, whether oriental porcelain, Persian faience or Italian majolica, it seems almost certain that Palissy's pottery, as ultimately perfected and currently produced, bore little or no resemblance to it. His multifarious experiments were apparently made entirely in ignorance of previous ceramic traditions or experience, the limited knowledge of the technique of vitreous enamels, acquired by the practice of glass painting, being probably his only starting-point. It is evident from some passages in Palissy's writings that he at first aimed at producing a white glazed ware suitable for decoration with the most brilliant colours, but in this he did not succeed; he probably, indeed, after a time abandoned the intention, for his works are evidence that he never even became acquainted with the common stanniferous enamel covering of the majolica wares, which, nevertheless, was in common use in most parts of Europe in his own time and had been known from a much earlier period. Palissy's pottery is as original and peculiar in style as that of the unknown contemporary of his earlier period, the potter of Henri Deux, betwixt whom and Palissy there does not seem to have been any direct communication. The probability is that Palissy did not see any specimen of Henri Deux ware till his own fabrication had been brought to a successful issue. It is not unimportant to remark that there was no novelty whatever in either the clay body, glaze or enamel colours of either of these artist-potters, all of which had been known and in use for centuries before both in Italy and perhaps also in Germany. Palissy, at all events, however, was unaware of this fact, and consumed years of time and took an infinity of trouble to rediscover for himself what the humblest potter of Faenza or Urbino could have taught him in a single day. In technical respects, indeed, the French potters were but the merest tyros by comparison with their Italian brethren, whose processes and results, exhibited in the endless varieties of their enamelled earthenwares, are at this day unrivalled and unapproached. The real and great merit of both the potter of Henri Deux and Bernard Palissy is the admirable taste and originality in design of their famous wares.

Mediæval Tapestry.

Guicciardini asserts that tapestry was invented in Flanders, by which we presume he would mean that the Flemings first introduced into Europe the art of weaving tapestry, which had been previously manufactured by the needle only. As early as the ninth century it existed in France, when the term *tapetia* becomes of frequent occurrence, and at the close of the tenth century we are told that tapestries were woven in the abbey of St. Florent, at Saumur. The fashion of hanging the walls of cathedrals and churches with tapestry on great festivals prevailed so much in the eleventh century that it was denounced as a vanity by the Cluniac order of monks, notwithstanding it had received the sanction of a saint, Gervais, abbot of St. Riquier, who had some remarkably fine tapestries made for that especial purpose. In 1025 the city of Poitiers, in France, was celebrated for its manufactures of tapestry. In the twelfth and thirteenth centuries the art progressed rapidly in consequence of the increasing demand for a material which clothed the cold, comfortless stone walls of the castles and mansions of the nobility, and not only gave warmth and cheerfulness to the chamber but frequently illustrated the actions of its owner or his chivalrous ancestors. The tapestries of Flanders were in great repute as early as the twelfth century; but although England was celebrated long previously for her wonderful needlework—so much so, indeed, that all peculiarly fine embroidery obtained the name of "English work" (*opus Anglicum*)—it does not appear that any successful attempts were made to introduce the weaving of hangings in this country, whilst manufactures were successfully established at Brussels, Antwerp, Oudenarde, Lisle, Tournay, Bruges, Arras, Florence and Venice. Of all these that of Arras appears

to have shortly become the most famous, and, indeed, almost substituted its own name for that of its production. Arras became in England synonymous with tapestry, and *Arrazzi* in Italy signified the most perfect description of this manufacture. The famous royal tapestry manufactory of the Gobelins was established by Louis XIV., who purchased the premises belonging to some eminent dyers of that name about 1666, and the productions of the Hôtel Royal des Gobelins are said to have attained their highest degree of perfection in the time of Louis's great minister Colbert and his successor Louvois.

John Cozens.

The father of the water-colour artist was a native of Russia, who was for years a teacher of landscape-drawing and was professor of drawing at Eton College. It is no mean compliment to the talent of John Cozens to know that Turner and Girtin have admitted that the contemplation and the copying, indeed, of some of his best works, opened to their minds that intelligence of effect in representing distant scenery which they adopted, and subsequently excelled in to so much greater a degree than their ingenious prototype. Cozens certainly was the first of the school of water-colour painting who exhibited a right feeling for art. His effects were washed in from the scenery which he beheld at once upon the spot. Hence, though his drawings for the want of that knowledge of the power of the pigments used with gum water, which all were then deficient in, were comparatively weak, yet by his mode of practice they were more natural and effective, and consequently more approved of by the eye of taste than any of the most laboured works of his predecessors. The process with which this artist wrought may be quoted as the foundation on which Girtin and Turner placed the lofty superstructure. Varley, indeed, is entitled to share with these distinguished artists in the honours of the achievement, for many of his landscape compositions, descriptive of the mountain regions of Cumberland, Westmoreland and North Wales, produced about the same period, were rendered with that truth and simplicity of pure aerial tone united with more vigour of effect, which, derived originally from the same source, expanded into a greater style of art by applying the theory to his intelligent and sedulous practice from nature. Cozens compounded his cloud tints and those for his distant mountains of Indian red, a small portion of lake, indigo and yellow ochre; in the middle distance he blended a tint of black; and his foregrounds were principally of black and burnt umber. His distant trees were tinted with the warm washes used for the sky, and those of the nearer than middle distance with yellow ochre and indigo enriched with burnt sienna, the immediate foreground trees and shrubs with the same rendered one or two degrees stronger. Girtin retained more of his manner and touch than either Turner or Varley, but in the early works of each, in scenery of the aforementioned character, much of the style and feeling of John Cozens is observable. Of Cozens's works generally it may be observed that his process amounted in effect to little more than tinted chiaroscuro. The same may be said, advanced a step further, of the early mountain drawings of his imitators; for that splendour of effect which they ultimately attained was the result of much subsequent ardent study and reflection.



Architects' Plans and Provincial Authorities.

SIR,—Architects outside of London have not the advantages for getting their plans ultimately approved when they have been wrongly disapproved by the local authorities possessed by their more fortunate brother professionals in the Metropolis in respect of having a tribunal of appeal conferred under the London Building Act, 1894, Section 175, and constituted as follows:—"One member shall be appointed by the Secretary of State, one member shall be appointed by the Council of the Royal Institute of British Architects, and one member by the Council of the Surveyors' Institution, and no member or officer of the Council shall be a member of the tribunal of appeal."

The decisions of the said Council under the above Act are frequently altered and varied by the said tribunal of appeal, and the question arises why should provincial

architects labour any longer under this great disadvantage to themselves, and inflicting serious monetary losses on their clients? This could be obviated by amending the Public Health Acts, giving power to local tribunals of appeal (similarly constituted) to deal with all matters connected with new buildings, streets and drainage (together with discretionary power to modify provisions of any acts and by-laws if deemed advisable by the majority). This is a favourable time to do this, as the Public Health Acts are now under the consideration of a committee appointed by the House of Commons.

At the present time, when plans are arbitrarily disapproved by a provincial authority, there are only two courses open to the client to take. The first is to go to the King's Bench Division to obtain a mandamus to compel the authority to approve the plans, and the second is to lodge the plans and give notice of intention to commence to build without such approval. The first process is costly and the second is objectionable, as proceedings would be instituted in the police-court.

To illustrate this, in my own experience a few years ago I had submitted plans to an authority for the erection of one house on a small estate, and they would persist in applying certain sections of their by-laws in reference to new streets, notwithstanding a decision in the High Court of Justice which laid down that the erection of one house did not constitute the laying out of a new street. My client not caring to instruct a solicitor to obtain a mandamus, he commenced to build the house. When it was 10 feet high proceedings were taken by the authority in the police-court, and although the summons was dismissed with costs, it was not a pleasant ordeal to undergo.

In an architect's practice vexed questions are constantly arising. For instance, a local authority disapprove a plan for bringing forward a gable of a corner shop lower down a street, whereas at the top of the same street a similar bringing forward of a gable of a corner shop is permitted. Technically, power is possessed under the third section Public Health Act, 1888 (Building in Streets Act), although not discriminately used. I had another case where plans were passed by an authority greatly to the detriment of the health of the tenant of the adjoining owners' property by allowing a two-storey building to be erected on the party yard wall only 4 feet distant from the opposite scullery wall, thereby interfering with the frontal rays of light and air to the window of same, and to the lateral rays of light, &c., to the kitchen window at right angles to the said yard wall.

It is cases like this that bring by-laws into disrepute, particularly where the angle of 45 degrees is rightly enforced at the rear of new houses, and also where insanitary houses are dealt with under the Housing of the Labourers' Dwellings Act, 1890, and local sanitary Acts. There are also frequent cases arising of local authorities trying to compel owners of houses to repair and reconstruct what they term "drains," whereas the incorrectly called drains are sewers, and repairable by the local authorities.

If there was a local tribunal of appeal it would be a great boon to architects and property owners, where decisions and actions of authorities could be equitably dealt with and revised without having recourse to costly or objectionable procedure.—Yours, &c.,

JOSEPH H. M'GOVERN.

Liverpool: June 29, 1906.

GENERAL.

The Late Sir Wyke Bayliss, aged seventy, of Clapham Park, president of the Royal Society of British Artists and F.S.A. and president of the Birmingham Ruskin Society, left estate valued at 2,640l.

The British Academy at their fourth annual meeting elected the following Fellows:—Messrs. R. H. Charles, D.D., W. J. Courthope, C.B., J. Fitzmaurice-Kelly, Andrew Lang, A. A. Macdonell, John McTaggart Ellis McTaggart, Edward Moore, D.D. (Canon of Canterbury), and G. F. Warner, Keeper of Manuscripts, British Museum. The number of Fellows is now ninety-four, out of a maximum of one hundred allowed by order of the Council.

Mr. J. J. Webster, M.I.C.E., of Westminster, has been appointed engineering expert in connection with a projected vehicular bridge over the river Ouse, in the neighbourhood of Goole, now under consideration by a joint committee of the East and West Riding County Councils and the Goole Urban Council.

Lady Betty Balfour, at a fête to raise funds for the erection of a new church at Woking, went to a brickmaking stall, where she moulded a brick, upon which she inscribed her name. The brick will be used in the building of the church.

The Church of All Souls, Leicester, has been formally opened and consecrated. The new church has been designed by Mr. G. F. Bodley, R.A., will accommodate about 700 worshippers, and has cost over 10,000l.

The Committee for the Fine Art Section of the Irish International Exhibition, which will be opened in Dublin in May 1907, is to be made up as follows:—Mr. A. G. Temple, F.S.A., director of the Guildhall Gallery (chairman); Sir Charles Holroyd, director of the National Gallery; Sir Isidore Spielmann, hon. secretary of the St. Louis Exhibition; Mr. Lionel Cust, M.A., M.V.O., director of the National Portrait Gallery; Mr. C. F. Corbould-Ellis, chairman of the art gallery committee of the Corporation of London; Mr. G. J. Frampton, R.A.; Mr. Philip Norman, F.S.A., treasurer of the Society of Antiquaries; and Mr. Whitworth Wallis, F.S.A., director of the Birmingham Gallery. The exhibition will comprise a selection of works by British and foreign painters during the last fifty years, and of water-colours, works in black and white, miniatures and architectural drawings, and a special display of British sculpture.

Mr. A. G. Temple, F.S.A., curator of the London Corporation Art Gallery, is producing, under the title of "Early Flemish Art," an illustrated catalogue of the pictures now being exhibited at the Guildhall. The exhibition will close on the 28th inst.

Mr. J. Murray Macgregor, C.E., Morpeth, Northumberland, has been appointed surveyor for the county of Sutherland at a salary of 300l. per annum.

Several Subscribers have presented upwards of 300 drawings and studies in water-colour, chalk, pencil, and pen and ink by Sir John E. Millais, Ford Madox Brown and Frederick Sandys to the Birmingham Art Gallery. They form part of the same collection which was bestowed in 1903. The Birmingham Gallery now possesses more than 800 drawings of the English pre-Raphaelite school.

An Exhibition of Pictures was opened at the Hampshire Social Club, Hampshire House, Chiswick, on the 29th ult. The members of the club already number 150, and are chiefly of the labouring classes. An art class has been established. The exhibition contains Watts and Burne-Jones drawings and works of Sir W. B. Richmond, Messrs. Charles Shannon, Francis Dodd, W. Rothenstein, G. Clausen, M. Bone, J. Paterson, A. E. John, H. S. Tuke, F. Brangwyn and Miss Dacre, and a fine flower-piece by Mrs. Nelson Dawson.

The Glasgow Archaeological Society, which was founded in 1856, proposes to celebrate its jubilee this year by a dinner in November. Mr. John Honeyman, LL.D., was the first secretary of the Society. The other original members are now few in number, but the Society of recent years has attained a membership which makes it rank as one of the leading learned societies of Scotland.

The Royal Scottish Academy, presided over by Sir James Guthrie, P.R.S.A., have had before them the Government proposals regarding the housing of art institutions in Edinburgh. It was unanimously decided to give the hearty support of the Academy to the Secretary for Scotland in his efforts to improve the present situation, and to support the Bill at present before Parliament, subject to the recognition of the Academy's rights in the building it now occupies. It was also decided to send, as requested by the Town Council, three representatives—of painting, sculpture and architecture—to the provisional committee organised by the Town Council.

A Collection of stained glass, including specimens from Flanders and France, has been presented to Durham Cathedral.

The Building Committee of the Portsmouth Board of Guardians reported at the last meeting the unsafe condition of the joists supporting a large water-tank at the children's home, and recommended that Mr. G. E. Smith, architect, should be requested to furnish a full report as to its condition and the best means of effecting its security. One of the members drew the attention of the Board to the fact that the recommendation was not unanimous, and quite contrary to the principle advocated by some, that the architectural work should be equally divided amongst the professional men of the town. After some discussion the recommendation was sent back for further consideration.

The Architect.

THE WEEK.

THE progress of Newcastle-on-Tyne can be judged by the works which were opened this week by the KING and QUEEN. All were costly, but not one penny has been derived from taxation. The high-level bridge, which has cost at least 580,000*l.*, was designed by Mr. C. E. HARRISON, and carried out by the Cleveland Company. In it 5,782 tons of steel were used. In the high-level bridge which the late QUEEN opened in 1849, and which ROBERT STEPHENSON designed, required 4,728 tons of cast-iron and 327 tons of wrought-iron. The cost was 243,000*l.* But STEPHENSON'S bridge consisted of six spans of 125 feet, while in the new bridge are two spans of 300 feet, one of 231 feet and one of 191 feet. The new bridge is more expensive than STEPHENSON'S, which, although mainly of cast-iron, has sustained heavy traffic for nearly sixty years, and is still in sound condition. The Armstrong College, designed by Mr. W. H. KNOWLES, is an extension of a building which has done much for technical education, and will under new conditions be still more useful. The new infirmary building, of which the architects are Mr. LISTER NEWCOMBE and Mr. PERCY ADAMS, is a memorial of Queen VICTORIA, and has cost about 250,000*l.* The statue of Queen VICTORIA, which is the gift of Sir RILEY LORD, is the work of Mr. FRAMPTON, R.A.

A JUDGMENT has been given in the French courts which suggests that industry has now a claim to recognition, which would be disregarded some years ago. The Place Vendôme used to be an ultra-respectable part of Paris, and seemed to be assigned to high officials. It was, in fact, a privilege to live there. Accordingly, an advocate agreed to pay 6,000 francs a year for a small pavillon which was attached to one of the solemn buildings. His landlady occupied the ground floor with the first and second floors. In course of time there was a change in the proprietorship, and the three floors which used to be used by the former landlady as a residence were let to a dressmaker. Occupants of apartments in the majority of Paris houses have to put up with many varieties of neighbours, but the Place Vendôme differed from an ordinary street. The advocate, who knew the law, brought an action because he was injured by the alteration of the character of the house. The Tribunal of Commerce agreed with him, but an Upper Court has decided that the advocate's rights as a tenant were not of a kind which gave him power to interfere with the appropriation of the other premises. After this decision we may expect to find the most aristocratic quarters of Paris invaded by tradespeople.

It is rare for anything which could be considered architectural to be made the subject of a patent or registration, and to receive protection from the Law Courts. The case of STAPLE *v.* WARWICK has therefore a professional interest. Eiffel towers at one time seemed to be the rage, but Mr. STAPLE designed a structure which would serve similar purposes and be otherwise attractive in an insular country. He called it "The Helter-Skelter Lighthouse," and took the precaution to register his design. Instead of being drawn up by a lift, visitors were able to ascend by a spiral road and staircase on the exterior, that was so arranged that they could slide down if they desired. Those who ascended were rewarded by an extensive view, and there was fun in descending quickly and safely by the aid of their own gravity. The defendant also began to erect an iron tower. Mr. STAPLE, believing it was an infringement of his design, applied for an injunction, which was granted. The defendant changed his structure from a lighthouse to a castellated building with overhanging battlements. Mr. STAPLE then applied for the

committal of the defendant, as his building was a breach of Mr. Justice BUCKNILL'S order. Mr. Justice PHILLIMORE acceded to the application. The defendant appealed, and the case came before the Master of the Rolls and Lord Justice COZENS-HARDY. Their Lordships allowed the appeal and set aside the order for committal, which they said ought not to have been made. Their Lordships held that as there had been no trial of the action, the question of infringement remained undecided. It might turn out that there was no breach of the injunction, and therefore no act of contempt. The Court would not allow the defendant to be put in prison for an act that probably was not a crime. The plaintiff will have to pay the costs. At present the case does not appear to be encouraging to those who think that every cottage they erect should be protected by law.

PREJUDICES take a long time to be dispelled, especially when they arise in modern corporations. Mr. DE COURCY MEADE, the engineer to the Manchester City Council, lately prepared a report respecting pavements, in which he explained how he had ascertained by experience that excavating work carried out by the Corporation staff cost more than similar work done by the unemployed; that, as a general rule, the work done by the regular staff is not measured up and the time is not so kept that the actual cost can be accurately ascertained; and that the cost of excavating work done by the regular staff averaged 156.83 per cent. more than the cost of work done by contractors. These conclusions, although they were incontrovertible, were not acceptable to the paving committee because they were supposed to cast an unwarranted reflection on the members and their staff. The subject was considered at the meeting of the Council last week, when it was proposed that the paving committee should present to the Council a report showing the actual cost of the work carried out by the staff and the estimated cost of such work if done by contract. This also was supposed to be unfair towards the committee, but it was decided upon by a majority of the Council. The case is another example of the absurdity of the theory that workmen who consider they are privileged beings will be more active in carrying out corporation works than men employed by an ordinary contractor.

THE British Museum is one of the most valuable institutions in the world, and THACKERAY was in a pious mood when he said that in the reading-room he could feel as grateful to Providence as in any cathedral. But that institution has set a bad example by paying salaries that are not commensurate with the services rendered. Keepers of departments may receive as much as a head clerk in a merchant's office. But the rank and file of the assistants are not adequately rewarded. Enthusiasts are always ready to sacrifice themselves, but it is not quite fair to take advantage of such a spirit. One consequence is that the curators of museums throughout the country are treated like ordinary workmen. Dr. HOYLE, the Director of the Manchester Museum, has had the courage to speak out on a subject which has concern for all with a desire to see the technical education of the country advance. In Germany, as we have often pointed out, there is a regular organisation, and men who are intelligent and active are sure of promotion. In this country retired Royal Engineers had at one time the best chance of office, owing to the influence of the South Kensington precedent. The requirements for office are indefinite, although no class of men require wider knowledge than the curators of museums. Dr. HOYLE suggested that the museums should follow the German system and train curators. But he has to admit that the prospects for an official are not inviting. The salary commonly offered is from 100*l.* to 150*l.* a year. As in other affairs, money has to be considered, and if, as Dr. HOYLE says, committees wish to have a superior article they must pay the price for it.

JULES BRETON.

ANOTHER of the old school of French painters has vanished, and it may be a long time before a true successor to him shall arrive. Born in 1827, JULES BRETON may be said to have commenced his life with Romanticism. His nature was complex and easily disturbed. At the cost of severe headaches and what might be called a bouleversement of his system, he was able to write short poems about the country life he loved so well, but when painting he could stand at his easel for ten hours at a stretch without the least sign of fatigue. Yet there can be no doubt he preferred the art which gave him vertigo. As a pictorial artist it was only natural that he should adopt the easier course and represent things with pencil in colours rather than describe them in words by his pen, although he believed the poet alone was king of the world. Still, there is a peculiarity about his paintings which can only be described as a trace of poetry which could easily be translated into verse by such a man as LECOMTE DE LISLE. The painter who was able to say that although the features of his mother could not be recalled by him, yet that in the stars he was able to see her eyes blessing him and guiding him, must have been possessed of a sentiment which was out of keeping with the prosaicism of the nineteenth century.

As we have said, he was born in 1827. He was the child of peasants, and his birthplace was at Courrieres (Pas de Calais). If we may judge by the numbers of portraits of women in peasant costume which are to be found in the ateliers of Paris, it would be reasonable to conclude that a great many artists have sprung from that class, and, indeed, men appear proud to avow the fact. The peasant's life, as ZOLA has described it in "La Terre," is one of the hardest and most prosaic, and it may be supposed that men like JULES BRETON represented a feeling of reaction against the sordid everyday slavery on the part of their mothers. JULES BRETON could never be accepted as a realistic painter. The figures in his landscapes are peasants rather than the nymphs and goddesses which COROT and others of his contemporaries preferred to introduce, but his landscapes have sometimes a brightness, sometimes a haze, such as are not to be seen on sea or land.

JULES BRETON and J. F. MILLET have been often contrasted as if they represented the two poles of rural life in France; both had, however, much of the idealist in their nature. MILLET was, perhaps, more pessimistic than JULES BRETON, and he could impart a sense of melancholy to which JULES BRETON was indifferent. It is remarkable that both went through a course of training which was adapted to make them figure-painters in the academic style. MILLET studied with PAUL DELAROCHE, DROLLING was the master of JULES BRETON. It is needless to say that the latter had to go through the curriculum of the Ecole des Beaux-Arts, but, fortunately for himself, he never gained the Prix de Rome or he might have attempted the so-called classical landscape. But before his Paris teaching he had the advantage of two or three years study in Belgium.

His first efforts were with historical scenes. He was converted to a more rational method of exercising his talent by ARY SCHEFFER. Timidly he went to consult that fashionable painter, to whom he displayed a large study which he had completed, and which when produced on canvas was to take the Salon by storm. It represented the ghost of a woman appearing at night to her murderer and pointing to the fatal wound in her breast. The assassin was shown recoiling in a manner that was derived from the great masters; his eyes and mouth were open to an unnatural extent, his arms and neck were stretched forward and every muscle was properly displayed; the moon was introduced, and on the occasion illuminated the room with a blue light, and a bat appeared as an additional accessory. SCHEFFER was the Court painter at the time, but he remained tranquil before the terrible scene. His only remark was, "Take care to avoid sketching any sort of action unless you

have seen the equivalent in nature." The words were worth more than a course of lectures to BRETON. By 1853 he had realised that he was not adapted to ambitious subjects. *Les Glaneuses* was described as a scene in Courrieres, and the poor women, young and old, who are represented as returning through the fields with their scanty sheaves of corn, were probably portraits of peasants with whom he was acquainted. That might be called a sentimental scene. The *Lendemain de la Saint Sébastien* is of a different character, and suggests the rough humour of French villages. It represented a guild of archers visiting the taverns accompanied by musicians, and recalls the English mummings scenes at the close of one year and the beginning of another. He received a third-class medal in 1855, a second-class in 1857 and a first class in 1859; in 1861 he was admitted into the Legion of Honour. From this regular progression it will be evident that JULES BRETON was appreciated, and that his success was due to the general character of his works and not to some painting which was a surprise to amateurs and officials.

From the descriptions which he gives of his own youth, JULES BRETON must have been in his early days deeply impressed by the scenes around him; indeed, he regretted that young children were not competent to express the forms and the colours of things which gave them pleasure. He tells us that his first recognition of a dawn worked a revolution in his mind; he felt disturbed by the mystery which seemed to awaken him to thoughts about the unknown. The belief in the companionship of an angel guardian was also advantageous to him. A flight of birds when first observed with attention made an impression on him which he always remembered. Atmospheric phenomena excited his wonder, and the first eclipse he saw filled him with terror. Then with flowers, the different stages of growth became as marvels. The humble processions and other ceremonies of the Church were also as influential as any Renaissance spectacle, and he used to walk solemnly in his garden imagining he was one of the officiants. "How many times," he exclaims, "have I been throughout my life the plaything of my imagination. Chimeras," he adds, "have taken from me a part of my life, but I owe to them a thousand joys and a thousand troubles." Indeed, he found it difficult to distinguish between realities and fictions. The descriptions which JULES BRETON gives of peasant life enable us to understand some of the qualities of his pictures. He lived, as he said, amidst adorable mirages; sometimes he has introduced them in his pictures, but if not visible the scenes will gain in effect if we suppose that we are looking at them through a mirage.

His early days amidst simple men and women might be supposed to have made a hardy youth of him. Coming into contact with nature, he could not fail to derive a belief in reality, but, strange as it may appear, his own experience in boyhood was the cause of much pain to him afterwards, especially when he found himself before a picture which appeared to be false in any respect. He relates that one time, when he was a student, he stood before a painting which was in the place of honour in an exhibition in Brussels. It represented several ladies in a drawing-room, but, when compared with the women he had known in life, they seemed to be no more than puppets. His whole being rose in revolt against so much falsity, and in the effort to restrain himself he became so weak that if a seat had not been near him he must have fallen on the floor. A visitor took compassion on him and led him into the air, where he gradually recovered. As he was liable to similar attacks it was risky for him to visit picture galleries, yet we suppose he never gave a thought to the sufferings of critics who have in the way of business to stand without losing their self-control before worse pictures than that of the Antwerp master.

A psychologist would find the life of JULES BRETON and his records of impressions to afford excellent subjects for investigation. Throughout his life he was

fascinated by the tranquil beauty of rustic scenes, while whatever was melodramatic filled him with aversion. On that account, although he had an atelier in the Boulevard de Montparnasse, he preferred to live and work in some part of the country with which he had become familiar. He was, therefore, able to point out the exact spot where he was inspired with a subject. His *Sarclouses*, or weeders, was derived from an actual scene which he observed one evening, and he therefore maintained that the painting was made complete by nature. The largeness of the lines, the intensity of effect, the richness and simplicity he saw with his own eyes. Not one detail was disturbing, not a tone interfered with the harmony. It was a transfiguration of honest toil. He said he never felt so near the Almighty as when looking at the scene, for then he realised that labour was a prayer. The influence of education is suggested when we find that BRETON, after he was first recognised by the principal critics of the Paris press, resolved to show his gratitude by producing a masterpiece. The painter of peasants studied HOMER, ÆSCHYLUS, SHAKESPEARE, and attempted figures of Druids, Vercingetorix and other heroes of the schools. Then he thought a course of the nude was indispensable, and for that purpose went to Ghent. When he saw the pale creature before him, he thought of the hale and vigorous women who laboured in his native fields, and he went back to see them and was cured.

Another time he imagined he heard Italy inviting him, and as he could not resist the voice he left France. LEON GOZLAN had initiated him beforehand into the way works by the great masters are produced. He was, therefore, cautious in admiring, and it was characteristic of him that he found more delight in the chapels of Assisi in their mystic slumber than in Venice or Florence. He was at first disappointed with Vesuvius, but he found compensation through the works of MICHEL ANGELO and RAPHAEL in the Vatican. Just as VICTOR HUGO declared that NAPOLEON lost the battle of Waterloo because Heaven was jealous of him, BRETON must also show himself to be a Frenchman by saying that MICHEL ANGELO struggled with the Creator, and that his works were a protest against the original weakness of the human organism. When we read such remarks it becomes more evident that BRETON's proper place was among the labourers of the field.

It is unnecessary to make an inventory of JULES BRETON's works. Almost every year gleaners, potato gatherers, reapers, shepherds were to be seen from his hand, and they were all equally delightful. Each could be easily recognised, and no lover of pictures could consider the painter was producing too much. There was no doubt he was extremely sensitive to the beauties of nature, but his own idiosyncrasy was a factor in what he produced, and they are fortunate to whom the fields sometimes appear as poetic in aspect as always to JULES BRETON.

SCIENCE IN SOUTH AFRICA.

IT appeared strange to many people when it was announced that the seventy-fifth meeting of the British Association for the Advancement of Science was to be held in South Africa. Prior to 1897 the annual meetings were in towns of Great Britain or Ireland. In that year Toronto was selected as the place of meeting, and in 1905 a still longer journey was undertaken to South Africa, and there were meetings at Cape Town and Johannesburg. A volume of the reports and papers has been published, but it was inevitable that the pages could not represent the whole of the proceedings. Papers, for instance, which have appeared in *The Architect* are only mentioned. The reason for omissions probably is that more importance was attached to communications from members at home, or who belonged to the party of visitors, than to those by local contributors.

The future of South Africa, according to the notions which now prevail, is closely connected with science. Few emigrants from Great Britain will care to emulate the Boers in farming and other agricultural pursuits. The desire at present is to make mining profitable, and to attain that end the aid of chemistry and mechanics is indispensable. The labour problem is so difficult that if it were possible mining owners would give it no attention, and the more science enables managers to dispense with the assistance of foreign or other miners the better it will be, not only for shareholders, but for the peace of this country. There were several papers read in the sections of chemistry, geology and engineering which had application to the mining industry. If the papers in other sections cannot be considered practical by managers they were at least interesting, and may lead those who have to live in South Africa for a longer or shorter period to turn their attention to the study of science.

It was shown by Dr. A. C. HADDON, the president of the section of anthropology, that students of that most modern of sciences have a wide field for investigation in South Africa. Those who have lived in India are aware that the least advanced of the tribes speak of a people whom they regard as savages, of a much lower type than their own, and who have been found living in small groups of families apart in the most dense interiors of forests. To the Zulus the Kattea are dogs or vultures, the lowest of the low. Their habitations are holes in the ground, rock shelters, and lately a few hovels were found. They have no arts or industries, nor even any weapons except those obtained in exchange for ostrich feathers, skins or ivory. Their language has not been mastered by any European, and it is therefore impossible to say what their ideas are about the world in which they live. Compared with them the Bushmen appear almost civilised, for they can make portable dwellings for themselves, which are dome-shaped and covered with mats. Their agriculture is simple, for an advanced operation consists in digging up roots by the aid of a stick which they turn in a hole perforated in a stone. Sometimes they are capable of producing coarse pottery. These poor Bushmen can, however, give a lesson to some of our modern exquisites. They are almost indifferent to personal ornaments, but their pictorial skill is applied in decorating their rock shelters with spirited representations in colour. They also erect cairns over graves. In them we have a curious correspondence with the races who, in prehistoric days, etched elks and other animals on bones in various parts of Europe. There are other tribes which may be said to indicate the degrees in the civilising process which affects all peoples.

Dr. HADDON pleads for the introduction of an Ancient Monuments Protection Act for South Africa, with officers to carry out the provisions. He would jealously preserve the pictures of the Bushmen to which we have referred. In the eagerness to obtain gold, not only were ancient workings destroyed, but no implement or other evidence was left which would enable us to determine who were the miners. But Dr. HADDON admits that preservation would be a costly undertaking. According to him, "the number of the ruins in Rhodesia is so great, and the area within which they occur so enormous, that it would be a very large undertaking for the Government systematically to investigate and permanently to conserve them all. Perhaps it would be possible to entrust some of this work to properly constituted local authorities, assisting them by grants and special facilities, but care would have to be taken to insure the thorough carrying out of the work. Records of work done should be published, and the specimens preserved in authorised museums only."

It is remarkable, although no more than was to be expected under the universal law of progress, that South Africa should have had its stone age, and that implements

have been found which correspond with those met with near the Pyrenees on one side and Madras on the other. What is difficult to understand is how implements which weighed $9\frac{1}{2}$ lbs. could have been used by a race so small as the Bushmen. Stone weapons were used until a comparatively recent period. Another survival is the bow of the Damaras, which is still used as a musical instrument, for it is believed by archæologists that the modern harp has been derived from a primitive bow, which enabled the warrior to accompany his song of triumph. There are other musical instruments in Africa which may also be related to those used in civilised countries.

Mr. D. R. MACIVER, who read a report on the ruins of Rhodesia, said there could be no doubt that the strange remains were the work of a native race closely akin to those at present inhabiting the country. To identify this race would be a task well deserving of the efforts of investigators. So far from considering that this new conception of the origin and date of the ruins destroyed a romance, Mr. MACIVER maintained that they were far more interesting now that they proved to be not a parasitic growth from Arabia, but products of South Africa itself. Their history is the past history of Rhodesia. But if the workers were of South Africa there is no objection to the supposition that Semites carried the gold that was produced to distant lands or that a part was deposited in SOLOMON'S treasury. It is still possible to combine romance and reality with the elliptical hill forts, the Parallel Passage, the fortifications and the other wonders at Inyanga, Niekirk, Umtali and Zimbabwe.

One of the most interesting of the reports relates to the progress of the geodetic survey; it was prepared by Sir DAVID GILL. In such a work the first step is to measure a line which would be of sufficient length to serve as a base for the subsequent triangulation. In 1752 the Abbé DE LA CAILLE endeavoured to measure the arc of the meridian. The terminal points of his base could not be identified in 1840 and a new triangulation was necessary. In 1859 Captain BAILEY, R.E., was ordered to make a survey of the southern coast of Cape Colony and British Kaffraria. The surveying party having completed their field work in 1862 returned to England, where the plotting could be executed. The vessel was wrecked and the instruments, field books, &c, were lost. Sir DAVID GILL was appointed in 1873 as astronomer at Cape Town, and he shortly afterwards took up the subject. By slow degrees he was able to persuade high officials to co-operate with him and to lay down a system of triangulation over various parts of the country. For a time the late CECIL RHODES gave no more than verbal support. Characteristically he considered that roads, bridges and other works should be first executed. Subsequently he promised to provide funds to carry on the survey and his promise is respected by his representatives. Fifteen base lines have been measured, the longest having a length of 71,165 feet, or over 13 miles. It is believed that with the majority of them the probable error is about 1:1,000,000. Great credit is due to Colonel MORRIS, who has been engaged for ten years in the field and one year in office work.

The progress of Johannesburg is at a quicker rate than elsewhere in South Africa. It was founded twenty years ago and has now a population of 160,000. The rateable (capital) value is nearly 40,000,000*l.* The Town Council have large powers, and possess the water, gas, electric light, tramways and other undertakings. In both Johannesburg and Cape Town it is evident there is a desire to emulate American buildings. Mr. WILLIAM LUCAS, who read a paper on the architectural problem, declared that nepotism and social qualities—far more than is possible in older and more extensive communities—rather than merit have much to do with the character of South African architecture. The public buildings, however, are generally the results of open competition, and more fully express the possibilities of

quality and the extent of "the force behind the hill" panting for its opportunity.

The low standard of building may be traced to the circumstances which surround the South African in his youth. It was stated by Mr. WAV, professor in one of the African colleges, that there are few beautiful school buildings in the country, and, as he insists, there is consequently little habitual training in that fine sense of artistic proportion which has made the Japanese Empire what it is to-day. If a boy's school associations are to be of an ill-paid schoolmaster, of a playground 10 yards square filled with old papers and broken rubble, of an oblong rectangular building covered with cracked and dirty plaster and roofed with corrugated iron, his imagination, his feelings, his sympathies will suffer. In other words, until architecture is recognised as an essential civilising agent there is not much hope of South Africa becoming a great nation.

When we remember the part of the world with which the latest volume of the British Association transactions is identified there is much that is hopeful in the pages. It was arranged that 1,000 copies are to be distributed at the expense of the South African Association. The circulation of so many copies will have, no doubt, a beneficial effect, and it may therefore be possible that whenever the British Association will again meet in Cape Town and Johannesburg to have all the papers contributed by observers who can claim to be residents.

ARCHITECTURAL PROBLEMS.*

IN architecture light and air exercise a potent influence, not only on exterior design, but on the planning of buildings. The intense heat of the sun and its brilliant light justified the peristyle and porticoed buildings with their small windows of ancient Greece and Rome, and the wide structural verandahs of the remoter east, but in the colder and darker north, and particularly in our seagirt isle, all artificial obstruction to the sun's rays has to be avoided, and large windows become a necessity for comfort and for the sanitary occupation of buildings.

This occupation is sometimes lost sight of, and it may be pardoned if I lay stress on the necessity of designing all kinds of buildings from within rather than from without. In other words to take care that the exterior, so far as fenestration is concerned, shall express and grow out of the internal requirements of the building. To sacrifice the interior in order to get an external effect is insincerity in architecture. It means inconvenience to those who use the building, and results in unsanitary conditions prejudicial to body and mind. Appropriateness in design is the correct aim in art, and this arises where the design is the natural and ordered outcome of the purpose for which the building is intended.

In the dwelling-house of the wealthy and middle class this principle of design is not so frequently overlooked, but it is not uncommon in towns, both in these and in poorer dwellings, to see the neglect of such simple rules as that windows should be so disposed that all parts of a room shall be well illuminated, not only because light is the great germ killer, but because it serves to point out impurities otherwise unnoticed; that the tops of windows shall be as near to the ceiling as possible, and that windows should be made to open wide, so that all parts of the room may be scoured by currents of fresh air.

Through ventilation of rooms and of buildings is again of great importance to prevent the accumulation of vitiated air in any part. We must see that other provision than that of open windows is made for the entrance of fresh air and for the exit of foul air. To this end we should provide inlet ventilators of a simple type, and outlets into upcast flues. In theatres and factories where large numbers of people are assembled the constant passage of fresh air through the enclosed space and the removal of foul air, vitiated by the capillary and respiratory emanations as well as by gas, are of the greatest importance. How frequently are consumptive patients improved in health by treatment under hygienic conditions, only to relapse when they return to the un-

* From the address by Mr. Edwin T. Hall at the opening of the Section of Engineering and Architecture of the Congress of the Royal Sanitary Institute at Bristol on Wednesday.

sanitary conditions of their normal employment in some factory where these conditions are neglected, where as was shown in the report of Dr. Scott Haldam, F.R.S., and Mr. E. H. Osborn, C.E., to the Home Office in 1902, the carbon dioxide is sometimes so excessive as to be a source of grave danger to the healthiest persons.

But I have also noted that light and air dominate the planning of buildings, and particularly the block planning of large buildings where health is of primary importance, such as hospitals and schools.

The old-fashioned type of hospital, with which we are familiar, the square building around an enclosed area, is the survival of a very old type of plan, which had its origin in a remote past, in the necessity for defence of life or of privacy; a type carried on in Mediæval times, surviving in the courtyard of many an old hostelry.

It possessed the one advantage of concentration, but concentration has its limitations. The old hospital, consisting of a heaped-up block of many storeys, was concentration beyond reason—reduced to a logical but unsanitary imperfection. This type in the spread of the science of hygiene has given place to the open plan, to the principle of open air circulation everywhere, of sunlight to all external walls and windows, of open prospect for the inmates themselves.

This open plan type brings me to the mention of sanatoria, which for many years have been erected in large and ever-increasing numbers all over the civilised world. Here in England they have been in recent years developing in number and usefulness. They are not merely the temporary abodes of consumptive patients as hospitals for recovery from diseases; they are great colleges of hygiene. Not the drug but the personal influence and disciplinary instruction of the medical staff are the great instruments for removing the ravages of the disease and rehabilitating the weakened fibre, both physical and mental. But to enable that influence and instruction to be given the architect must make the sanatorium a model, an object lesson of what a sanitary building should be. Hence it is that he should lay out his scheme on broad lines, design so as to give to all rooms a maximum of sunlight, direct and reflected, so that floor, walls and ceilings may be illuminated, and while the windows face the sun, he must give ample openings in the inner walls that air may freely pass through, that even when there is no wind the difference of temperature on the hot sunny side may induce currents from the cooler side. There must be no blind corridors ending in blank walls, but all must be well aerated and illuminated by sunlight. The assembly and dining-rooms must also be designed on similar lines, and no reservoir for stagnant air should be tolerated. Again, however large the building a sense of security from fire must be felt by all patients, however nervous; hence means for escape from fire must be carefully considered and be in evidence. Everywhere facilities for cleanliness must be evident—cleanliness of the habitation and of the person. I endeavoured to give effect to all these views in the Frimley Sanatorium for the Brompton Consumption Hospital, opened two years ago by H.R.H. the Prince of Wales, and since then two other sanatoria of exactly the same number of beds have been opened, that for the North London Hospital and the King's Sanatorium at Midhurst, recently opened by His Majesty.

A residence in such a school of hygiene cannot but have its influence on all, rich and poor alike; and they will all go forth to preach and talk of what they saw and learned and of the results to those who lived under such conditions. But it will be said all cannot go to such places. True; but all can be and are influenced by those who are so privileged. Even in cities, in the hospitals and infirmaries similar conditions and similar educational advantages may be obtained. Wards and flat roofs may be designed and utilised for the treatment of consumptives. At Camberwell Infirmary we made the experiment of such design and utilisation, and the medical superintendent, Dr. Keats, informs me that the results are most gratifying, and will bear comparison with those in sanatoria.

I cannot but think that the public guardians of the health of the poor in towns might with great advantage follow this precedent, and so bring home to the denizens of crowded towns the same lessons which are taught in country sanatoria. I suggest that our large hospitals under private management might specially fit up some parts of their noble institutions for this particular method of treatment, and become schools of hygiene in a very special sense.

There has been a good deal said and written lately as to rural by-laws and their effect on housing the poor. The

fact is we in England are slow to move, and when we do move we too frequently go to extremes.

In the general consideration of better house construction it was legitimate to bear carefully in mind the danger from fire in cities and towns, and to insist on using materials that were fire-resisting, and the Local Government Board did a great service in preparing model by-laws, so as to insure some uniformity throughout our urban districts. On the creation of rural sanitary authorities the question of sanitary building construction came up of necessity for consideration, and frequently, for want of knowledge, it was assumed that the local board could not do better than adopt (sometimes with practically no modification) the model by-laws. These, however, were never intended as hard-and-fast rules applicable everywhere, but as models on which local authorities might work as a text. In the result rules that were reasonable in towns were unreasonably adopted and insisted on in hamlets, and the cost of housing the poor was greatly increased. It is reasonable to insist (and as sanitarians we should insist) on damp-courses in the walls, on preventing ground-air from passing into rooms, on sound drainage and its ventilation, and on preventing water pollution; but beyond these essentials a great many of the present requirements for cottages are not only unnecessary but are deterrent of building, and so the agricultural labourer is driven away for lack of residences.

In the recent exhibition of cottages at Letchworth there was nothing very new in design or illuminating in construction, but such exhibitions are stimulating.

From housing the workmen to housing those who are past work is a natural transition, and I should like to say a few words on what is a national question. This is no place for discussing politics, but the unemployed and unemployable are with us, and we must take care that we do not let legitimate sentiment for unavoidable and temporary distress obscure our vision and lead us into the fatal mistake of pauperising large masses of people. The subject is no new one, but has been before our forefathers for centuries, and the Legislature has attempted again and again to grapple with it, notably since the reign of Queen Elizabeth.

From various causes there have always been large numbers of idle people—some from no fault of their own, many from choice. We are apt to think it a modern result of the vast increase of our population, of the advance of civilisation, but the proportion of indigent persons to population is far less now than when England was sparsely populated.

It would take almost a volume to discuss the subject of the relief of the poor, but we are familiar with what are still called workhouses, with infirmaries and asylums. With the last two classes of admirable philanthropic institutions I do not propose to deal, but I should like to throw out for consideration the possibility of an improvement in the principle and type of workhouses. Would it not be possible to grade our homes for the indigent classes? At present the worthy aged poor who have done their honest life's work, and those who from lack of employment are temporarily indigent, are associated with the thriftless, the idle, and the otherwise unemployable. Could we not separate these three classes? Instead of one large workhouse to contain all, could we not have a home for the worthy aged poor, another for the temporarily unemployed and a third for the other class? The last to be a real workhouse, whose inmates should be under discipline, compelled to work, taught to work and to earn their living where they lack the knowledge, and all made to learn that they have a duty to the community as imperative as that of the community to them. As they learn their duty and become employable they should be entitled, when necessity arises, to claim the right to reception into the higher grade home for the unemployed, and if misfortune should fall on them in their old age should know that they will be ultimately received into the highest grade home for the worthy aged.

It will, of course, be asked, "Will not work so done compete with that done by wage-earners outside?" But I think if their work were confined to supplying the needs of the three classes of homes it would be a fair and reasonable employment.

Now, as architects we can assist the authorities in the design of such buildings as are suitable to these classes, each one differing in its characteristics from the others. Attempts have been made to classify inmates of present poorhouses. I suggest the classification of the houses themselves.

In the field of building construction the use of steel is

now and will probably become more and more general, and, for a reason that will be presently touched on, its modern application affects the salubrity of our cities. The practice of a skeleton of stanchions and girders rivetted and bolted together to carry all the weight, merely clothing these with brick and stone, is a type of building now commonly seen. The San Francisco fire has demonstrated one great advantage of this form of structure. This consists in the fact that all parts are of one metal tied and bound together; whereas in a building with walls of stone or brick, relying for their stability principally on specific gravity and gravitation, and only held together by an earthy material of comparatively small tensile strength, supporting horizontal supports of other materials, there is manifestly less cohesion, and any disturbance of the foundations will produce greater damage or destruction of the fabric than in the other structure. Reinforced concrete is the latest evolution of steel used in combination with cement and concrete. Its strength has been demonstrated; but I feel that one danger lurks in it, and that is the effect of fire and water on it. Slight piers of the material are used for very large loads, and should a fire play directly on these piers the cement will, I fear, crack, letting in moist air or water, which will oxidise the steel and destroy it. I have heard of reservoirs constructed of the material where this result has happened, and the rust has burst the concrete. In reinforced concrete the strength lies in the perfect combination and cohesion of two materials. If this be interfered with, collapse must follow, for neither the steel nor the concrete alone is of adequate strength to support the load easily carried by their combined strength.

Steel-framed construction has evolved the skyscraper of twenty or more storeys, and, however interesting this may be as a feat of engineering and permissible in isolated cases, its general adoption as a means of expansion of floor area would be an unmitigated evil in our streets, shutting out all sunlight and creating deep channels for wind currents. Already the overcrowding arising from unreasonable concentration has produced great evils and taught its lessons.

In the broader aspect of sanitation we have to consider the laying out of our towns and cities. With electricity and other auto-motor means of transport we may spread ourselves out, give more air-space about our buildings, leave open squares, gardens and parks as oases in the desert of buildings, to the advantage of all, to the brightening of our lives and the refining of our tastes; to the broadening of our ideas and to the stimulating of our creative faculties.

The benefits of such an expansion to the appearance of our large towns are hardly calculable, but the greatest of these would be in the incentive it would give to local patriotism, to creating a pride in one's environment, because it is something of which to be proud. No one who visits Paris or Vienna can fail to feel the breadth and stateliness of the open spaces and boulevards, and the same sentiment is awakened at Edinburgh. When our black country towns become white, and the enlightened policy of our modern municipal councils has cut wide and noble thoroughfares through what were the dens and alleys of their cities, we shall be able to point with pride to these great centres not only of wealth, but of taste, stateliness and culture.

In conclusion, may we also press on the public at large to take care that new buildings shall be worthy of our towns and cities; that there shall be a real desire to get good architecture to adorn their streets? The Royal Institute of British Architects has been earnestly striving for many years to raise the standard of the practitioners of our art by enforcing thorough training, by making the examinations for young architects sound test of knowledge, but many men (particularly in the provinces) evade these and hold aloof from our organisation on the ground that it is useless for them to toil, because the incompetent man, unequipped by study and having no claim to the title of architect which he assumes, receives the employment which his local friends secure for him without inquiry as to whether the representative body of architects have given him their diploma or not. May we hope that the Institute's efforts will receive the cordial support of all public-minded men, because then we may be sure the standard of architectural art in the public mind will be raised, and competent men alone will be commissioned to see to the adornment of the great centres of industry, of liberty and of throbbing life, which are the glory of our country.

The Governors of Dulwich College have given notice that the picture gallery will be open to the public on Sunday afternoons until further notice from two till five o'clock.

NATIONAL PORTRAIT GALLERY.

THE trustees of the National Portrait Gallery in their annual report state that owing to the congested state of the galleries the difficulty of finding space on the walls for the proper exhibition of recent acquisitions continues to increase, and the attempt to maintain a chronological and historical arrangement of the portraits will soon become unavailing. Portraits, especially those of a large size, have to be hung in most unsuitable places. The trouble caused by the shifting and rearrangement of pictures in the event of new acquisitions adds greatly to the labour and consequently to the expense of the Gallery. The trustees have been in further communication with the War Office as to the future disposition of the site now occupied by St. George's Barracks, but up to the date of the report no reply has been received from the military authorities. It cannot therefore be said that the trustees have any immediate prospect of obtaining the extension of the Gallery which has become of such urgent necessity.

The communication by alarm-bells has now been established throughout the Gallery. A new series of regulations in the case of an outbreak of fire has been drawn up and approved. The work of installing electric ventilating fans in the roof of the main building of the Gallery, which has done so much to mitigate the intense heat experienced during the summer months in the top galleries, has been most satisfactorily continued in the east wing.

The donations, loans or bequests during the past year were:—Rev. Rowland Hill (small plaster bust), George Frederick Watts (painted, unfinished, by himself), Cecil John Rhodes (painted, unfinished, by George Frederick Watts, R.A.), John Arthur Douglas, second Baron Bloomfield (by Sir Thomas Lawrence, P.R.A.), Sir John Walter Huddleston (by Francis Holl, R.A.), Edmund Lodge, F.S.A. (by Lemuel Francis Abbott), Charles Abbot, first Baron Colchester (by John Hoppner, R.A.), Owen Swinny or MacSwinny (by Peter van Bleeck), Henry Fawcett (colossal bust), Sir Cyril Wych (painter uncertain), Sir James Brooke (bust by Thomas Woolner, R.A.), John Addington Symonds (crayon drawing by Carlo Orsi), Dugald Stewart (drawn by John Henning), Thomas Campbell (drawn by John Henning).

The purchases were:—Joanna Southcott (drawn by William Sharp), David Cox (by William Radclyffe, junior), Augustus Welby Northmore Pugin (painter uncertain), Mary Ann Cross, "George Eliot" (replica by M. d'Albert Durade), Tiberius Cavallo (painted probably by John Zoffany, R.A.), Alfred Stevens (plaster cast from mask), Captain James Cook (painted for the Governor of Newfoundland), James Smith (painted by James Lonsdale), Sir John Harman (painted by Sir Peter Lely), Richard Graham, Viscount Preston (attributed to Sir Godfrey Kneller), John Joshua Kirby, F.R.S. (painted by Thomas Gainsborough, R.A.), William Cowper (drawn in crayons by George Romney), Charles Talbot, Duke of Shrewsbury (attributed to Sir Godfrey Kneller), Heneage Finch, first Earl of Nottingham (painted by Sir Peter Lely), Archibald Campbell Tait, D.D. (drawn by Lowes Dickinson), Thomas Love Peacock (painted by Henry Wallis), Sir Hector Munro, K.B. (artist uncertain).

THE LATE F. J. C. MAY.

THE announcement of the death at Hampstead on Saturday morning of Mr. Francis J. C. May, formerly borough engineer and surveyor of Brighton, will be received, says the *Sussex Daily News*, with feelings of genuine regret in many circles in the borough, in which he had a large number of friends, who recognised in him, apart from his professional capabilities, a man of wide sympathies and generous impulses. Mr. May, who recently completed his sixty-seventh year, was the head of an old Kentish family, and was educated at Islington under the Rev. George Darnell, M.A. Articled to a relative who was a partner in the firm of Wm. Cubitt & Co., London, deceased gained his first public appointment in 1872, when he was elected surveyor to Malling Highway Board, Kent, and subsequently to Malling Rural Sanitary Authority. In 1882 he was appointed borough surveyor of Maidstone, and in 1889 borough engineer and surveyor of Brighton, a position he held for a period of sixteen years. He succeeded Mr. P. C. Lockwood, who, singularly enough, resigned his position as consulting engineer only a month or two before Mr. May felt it incumbent to take a similar step, although for a different reason. Mr. May came with the highest credentials from Maidstone, and during his official con-

nection with Brighton the town developed tremendously, and the demands upon him were many and varied. He designed and carried out a number of the most important of its modern works, among them the abattoir, destructor, sanatorium, technical school, swimming bath and extensive main drainage and sea-defence works, and the remodelling of the town hall and market and the free library buildings.

His association with the Corporation practically terminated on March 25, 1905, though his resignation was accepted at a meeting of the Council on March 2, 1905, when it was resolved that his resignation, which had been tendered to a meeting of the general purposes committee on February 24, 1905, should be accepted as from September 29, and that he be granted leave of absence from March 25. His retirement was connected with the unfortunate litigation arising out of the contract for laying tramways, which ended in the town being called upon to pay the contractors 17,500*l.* for work which it was intended should be included in the amount of the contract, but which was claimed as extras. In addition the town had to pay its own costs in the litigation, and Mr. May was held responsible for not calling attention to the fact that the contractors had raised the question of extras before commencing the work, and that they had charged for extras in some early accounts they rendered. At an early stage of the proceedings which gave rise to the litigation Mr. May strongly complained of "unwarrantable and unjust insinuations and innuendoes" made against him by certain members of the Council, and in a special report which he presented to the works committee denied, on behalf of those associated with him in supervising the work, as well as for himself, that there was the slightest justification for them, and called upon the committee to take such steps as they considered necessary to vindicate his honour in as public a manner as the insinuations were made. This was in May 1903, and the conclusion arrived at by the committee was that the statements complained of "were in most cases contrary to fact, that those for which there is any foundation are greatly exaggerated, and that the statements referred to so far as they charge the committee or the borough surveyor with neglect of duty or improper conduct are wholly unjustifiable." There is no doubt that the strain and anxiety of the protracted dispute told greatly on Mr. May's health, and although, following a period of rest after his resignation, he recovered sufficiently to start in private practice at Brighton, he was soon compelled, under urgent medical pressure, to relinquish it. His professional brethren formed a very high opinion of his character and abilities, and the Incorporated Association of Municipal and County Engineers conferred upon him the distinction of electing him President, and also of appointing him examiner in engineering, building construction and sanitary science. He leaves a widow, two daughters and seven sons.

DISCOVERIES IN EGYPT AND NUBIA.

IT has been announced by Mr. John Garstang that the expedition which was despatched in the autumn of last year, under the auspices of the Institute of Archaeology of the Liverpool University, has completed its season's work and returned to England. The objects discovered will be exhibited in the city museums of Liverpool from Wednesday, July 11, until the 26th. The Chancellor of the University, the Earl of Derby, will inaugurate the exhibition.

The explorations of which these antiquities are the outcome were conducted over a somewhat large tract of country, and the objects to be exhibited represent several distinct periods of Egyptian history. In the first place, the expedition resumed its work at Esna, and there completed the excavation of a site which has proved of considerable importance from the historical standpoint, inasmuch as it has provided what is possibly the most representative and complete series of Egyptian antiquities of the Hyksos period. The objects themselves are for the most part of a character which accords well with the provincial situation of the ancient Latopolis; but perhaps from that very cause they will prove of surer value to archaeology in that they illustrate the remains, both domestic and funerary, of the Egyptian people themselves rather than more attractive antiquities fashioned specially for the funerals of great officials or royal personages.

Meanwhile, during the course of these excavations a systematic exploration had been made of the desert lying to the south of Esna for a distance of sixty miles. Most of the sites of antiquities had been very much disturbed, but

it was possible to sift from them certain slight evidences which seemed to bear directly upon the problem of the origins of the Upper Egyptians. Following the clues thus indicated, the expedition moved camp into the heart of Nubia in the hopes of there getting beyond the reach of modern plunderers and of being able possibly to distinguish by an examination of the archaeology of that region those features of the early Egyptian culture which might be considered to be African rather than Asiatic in origin.

Excavations were made at Kubban and at Dakke; at both places something of interest was found, which will be described in a special publication; but the chief interest was awakened by the discovery of an undisturbed necropolis near the ancient fortress of Kostamneh, which lies some five miles to the north of Dakke upon the west bank. Some 200 graves were excavated and a complete record made, with photographs and notes, of every feature of interest which they disclosed. It may be said in brief that in many respects the objects and funereal customs reveal a close analogy with pre-dynastic and early dynastic people of Upper Egypt; but, at the same time, many vases of pottery were found which seemed to resemble more closely those sporadic examples which are found intruding themselves into the Egyptian graves lower down the Nile during the twelfth dynasty or thereabouts, and have been generally attributed by archaeologists to a reincursion of some element of the primeval population. These objects will all be exhibited during the coming weeks; but it is hardly possible to say without further study, indeed without more evidence of a comparative character, to what precise period in Egyptian history these must be assigned.

These discoveries open up a problem of first interest connected with the early days of the Egyptian civilisation. They suggest, in short, that possibly the primitive type of Egyptian culture, as illustrated in the now familiar graves of pre-dynastic and archaic times in Central Egypt, may have survived in these remoter districts of Upper Egypt, not merely into the early historic phase after the founding of the monarchy, but far down into the dynasties, possibly even to the twelfth dynasty or later. These considerations are considerably illuminated by the remarkable survivals in modern Nubia of many small features of the Egyptian civilisation, which is illustrated even by the hairdressing of the girls and the manner in which the bread is prepared for baking.

The exhibition will also contain a series of interesting antiquities discovered during a month's tentative work at Abydos, to which place the expedition removed when the heat in Nubia became too great for further work. In this famous necropolis, from which a distinguished English explorer recently recovered the history of Egypt's earliest kings, there still remains some ten or twelve years' organised and systematic work. The ancient Abdu throughout Egyptian history remained a favourite burying-place for the wealthy and the pious, and much history may be still recovered from its tumbled sands. It is this site that will probably form the centre of our work in the coming seasons.

THE INTERNATIONAL CONGRESS OF ARCHITECTS.

THE Duke of Argyll will take the chair, and the Princess Louise has promised to be present at the inaugural meeting of the seventh International Congress of Architects at the Guildhall, on Monday, July 16. At least 1,500 members, including 600 foreign delegates, are expected to attend the congress, which promises to be the most successful which has yet been held. The arrangements for the week, which have been made by the executive committee, supported by the Council of the Royal Institute of British Architects, are of an elaborate and interesting character. Papers will be read by distinguished members on subjects connected with architecture, possessing in many cases a public as well as a professional interest. Visits will be made to some of the principal buildings in London and to Oxford, Cambridge, Hatfield and Windsor, and an interesting feature will be an exhibition of photographs and models of notable buildings in this country, both ancient and contemporary. A soirée at the Royal Academy, a conversation at the Mansion House, a garden party at the Botanical Gardens and a farewell banquet are included in the programme of what promises to be a busy and delightful week.

The King is patron of the congress, the Prince of Wales hon. president, and the list of vice-presidents is both extensive and distinguished.

NOTES AND COMMENTS.

It needs no small courage on the part of a Scotsman to say a word against anything which is supposed to uphold the greatness of his country. Sir HERBERT MAXWELL has, however, braved all the consequences by saying boldly what every educated visitor to Holyrood must have known from a glance at the walls, viz. that the series of portraits of the kings of Scotland are all shams. Photographs on a large scale of a troupe of actors passing across the stage in the Witches' cave before the astonished MACBETH would have more reality, for they at least would be representations of men, and the Holyrood monarchs could never have been derived from anything living on this earth. They are the results of a contract entered into with one "JAMES DE WITTE Indweller in the Canongate." After the visit of CHARLES I. the palace must have been dismantled. CROMWELL ordered the rebuilding of it. Both CHARLES II. and his brother, who was JAMES VII. of Scotland, took so much interest in the palace it was supposed they intended to use it as a refuge in case of need. The portraits are a relic of that time, for they range from FERGUS I., who was supposed to have lived in the fourth century, down to CHARLES II., who reigned in the seventeenth. We must not be severe in judging them, for the painter contracted to produce the whole series of one hundred and ten within two years in return for payment of 120*l.* a year. He may have had some data for the appearance of the later monarchs, but for the others, if he employed models, they must have belonged to the lowest order of people. Scotland has many relics of the past, and it is not wise to allow it to be suggested that they are not more genuine than the portraits of the kings in the royal palace. The best way to deal with them would be to employ them as elements in a scheme for the decoration of the gallery. For that purpose it would be necessary to reduce the dimensions of each canvas. But the excisions could be executed on a large scale without any loss to art or history. After a tenure on the walls for over two centuries the portraits have some claim to be preserved, but that could be done by making medallions of them, and filling the intervening spaces of them with Scottish ornament.

It is proposed to erect college buildings in Bangor in connection with the Welsh University. At the present time Welshmen are asserting themselves, and they believe that they have some claim on such work. It has somehow got abroad that Welshmen are ineligible to take part in designing the new buildings. The college authorities repudiate any charge of unfairness, and the Carnarvonshire County Council, who are connected with the work, also profess to be in favour of their countrymen. The college committee propose to select five architects, each of whom is to receive a premium, but so far as is known a Welshman is not among them. In a case of the kind experience is essential, and, owing to the peculiar circumstances of the country, Welsh architects have not hitherto been able to prepare plans for such buildings. It would, no doubt, impose more trouble on the committee if the competition were open, but, considering the sensitiveness of Welshmen to anything which resembles unfairness, that course should have been adopted.

If it were desired to occupy the German mind with æsthetic problems in order to prevent them from discussing political defects, it would be difficult to find a better subject than the restoration of Heidelberg Castle. To practical minds it seems strange that sandstone walls which are so thick, and which, although not properly bound to other walls, show no signs of collapse, should be allowed to remain in a ruined state when a comparatively small outlay would make them once more parts of a large and most useful building. That kind of thought is exemplified by the projects which are brought forward from time to time for the restoration of at least some

parts of the building. Heidelberg as a town depends for existence in a large measure on the ruins, for it is in order to wander among them that the majority of visitors travel to the town. There are, of course, many University students, but as they belong to what may be called an institution they do not count like the strangers who come from many parts of the world. A few days ago the townsfolk met and entered into a protest against all restoration projects. Their action may be inspired by selfishness, but anti-restorers in all lands will agree with them. A collection of the German poems which were inspired by the sight of Heidelberg would be representative of the majority of the great poets of the country. And, indeed, some men are only remembered by their verses on the ruins. The discussion of the subject is likely to continue for many years, for, as we have suggested, it attracts German thoughts which otherwise might be turned to more dangerous subjects.

WE have often remarked on the foresight of the French in having models of sculpture, and sometimes of architecture, prepared at full size in order to judge of the effect of the contemplated works when executed. They are not expensive, for sometimes the model consists of only a slight framing covered with canvas, on which for sculpture the figure can be boldly painted. The London County Council propose to have models executed of the two propylæa which are recommended for Vauxhall Bridge. But the cost is to be 440*l.*, a sum which would amaze a French municipal council. As the granite propylæa are estimated to cost 15,400*l.*, it is not considered necessary to have very expensive models. It is said that "in order to withstand the high wind pressure which may be expected, and to provide a structure which might last for several months, each model should consist of a strong wooden staging securely anchored to the top of the existing granite piers. This staging would be faced with slabs of light fibrous plaster screwed to wood studding. The work would be of a special character, and we have therefore consulted a firm which has great experience in work of this description as to the probable cost." The kind of models employed in France are no doubt less substantial, but they endure long enough for the criticism required, and there is no need of wasting money on anchoring as if they were to be permanent structures. Because there is a balance out of the votes there is no need to waste it on structures which are likely to be removed within a year after their erection.

ILLUSTRATIONS.

OFFICES, ARGYLL COMPANY'S NEW MOTOR WORKS, VALE OF LEVEN, N.B.

THE illustrations show some parts of the new offices of the Argyll Company, which were recently opened. They are described in another part of this Journal this week.

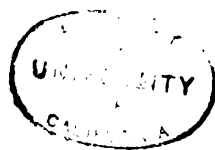
HOUSE AT FARRATT.

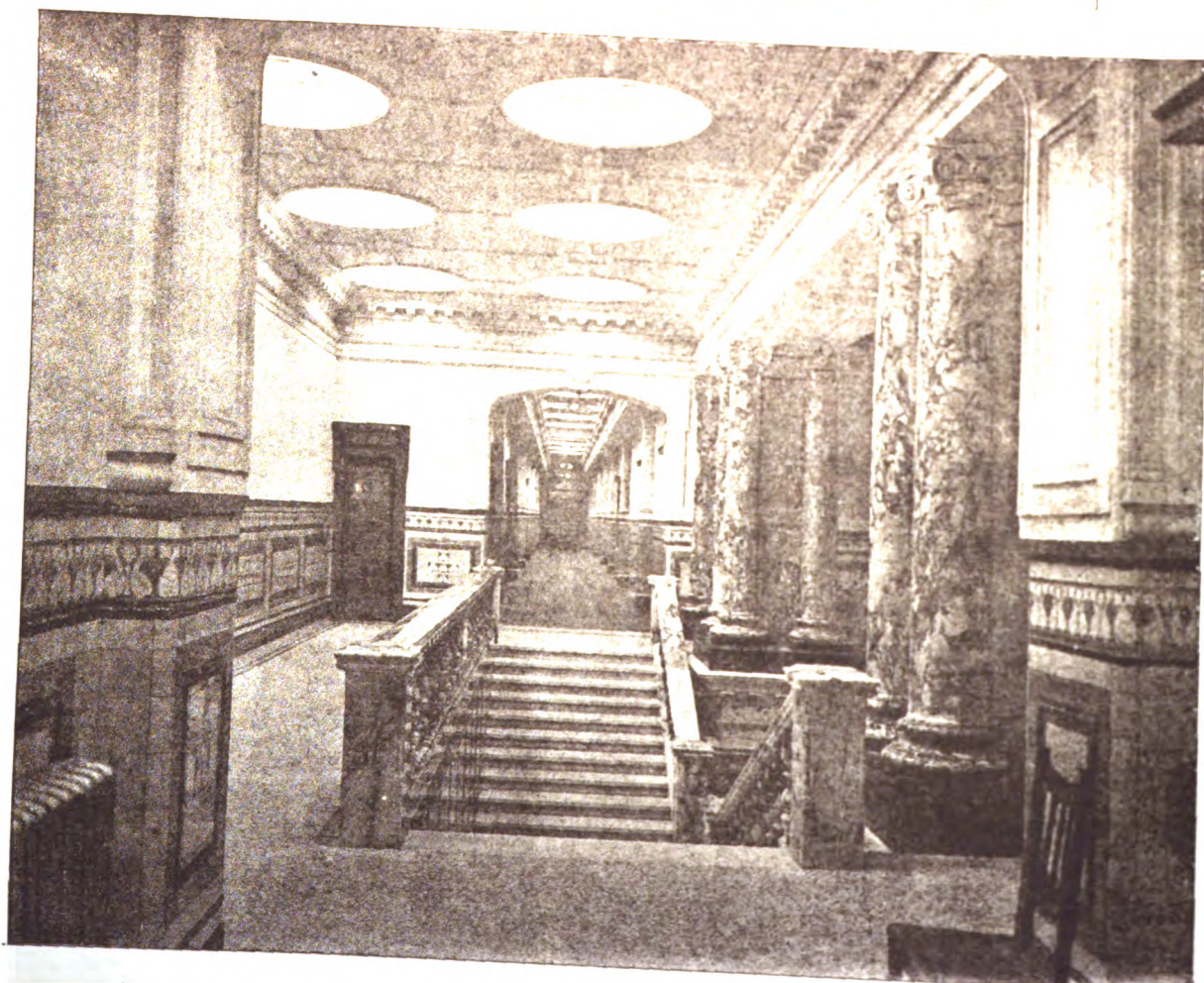
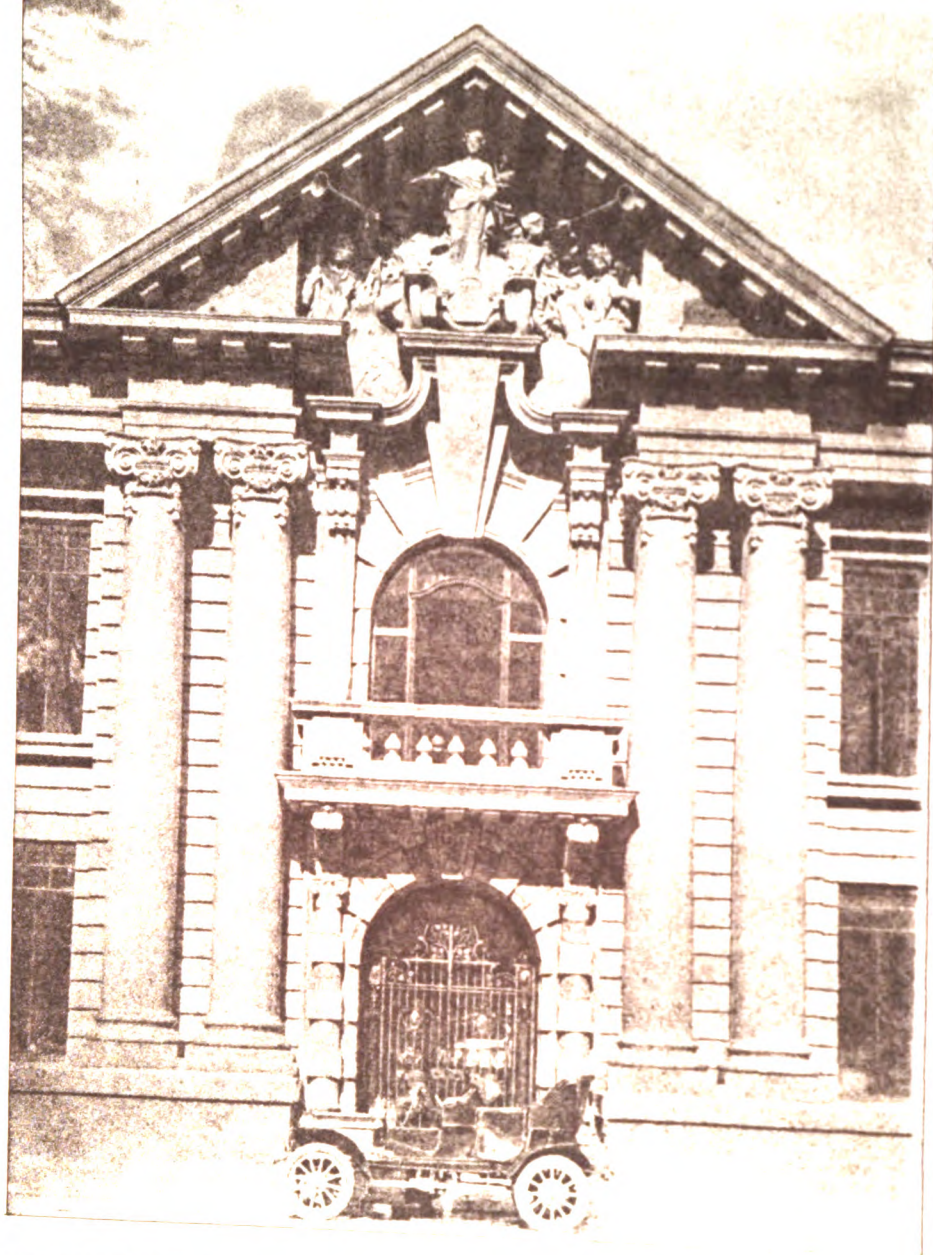
PROPOSED COUNTRY HOUSE.

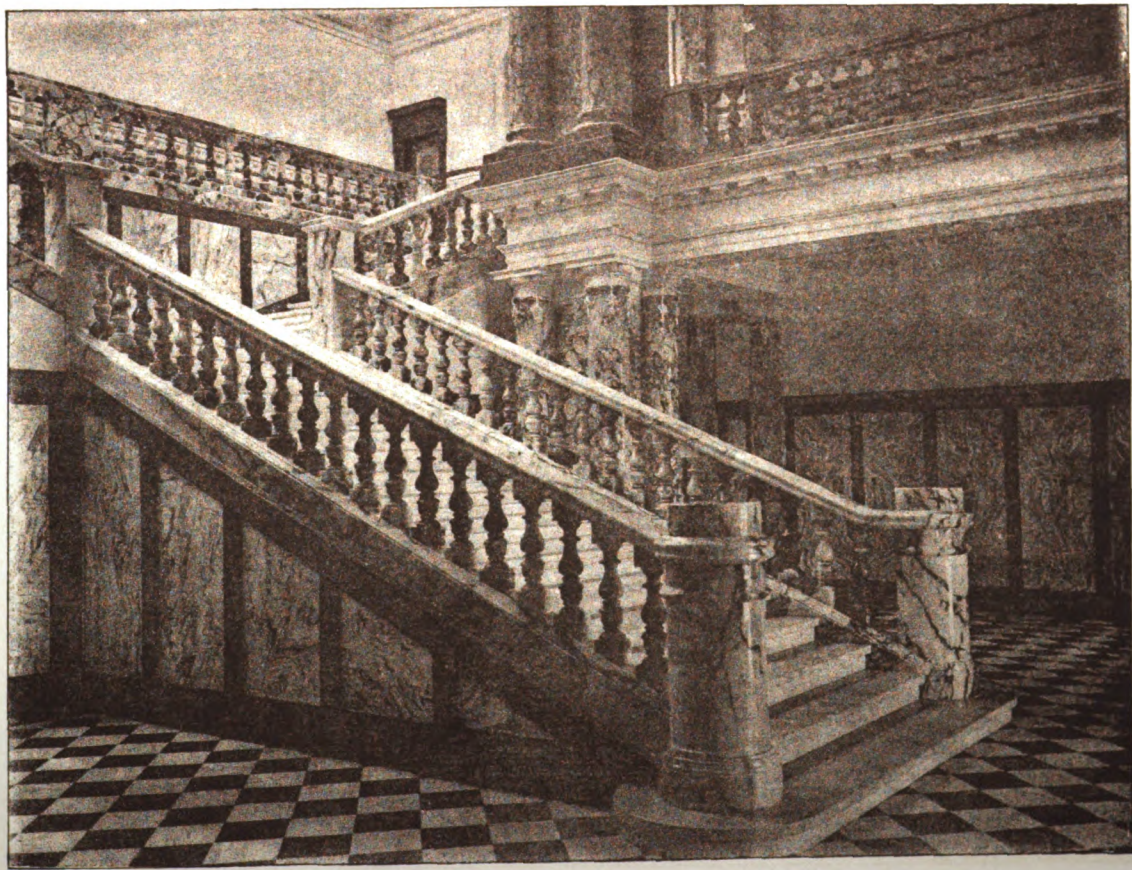
WE illustrate the preliminary design for a country house by Mr. J. E. DIXON-SPAIN, A.R.I.B.A. The planning is symmetrical, with a "central hall" motif. The lavatory accommodation is conveniently placed in conjunction with coat-and-hat space, the latter providing storage for bicycles, tennis, racquets, &c. A suite of children's rooms is arranged on the second floor, consisting of a large day nursery with an open-air railed-in balcony, night nursery, nurses' bedroom, &c. The materials will be local stone to first-floor level, rough-cast with red and brindled brick dressings, and quoins above and tile lintels, iron casements with leaded glazing and roof of grey-green Westmoreland slates.

COMPETITION DESIGN FOR PROPOSED CENTRAL LIBRARY, HACKNEY.

CATHEDRAL SERIES.—ST. DAVIDS: WEST FRONT, AND PART OF RUINED COLLEGE OF ST. MARY—EXTERIOR OF LADY CHAPEL.







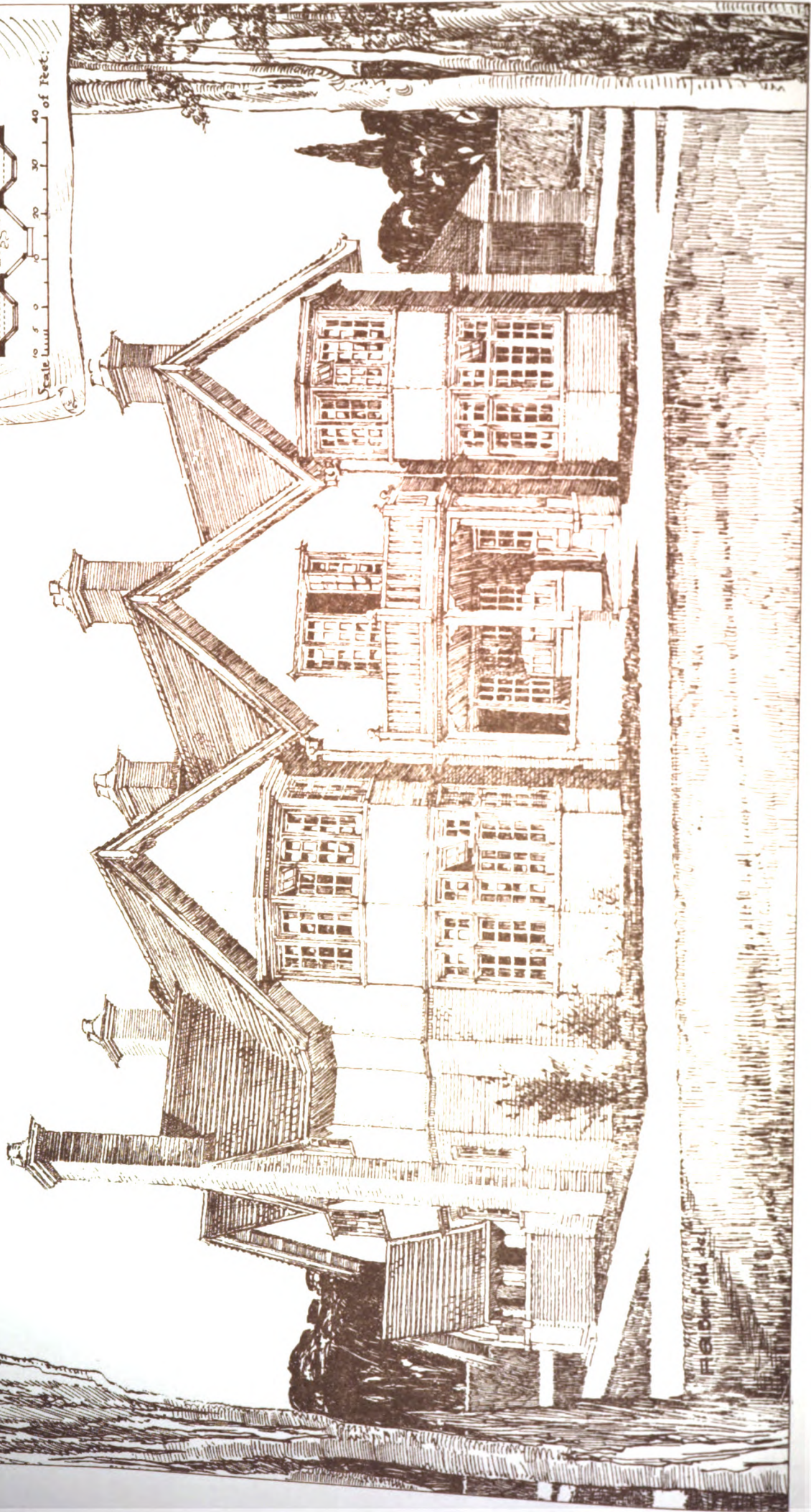
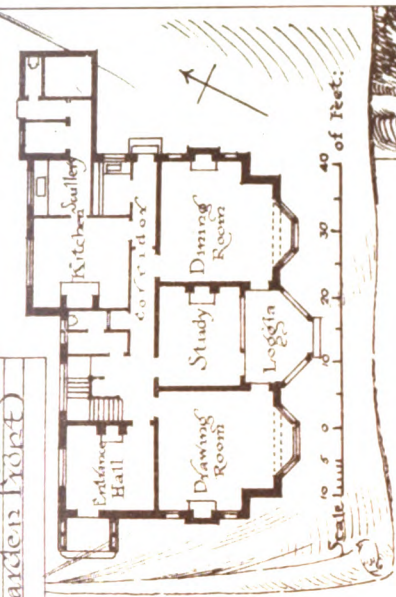
INK PHOTO, SPRAGUE & CO. LTD. 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.



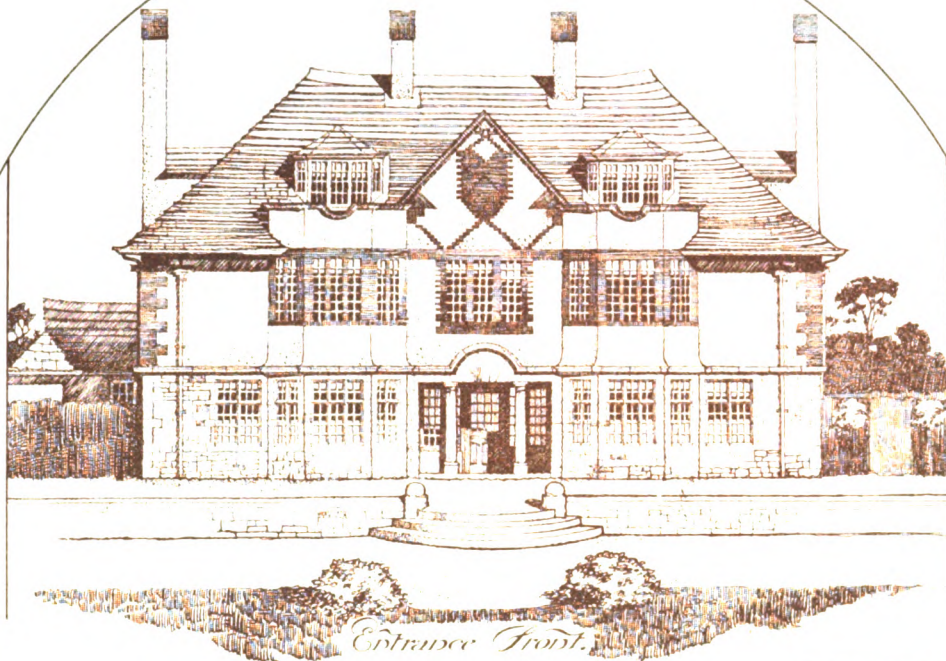


HOUSE, AL. JARRATT • For Desmond O'Connell, Esq.: Garden Port

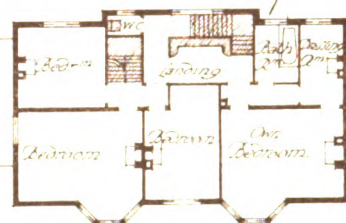
Walter E. Hewitt • A.R.I.B.A. Architect.



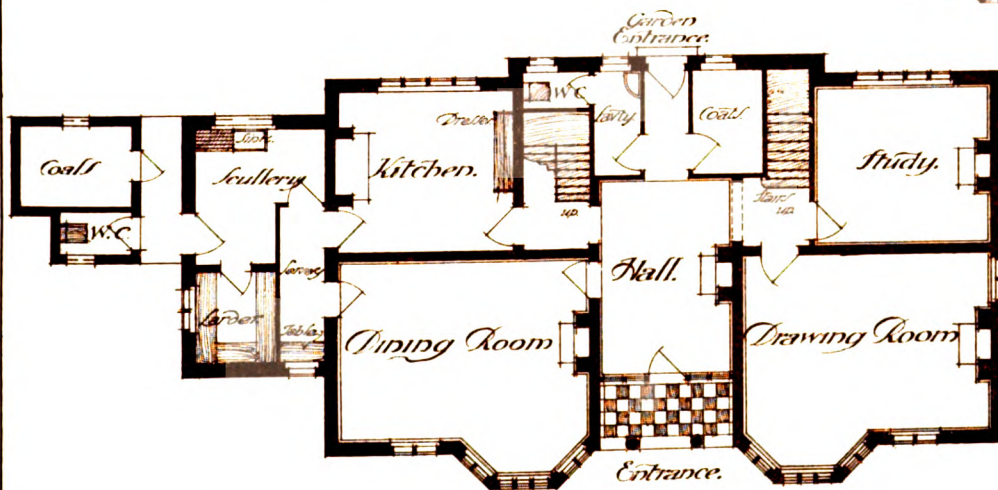
W. E. HEWITT, ARCHT. 11, ST. MARK'S PLACE, N.W. CORNER SEVEN, LANE, E.C.



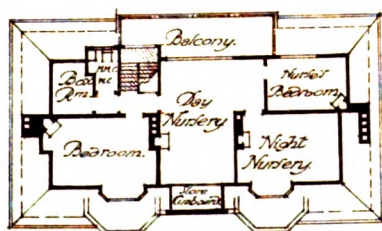
PROPOSED
COUNTRY HOUSE.



First Floor Plan.



Ground Floor Plan.

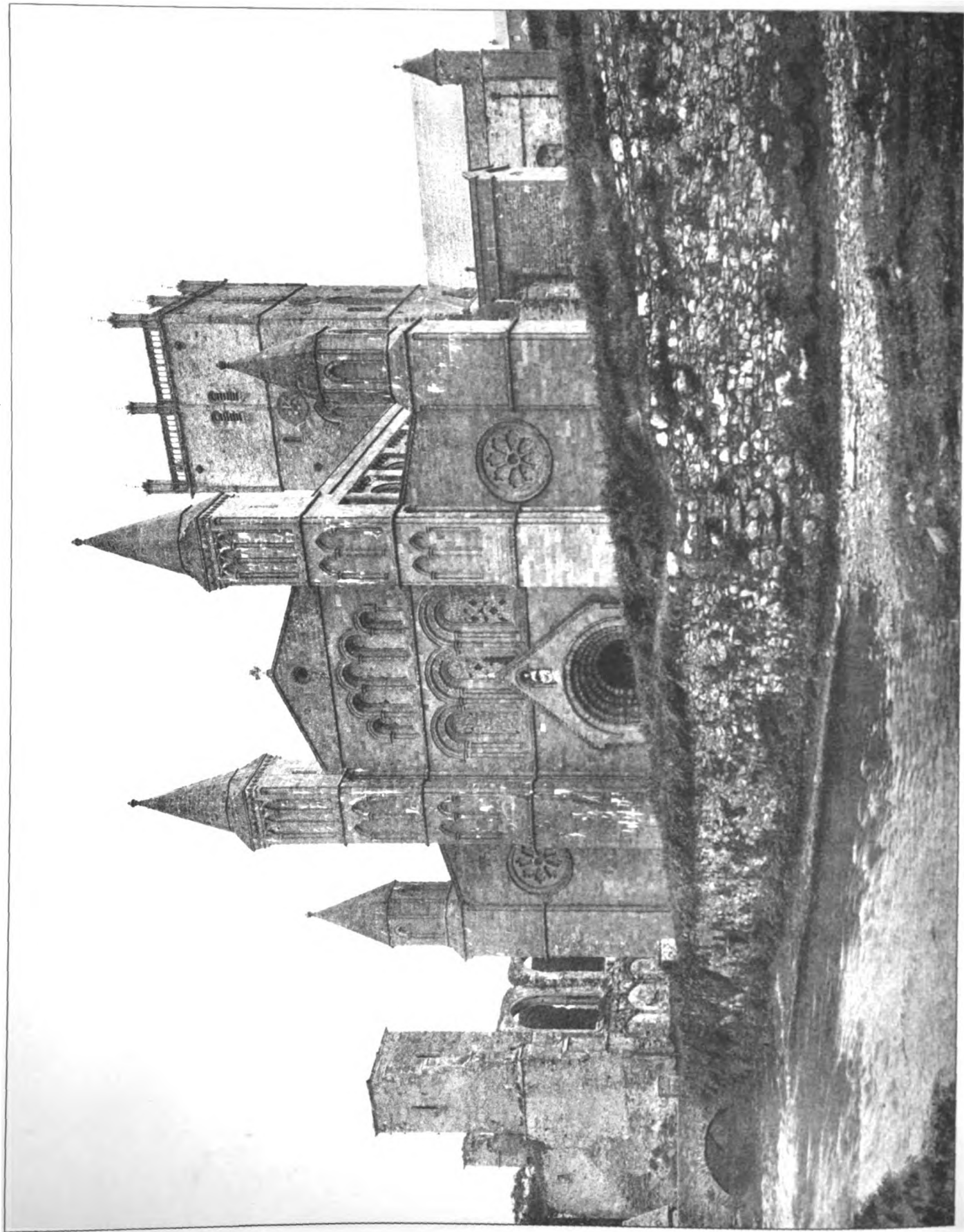


Attic Plan.

J. E. Dixon-Spain A.R.A. 1887.
Architect.

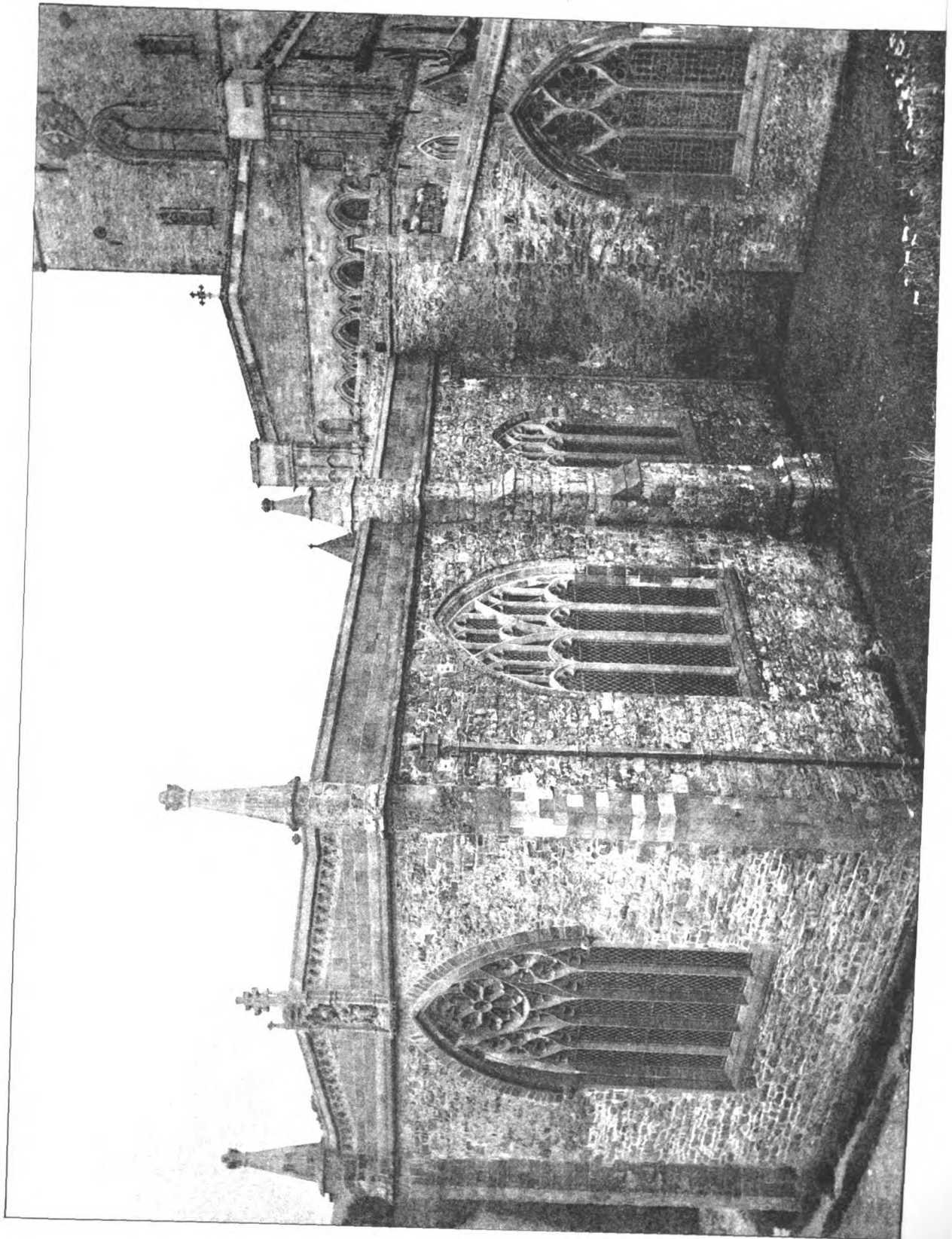






THE PHOTOGRAPHIC ARCHITECTURE EAST HAMPING STREET PETER LANE E.C.

CATHEDRAL SERIES, NO. 565. ST. DAVID'S: WEST FRONT, AND PART OF RUINED COLLEGE OF ST. MARY.





LONDON COUNTY COUNCIL
ADMINISTRATION.

A *PRECIS* of the evidence relating to the London Building Acts (Amendment) Act, 1905, has been published as a Parliamentary paper. The opportunity was taken to explain how the London County Council has exercised discretionary powers in the past :—

Objection was raised to giving the Council discretionary powers to make requirements, and there was much discussion of the past record of the London County Council in making requirements for means of escape, especially in the exercise of their powers under the Factory Act.

In 1898 the London Chamber of Commerce complained to the London County Council that some of their recent requisitions had been unreasonable, and that to carry them out would render useless for business purposes the premises concerned, owing (1) to the amount of valuable space which would be taken up by making extra staircases or enclosing existing staircases; (2) to the extreme difficulty of extending premises or acquiring additional space so as to comply with the requisitions; (3) to the alteration or removal by the Council's directions of structures, partitions, &c., approved by His Majesty's Inspectors of Factories for regulating temperature or for other purposes. They stated, further, that instances had come to the knowledge of the Chamber when the absolute removal of factories to other premises outside the district in which they had been established for years past had been necessitated or was contemplated through the difficulty of complying with the Council's requirements.

Mr. Riley, the superintending architect, when reminded of these representations, said that he did not believe any removals had been due to the action of the London County Council. Occupiers had left London because it was more convenient and more economical to carry on their business in the country. In 1898 there were 500,000 persons employed in factories and workshops, and he believed there were more employed at present. People naturally complained of the demands of the Council, but on the whole he thought the administration was satisfactory.

Later Mr. Lilley, on behalf of Lilley & Skinner's, stated they would like to move a factory from Bristol to London, but were deterred by the heaviness and uncertainty of the Council's requirements. He admitted that the Council ought to have power in all cases to demand reasonable means of escape from every building in London, and if there were a right to arbitration there would, he thought, be no hardship.

Mr. George Lewis, a solicitor, quoted a case in which a firm who were tenants of his had left a London factory and moved into the country, and had given the demands of the Council as their reason for going. Witness had also found a difficulty in letting property unless he could assure prospective tenants that they would be free from the demands of the London County Council, and sometimes it took months to get a letter from the Council saying they were satisfied with the means of escape. As for expense, Mr. Lewis had spent altogether 13,000*l.* in eleven different sums in satisfying requirements of Council under the Factory and Workshop Act. The total rental of his property was 22,000*l.*, but not all the buildings had been provided with means of escape. The 13,000*l.*, however, includes the expenditure in Redcross Street, where the building was put up, although the Council had refused a certificate under the Factory Act, and the expenditure in Moor Lane.

Mr. A. R. Stenning quoted a case in which the occupier of a pin factory in Tooley Street, employing from 180 to 200 hands, had left premises owned by Christ's Hospital rather than comply with the Council's demands.

Mr. Luke, managing director of Gilbert & Rivington, thought the expense imposed under the Factory Act might have been lessened if the Council's officials had been more willing to consider alternative proposals.

In connection with the complaint of the Chamber of Commerce referred to above, a deputation had waited on the Council, and, as a result, the Council had promised to take into consideration alternative proposals made by owners. Since, then, it was said, the Council had been more willing to consider any alternative proposals instead of going to arbitration.

The Council claimed, however, that alternative suggestions were always considered. It was their practice, before a formal notice of their requirements was served, to send an informal letter setting out their proposals and inviting alternative suggestions.

It was suggested also that the discretion of the Council meant the discretion of the Council's officials, but this was denied. Some members of the Building Act committee have been on it ever since it was established, and they are experts able to examine the architect's recommendations. The committee consists of ten or twelve members, and contains four builders; there are no architects or surveyors among its numbers.

Mr. E. White, a member of the Building Act committee, who was opposed to the Bill, gave evidence that some years ago it was found that requirements which looked harmless were sometimes very costly, and a rule had been made that all cases where the requirements might be considered to entail an expenditure of 300*l.* or more should be reported to the committee before the sealed notices were served.

Some specific cases were quoted in which the requirements of the London County Council were considered to be very costly.

In Redcross Street, on the site of buildings destroyed by fire, new buildings were to be erected, and the Council's demands, it was said, would have taken 20 feet off a frontage of 50 feet, but ultimately, after two years, during which 730*l.* worth of penalties for which they did not dare to press had been incurred, they accepted an additional bridge in lieu of the proposed staircases.

Mr. Riley explained this case to the committee with plans. Before the building was put up the Council made certain requisitions as to staircases. The building, however, was put up in defiance of their demands. To alter it afterwards in accordance with the original requisitions would have cost 4,000*l.* Ultimately, amongst other suggestions, means of access were proposed to an adjoining building (the Council could not have requisitioned such means, as they would have involved trespass), and these suggestions being found satisfactory, the Council did not press for penalties. The suggestion that 20 feet of frontage would have been taken away by the Council's original requisitions was denied.

This case was again referred to later, and Mr. G. Lewis, who owned the property, stated that his original plan for the building had been pronounced by several architects to be satisfactory. Two years were occupied in negotiations with the Council, and ultimately, rather than have any further trouble, he accepted their final proposals, which involved an outlay of 200*l.*, though he thought them unreasonable.

At a house, 21 Moor Lane, it was stated the Council made requirements that would have cost 1,000*l.*, and eventually the arbitrator made an award involving an expenditure of 180*l.*

The Council said their first requisitions might have cost 800*l.* The arrangement finally made was for means of escape by balconies, which they could not have asked for, as they involved trespass on other property. The balconies lead into property occupied by the same firm, and counsel for the promoters suggested that if the owner had proposed this in the first instance there would have been no difficulty. The owner, however, stated that he was led to believe the Council would accept nothing but means of escape by way of a staircase.

The surveyor to the Merchant Taylors' Company quoted a case in which the Council's requirements under the Factory and Workshop Act cost just over 2,500*l.* in a building with a rental of about 250*l.*

Evidence, however, was afterwards given that the rental was 2,000*l.* The building was a big one, with a superficial area of about 6,700 feet, and 223 persons were employed there. The building was old. Two staircases were required, one of teak, and the other an outside iron staircase. Two gangways and many teak doors were required.

The surveyor also mentioned a case in which a private house was taken by a dressmaker, who employed more than forty persons, and the Council's requirements cost 1,200*l.*

Mr. E. T. Hall, vice-president of the Royal Institute of British Architects, mentioned a case in which requirements under the Factory and Workshop Act cost 3,200*l.* It appeared, however, that some extra expense had been incurred in this case by alterations not required by the Council.

In another case the cost was 1,500*l.* Witness had known the County Council staircases cost from 750*l.* up to 3,200*l.* He could give no information as to the rents of the buildings referred to.

Mr. F. J. Ronald, adviser to the Law Guaranteed Trust, mentioned a case in St. James's Court where the require-

ments of the London County Council under Section 63 of the Act of 1894 would cost his clients about 6,000*l.* The requirements were unnecessary, and further the tortuous ladders they were requiring would be the cause of accidents owing to people falling off. He had not gone to arbitration because the building had been put up by a speculative builder, and his clients, who were guarantors to the mortgagees, only became owners after the whole thing was practically arranged.

The Council pointed out that the building was occupied before a certificate was granted under Section 63 of the Act of 1894, and the owner was fined for the offence in the police court.

In the building of Harrod's Stores, the plans of a building which came under the Factory and Workshop Act, it was said, were first passed, and afterwards the Council made further demands, which meant, *inter alia*, the loss of two shop-fronts. An outlay of some thousands of pounds had been involved by their demands.

In reconstructing Swan & Edgar's premises in Regent Street 30,000*l.* had been spent, of which 10,000*l.* was said to be solely referable to the demands of the Council, partly under the Building Act and partly under the Factory and Workshop Act.

The Council, on the other hand, said the fewness of the cases in which there had been an appeal from their requisitions to arbitration showed the reasonableness of those requisitions. Under the Factory and Workshop Act, Mr. Riley had dealt with 2,344 cases, and there had been only eighteen appeals to arbitration, and of these six cases had gone to the High Court. (Cases only go to the High Court on matters of law.)

In all, out of 3,139 cases which had been dealt with under their existing powers, *i.e.* 2,344 factories and workshops, 164 theatres, 499 common lodging-houses and 132 high buildings, there had been only thirty-two appeals of any kind, roughly, 1 per cent., and Mr. Riley claimed that in every one of these cases the requirements of the Council had been justified.

The promoters also referred to a letter received from the Home Office in 1900, in which was the sentence, "Sir Matthew Ridley desires to take this opportunity of expressing his appreciation of the work done by the Council in the administration of these provisions of the Factory and Workshop Acts" (*i.e.* the provisions as to means of escape). Also in the reports of the Chief Inspector of Factories there had been references both by the chief inspector himself and by the London inspectors to the value of the work done by the Council.

One charge brought against the Council was that of delay. One witness said it took three or four days to get an answer from the Council, and sometimes six months to get a definite reply. The manager of Harrod's Stores gave evidence to a similar effect.

Under the Act of 1894, it was said, the district surveyor and the builder discuss the plans and the surveyor points out any irregularities. If there is a dispute the matter goes to a petty sessional court. But generally there is no dispute, and the building can be commenced as soon as the surveyor consents; there is seldom forty-eight hours' delay. Under the Bill, if officials have to report, and their report has to be considered by the Building Act committee, and perhaps some other committee and the decision has to be confirmed by the Council, there would, it was argued, be more than two months' delay caused.

In the Bill as introduced a right of appeal from the requirements of the Council was given in the case of existing buildings which are high buildings and twenty-person buildings. The promoters also early in the case expressed their readiness to give a right of appeal in the case of existing buildings coming under the provisions as to projecting shops and as to means of escape to the roof. They objected to giving a right of appeal in the case of existing buildings coming under the provisions relating to places where inflammable liquid is stored, but the committee decided to maintain the principle of giving a right of appeal in all cases so far as existing buildings are concerned, and the clause as to premises in which inflammable liquids are stored was amended accordingly.

The petitioners pressed for a right of appeal from the Council's requirements in the case of new buildings also.

The agent for the Rolls Estate thought it unreasonable that builders should be left at the mercy of the Building Act committee. The present committee might be reasonable, but at a future date another committee might make unreasonable requirements.

The main objection of the Chamber of Commerce to the provision as to new high and twenty-person buildings was that it allowed no appeal.

Mr. Lilley said that if a right of appeal was given in all cases there would be no hardship in the Bill.

When the committee came to the consideration of clauses all the opponents strongly pressed this point. The promoters, however, pointed out that no appeal was given in the case of new buildings under the Factory Act, the provisions of the Metropolitan Management Act as to theatres, or, as they claimed, under the Building Act of 1894, in constructional matters. A right of appeal was unnecessary, because in the case of buildings still to be erected the cost of meeting the requirements as to means of escape was small. To give a right of appeal in the case of new buildings would be to introduce a new principle and to fritter away to a large extent the value of the Bill.

The Commons committee supported the promoters.

When the Bill came before the House of Lords committee the opponents offered to allow the consideration of the preamble to be postponed if the promoters would consent to the right of appeal in the case of new buildings. The promoters, however, refused, and the point was again argued at length.

For precedents the promoters quoted the provisions of the Metropolitan Management Act as to theatres, the Factory Act, the provisions of the General Powers Act 1902 as to lodging-houses, and section 63 of the Act of 1894 as to high buildings.

As to the first three precedents, it was argued by the opponents that these Acts only dealt with special kinds of buildings, and did not, like the Bill, apply to buildings generally. The legislation as to theatres was full of special precautions, and was not a precedent for a general Bill. The Factory Act was a public and not a private Act, and consequently when it was being framed private interests were not heard. As to section 63 of the Act of 1894, that only applied to buildings over 60 feet, which were comparatively rare. According to Mr. Riley's evidence that 298 high buildings were 75 per cent. of the total number in London, this section would only affect about 400 buildings. But by reducing the height to 50 feet, as in the Bill, a great number of buildings would be brought in—2,000 of them—according to Mr. Riley's estimate of 1,400 as 75 per cent. of the total number. Further, twenty-person buildings were very numerous.

As to the precedents afforded by other sections of the Act of 1894 than Section 63, there was much dispute. Sections were quoted in which there was an appeal from the Council on such matters as space at the back of a building. Mr. Riley drew a distinction between the planning of sites and the internal planning of a building, and maintained there was no appeal from requirements as to construction. It was argued against this that such a distinction could not have been the principle guiding the Legislature in framing the Act. The principle that guided them was that of the importance of the requirements, and they gave an appeal in cases where owners' interests were seriously affected. Generally speaking, the Act of 1894 did not leave the Council discretionary powers; it specified the requirements. Section 63 was the only important exception.

The promoters argued that in the case of a new building the difficulty of meeting requirements as to means of escape was small, because there were no existing arrangements to consider. The builders started with a new project on paper, and could easily make alterations to meet the Council's demands. In reply it was pointed out that the question of sites was of vital importance. Unless the site could be utilised to the best possible advantage the cost of the building might be enormously increased. High buildings were naturally more frequently erected where land was valuable and twenty-person buildings were most common in the commercial parts of the town, where also land was valuable and sites were cramped, and the development of the sites for these buildings was particularly important. Again, in cases where a building was pulled down to half its actual extent, and then, when re-erected, became a new building, the question of the arrangement which would be most suitable to the site was clearly vital.

In all cases the requirement of an extra staircase might necessitate a totally different arrangement of the building. In letting land difficulties were likely to arise, as it would not be possible to know beforehand the Council's requirements, and until these were known it would not be possible to know how the site could be utilised, whereas a right of appeal would give a greater sense of security. The case

of the Tooley Street pin factory was quoted to illustrate how much tenants were afraid of the Council's requirements.

The opponents also urged that the argument of the Home Office against leaving the requirements as to means of escape to the roof in the discretion of the Council was an argument for limiting their discretion in these other matters by a right of appeal.

With every desire to be reasonable, a public body like the Council could not always take into consideration all the circumstances of a case. To avoid an appearance of impartiality they must be guided by general rules.

Before a tribunal of appeal an owner had a better chance of stating his case. It was only by the grace of the Building Act committee that an applicant could appear before them in person and state his objections to their requirements; he could always appear in person before the tribunal of appeal.

Further, the Building Act committee had not the same technical knowledge and experience as the arbitrators. The attention of the committee was directed only to the need of means of escape, and other important considerations familiar to persons with experience of building did not come before it.

What harm could there be in an appeal? If a man appealed unreasonably he would have to pay costs. The Council's statement as to the few cases in which there had been appeals under the Factory Act showed that the right of appeal was not likely to be abused.

The Council, on the other hand, maintained that no right of appeal in the case of existing buildings had been given by Section 63 of the Act of 1894, and no one had ever claimed there should be such a right. If a right of appeal were given, it would lessen the existing powers of the Council, as the provisions in the Bill were intended to take the place of Section 63.

Many insignificant disputes would arise, and to take them before the tribunal appointed to consider appeals with its ceremonious procedure would be absurd.

Complications would be caused. It would be unreasonable, e.g. for the Council to have to give a certificate for a building of which they might disapprove, but which had been erected in accordance with the requirements of the arbitration tribunal. A decision might be given by the tribunal as to means of escape, and then it might be necessary again to consider the whole construction of the building in view of the requirements of the Act of 1894 as to light and air, &c. (Against this it was argued that the tribunal would be competent to take all these considerations into account.)

Counsel for the promoters also suggested that there was some check on the Council's requirements already provided in the Bill. If they refused a certificate and the owner allowed a building to be occupied in defiance of their refusal, the magistrate before whom the owner was prosecuted would judge of the reasonableness of the Council's requirements. It was pointed out, however, that the magistrate would only be competent to decide if the certificate were wrongfully withheld, and it could not be considered wrongfully withheld if the building were not in accordance with plans approved by the Council.

The Council also maintained that their claim to discretionary power was justified by the approval given by the Home Office and Chief Inspector of Factories of their work under the Factory Act.

The House of Lords committee decided that there must be a right of appeal in the case of new as well as in the case of existing buildings.

MUNICIPAL REQUIREMENTS.*

THE proper housing of the labouring classes, both in urban and rural districts, is a "problem" which has not yet been satisfactorily solved. It involves not only engineering but serious economic questions which are not easy of solution.

The employment of the unemployed on municipal works is a somewhat similar problem. It is not an easy matter to find suitable work for the men who swell the ranks of the unemployed; many of them are unfortunately unfit for such work, and some of them are what the Germans call "work shy."

* From the address by Mr. H. Percy Boulnois, as president of the Conference of Engineers and Surveyors at the Congress of the Royal Sanitary Institute at Bristol on Tuesday.

Another question which "looms large in our perspective" is that of the recent revolution in the description of the locomotion on our roads and streets by the introduction of motor-cars and traction-engines, which have entirely altered the character of the traffic which our roads and streets were designed to carry. Whilst, on the other hand, their surfaces will not be subjected to the hard hammering of the horses' hoofs, they will be subject to a tearing, disintegrating action from the rapidly revolving pneumatic tyres of the motor-car and to greatly increased weight of the traction-engine and its accompanying loads.

Not only is this question one of future construction and maintenance of our roads and streets, but there is also the question of the dust raised by this rapid locomotion, which is becoming a terrible nuisance throughout the country and must be stopped before serious damage thereby is caused to persons and to property.

Whilst on the subject of our streets it may be well to call attention to the question which is now being raised in many quarters as to whether the rigid tramline and "inelastic" traffic of the tramcar is suitable for our crowded streets, and whether the motor omnibus is not a suitable substitute for the conveyance of the increasing traffic.

With regard to the supply and distribution of water, the question of the economical supply of pure water to our villages and scattered houses is worthy of every engineer's attention, as such supplies are required all over the country. Unfortunately the cost is generally prohibitive, or a local source of water-supply is only available by pumping, involving such an outlay and annual cost as is quite beyond the means of the district.

The various types of "wind-engine," which were introduced as a cheap means of pumping water, have not met with the success that was at one time hoped for them, chiefly owing to the uncertainty and unreliability of the velocity of the wind in this country.

There have been some improvements in pumping water since 1892, notably the introduction of the "air lift," whereby it has been made possible to raise more water from deep wells, especially in bores of small diameter, at a reduction in cost.

The manufacture of special jute-covered steel tubes for water-mains has, under certain conditions, tended to lessen the cost of the distribution of water where these tubes can be used instead of the ordinary cast-iron pipes, but hitherto it has been found that they are not suitable for service mains where they have to be tapped with ferrules for house services. For long lengths of sealed mains they can be laid with advantage, especially where there is any risk of ground subsidence.

Concrete construction has made considerable progress since 1892, due to the introduction of the Hennebique patent processes, and there is, no doubt, a large field open for this description of construction in many branches of engineering. The strengths obtained by this "fortified" concrete have been remarkable, and it looks as if our text-books on the strength of this material will have to be revised.

With regard to some of the minor questions with which you are constantly dealing, a discussion has again lately been revived as to whether the house drain should or should not be trapped before it enters the sewer, and there seems to be considerable divergence of opinion on the matter.

Street lighting has made great strides since 1892. The introduction of the Welsbach and other gas mantles has given a great impetus to gas-lighting, and although an improved electric arc lamp has been lately introduced, gas-lighting for the present seems to hold its own in street lighting where properly and scientifically carried out. There are, no doubt, still further developments to be made both with gas and electricity for lighting and heating purposes.

With regard to the disposal of house refuse, there have been some improvements in the construction of "destructors," whereby the gases are more thoroughly consumed, and we hear less of nuisances caused in the neighbourhood of these very necessary installations than was formerly the case.

With regard to public baths an improvement has lately been introduced whereby the water in a swimming bath can be filtered at a very small cost, so that the same water is used over and over again; this greatly reduces the cost of water, and also renders the water in the bath always bright and clear and more attractive on every day of the week, instead of allowing it to get dirty and discoloured before it is changed, which is the general practice.

I have endeavoured in this short address to draw attention to some of the questions in which you are all interested, and in which you all have to take a part in forming the real history of a country.

"Progress" is the watchword of every engineer, and it is especially so with the municipal engineer, as the eyes of the public are so constantly upon him, and he is subject to much criticism.

There is no finality in engineering, and it behoves us, who have the well-being of the country at heart, to take advantage of everything that will help us to meet the difficulties which must ensue from the modern desire of the human race to aggregate together in large centres of population. I trust that this conference may assist in the discussion and, perhaps, elucidation of some of the engineering problems that are now so prominently before the public.

CONCERNING MASONS AND MASONRY.

ACCORDING to Stow, "the Company of Masons, being otherwise termed Freemasons, of ancient standing and good reckoning, by means of affable and kind meetings divers times, and as a loving brotherhood should use to do, did frequent this mutual assembly in the time of King Henry IV., in the twelfth year of his most gracious reign. Their arms granted by William Hanckeston, Clarenceux King at Arms, 13 Edward IV." He also adds:—

"The Saxons were ignorant of building with stone until the year 680, for then it is affirmed that Benet, abbot of Wirrall, Master to the Reverend Bede, first brought artificers of stone houses and glass windows into this island amongst the Saxons, arts before that time unto them unknown, and therefore used they but wooden buildings. And to this accordeth Blicronicon, who says, 'that then had ye wooden churches, nay wooden chalices and golden priests, but since golden chalices and wooden priests.' And to knit up this argument King Edgar in his charter to the Abbey of Malmesbury, dated the year of Christ 974, hath words to this effect:—'All the monasteries in my realm, to the outward sight, are nothing but worm-eaten and rotten timbers and boards, and that worse is, within they are almost empty and void of divine service.'"

Mortar.

The word mortar comes from the Latin *mortarium*, a vessel in which things are pounded or brayed together like a salad. Hence applied to the lime, cement, &c., used for building purposes, which are blended together as if in a mortar.

Among the numerous conjectures how the excellent mortar of the ancient buildings was made there has been hesitation to suggest that articles so expensive as beer and eggs entered largely into the composition; yet, from the following items in an account for repairing the spire of Newark Church, the constituents included such additions:—

The whole charges for pointing the steeple to the battlements, donne and begonne in Easter weke and ended the weke before Cross weke, in the yere of Our Lord a thousand five hundred seventy-one and in the thirteenth yere of the reign of Our Sovereign Ladye Quene Elizabeth, and in the time of Mr. John Brignell, their alderman:—

Item, one grette rope for the cradell pulley	£0 15 0
Item, six strike of malte to make worthe to blend with the lyme, and temper the same	0 7 2
Item, seven quarter lyme	0 4 0
Item, three hundred and a halfe eiggs, to temper same lyme with	0 4 8
Item, a load of sand and smithe come	0 1 6
Item, a rope to draw up the cradell with	0 1 6
Item, for a rope making	0 3 4
Item, paid to the mason for workmanship of the same steeple	4 0 6
Item, gave him in rewarde bezydes his usages	0 11 8
Item, for bruynge the malte	0 1 2
Item, paid to his laborer for twenty-seven daies	0 13 6
Item, for southeringe the wether coke	0 3 4

Summa totalis £7 7 9

Other observations arise out of this account. In the first place, it is evident that no scaffolding was used, but only a cradle and ropes; secondly, what is meant by "Cross week"? which seems to have occurred about five-and-thirty days after Easter week, as the labourer was paid for twenty-seven days' work, which began in Easter week and finished the week before Cross week.

The churchwardens of St. Martin's, Leicester, having

determined in 1606 to point the steeple, purchased the following with which to make the mortar and cement:—

Item, payd for one loade of lyme	vj	d
Item, payd to John Harris for one loade of sande	xvj	
Item, for egges	iiij	vij
Item, for iiij th of allome	—	x
Item, for j strike of peeces	—	ix
Item, payd for iiij th of rosen	—	vij
Item, for woode to seeth the peeces	—	iiij
Item, payd for more egges	iiij	—
Item, payd for three strikes of mault	vj	—
Item, for three strikes of Smythie come	—	iiij

From a similar set of entries made in 1609 we learn the "peeces" mentioned above were "glovers' peeces," and from another set under the date of 1630 we obtain the fuller description:—

Paid for calves leather peeces to make the size with	ij	d
	x	

As just seen, our forefathers believed that beer, eggs and various other such like things if put into mortar made it stronger. In the church accounts of South Lincolnshire there is an entry under the year 1616 for "ix quarts of ale to make Craven's mortar strong xviii^d." Craven was the master mason. He and two of his men were employed at this time in repairing the steeple and the "chancell end." In the same account under the year 1714 there occurs the following:—"For two quarts of ale and two pound and a half of cheese to make Simonds mortar ix. 1^d."

There was formerly a notion that mortar was at times mixed with blood. In J. M. Ludlow's "Epics of the Middle Ages," vol. ii. p. 283, we read:—"The besieged take refuge in a tower, stabling their horses underground. The tower is Saracen work; all the mortar was boiled with blood, it fears no engine." Clement Walker, in his "History of Independence," writes:—"When usurped ttranny layes its foundations in bloud, the whole super-struction must be built with mortar tempered with bloud."

In the Hon. Frederick Walpole's "The Ansayrii," 1851, this passage occurs:—"Merkab is two miles inland. There are several remains of buildings about, which probably once joined the mina to the castle. In a field near by may be seen a huge reservoir of water. There is likewise a story that the mortar was mixed with oil instead of water, and that the huge tank to be seen near the walls was full of it. They allude to an inscription which says, 'We 15,000 men, well paid, well treated, worked at this. Every stone was cut and brought, every stone was set with oil, oil one parra the bottle.'"

Sir John Forbes, in "Sight-seeing in Germany and Tyrol," 1856, when describing the Stephans-kerche at Vienna, says:—"The completed tower was founded with the rest of the church in 1359, and after being advanced under several architects was finally completed by Hans Buchsbaum in the year 1433. The second tower was founded by the same architect in 1450 (the mortar on the occasion, according to tradition, being mixed with wine), but was never carried beyond its present height."

Yorkshire was noted for lime. Fuller in his "Worthies of England" says:—"I am credibly informed that, within a few miles of Pontfract, no less than 20,000^l. worth of this coarse commodity is yearly made and vended in the vicinage. It is a great fertiliser of ground if judiciously disposed. Indeed, the laying of lime on light and sandy ground (like the giving hot cordials to persons in high Feavours, enough to drive them into a Frenzy) will soon burn out the heart thereof, which bestowed on cold and chill ground brings it to a fruitful consistency, and, prudently ordered, it will for a long time retain the same."

Cement.

The following recipe is copied from a "Register of Occurrences" kept by the Prior and Convent of Durham, and now in the possession of the Dean and Chapter. The next entry is dated July 2, 1413:—"Take new brynte lyme and water, and the skarthes of newe tyle, and stampe yam to the mykilnes of beenes, or sum what gretter, and synders yat comes of ye smythes herth, and breke yam on ye same maner lyke ye tyles, and blend yam to gider with water, and take thre partes of lyme, and yen lay two tyle thicke in lyme and morter, and yen take all yat es befor sayd and lay itt all above two ynche thicke, and yf itt be thikker itt es ye better; and take and syfte all ye small poudre oute of

* It is stated later that "Smythie come" are the scales cast forth from hot iron by the smith's hammer. These scales in Yorkshire are called smythycome or smythycum. Wine is sometimes mixed with mortar in Spain at this present day.

ye lyme, and ye tyele, and ye syndres; and ever as ytt es fressh wrought cast ye same poudre above ye werke. And yis must be done in Marche, for ye frost will elles lest it."

The following description of a method of making mortar, which will be impenetrable to moisture, is to be found in the "Memoirs of Agriculture, 1771":—"Take of unslacked lime and of fine sand in the proportion of one part of the lime to three parts of the sand, as much as a labourer can well manage at once; and then, adding water gradually, mix the whole well together till it be reduced to the consistency of mortar. Apply it immediately while it is yet hot, to the purpose either of mortar, as a cement to brick or stone, or of plaster for the surface of any building.

It will then ferment for some days in drier places, and afterwards gradually concrete, or set and become hard. But in a moist place it will continue soft for three weeks or more; though it will at length attain a firm consistence even if water have such access to it as to keep the surface wet the whole time. After this it will acquire a stone-like hardness and resist all moisture.

This method of making mortar was discovered by a gentleman of Neufchâtel, the back part of whose house being cut out of a rocky hill; the spring from the rock produced a continual damp which nothing could cure till he tried the mortar above described, which effectually answered his purpose, and which by time grew so tenacious and firm that he was induced to believe the method of composition was the same with that pursued by the ancients.

This mortar is extremely beneficial for preventing the oozing of water through the floors or walls of houses where the common method would have no effect.

When a very great hardness and firmness are required in this mortar the using of skimmed milk instead of water, either wholly or in part, will produce the desired effect; and in this circumstance likewise the preparation is imagined to resemble that of the ancients.

Bacon says:—"There is a cement compounded of flour, white of eggs and stones powdered that becometh as hard as marble."

Pozzolana Mortar and Pine Timber.

Prior to 1870 in Rome the beams used in the construction of houses were of chestnut wood; after that date pine was largely used. After a few years the roofs and floors in which the pine had been used were found to be failing. A beam used in flat roof or in flooring where it was embedded in the wall was found to be rotten, while the body of the beam was perfectly sound. The cause was a puzzle for a long time, but on taking down the scaffolding of the Ministry of Finance a complete answer was found. One of its scaffold poles had been embedded in the ground; about its foot was a heap of the debris of Pozzolana mortar. That part which had been underground was perfectly sound, that which had been surrounded by the mortar was utterly rotten, and, finally, the remainder of the pole above the ground was perfectly sound. Hence it was clear that the mortar was to blame.

Pozzolana is a volcanic earth, and as this substance had been used for mortar in Rome and Naples for ages in contact with chestnut beams with impunity, the only logical conclusion is that pozzolana and pine wood have some chemical affinity which causes some of their ingredients to combine to the destruction of the latter.

Wolfius observes that the sand should be dry and sharp, so as to prick the hands when rubbed, yet not earthy, so as to foul the water it is washed in. He also finds fault with masons and bricklayers as committing a great error in letting their lime slacken and cool before they make up their mortar, and also in letting their mortar cool and die before they use it.

Stone.

Building stones are obtained more or less from every geological formation known. Granite was used by the Egyptians, alabaster by the Assyrians, marble by the Greeks, and sandstones and limestones by the Romans and Mediæval and modern nations. Each nation has been more or less dependent on the native rock of the district for building stone, and with material so ponderable this must ever remain one of the conditions of using stone largely for building purposes. Where granite is found and has been used, or is used largely, the buildings will have a rude and massive grandeur; where marble abounds we may have elegance and refined beauty as in Greece; where the more common sandstones and limestones form the superficial crust of a country, buildings should be modified in form and detail to suit such materials. The great cost of working granite into the most

simple forms will ever prevent its use on a large scale by any nation for domestic as also even for national masonry. It has been said that the stone produced in any district harmonises best with such district; buildings erected of native stone are more in keeping with the surrounding landscape. Every building stone is composed of grains and crystals, cemented and bound together by a natural process of chemistry. The hardest and most enduring rocks are compounds which nature has formed, and which nature's elements can disintegrate again to mouldering waste. Stones, like timber, to be used in building should be well seasoned by exposure to weather.

ANCIENT SANITATION.*

IT has been often observed that arts and sciences, no less than cities and people, have their periods of advance and of retrocession, of rise and of decline, and to this observation sanitary science, I conceive, offers no exception. The ordinances of Menu, one of the most venerable of legal institutes, mention offences in diet as one of the things through which "the genius of death becomes eager to destroy men" (translation by Sir W. Jones, p. 123), and the Levitical laws of the Jews contain, as is familiarly known, many enactments of a sanitary character, especially in relation to leprosy: and so remote seems to have been the origin of these provisions, alike in Hindustan and Judea, that they appear already to us in the form of Divine commands. Amongst the Greeks I know of no earlier traces of a consideration for healthful practices than are to be found in some passages of Hesiod, where he enumerates for us some of the rules of rural life in Bœotia some 700 or 800 years before Christ. The warning not to enter the house when affected by certain kinds of pollution, the prohibition of the doing of certain acts with unwashed hands and of the fouling of streams and fountains, are all supposed to have the sanction, more or less direct, of the gods, or all may probably have had their origin in a care for the general health.

But it is to the Romans, and not to the Greeks, that we look for the first practical works of a sanitary kind, and their earliest structures are such as still to challenge our admiration and our wonder. According to the Roman historians, to whom in this matter we may, I believe, give full credence, Tarquinius Priscus began and Tarquinius Superbus completed the great works for the drainage of Rome, of which the Cloaca maxima was the most remarkable feature. These works excited the warm admiration of the encyclopædian Pliny, and their construction appeared to Livy and the other Roman historians as one of the most remarkable of the works of the regal period at Rome, and the remains of the Cloaca maxima still pouring its effluent into the Tiber justly excite the admiration of the modern antiquary. Probably no drainage operation ever had so mighty an influence on the history of the world, for the result of these works was not merely to carry away polluting matter, but to convert the low swampy land lying in the midst of the hills of Rome into the solid ground on which the Forum Romanum was constructed, and thus to afford a common meeting-place for the inhabitants of the several communities of the several hills of Rome, that is, to form the very home and nursery of the fierce Roman people, from whence they went forth conquering and to conquer.

Even more remarkable than the case of the Romans in the drainage of their city were their labours for the supply of the city with pure and abundant water. From the time of the great Censor, Appius Claudius, the builder of the Appian Road as well as the great Appian aqueduct (312 B.C.) to the time of the Emperor Alexander Severus (cir. A.D. 221), Rome went on adding aqueduct to aqueduct, some of which still supply the city with water, until no less than eleven streams yielded their daily supply to the people of the Imperial city.

Another way in which the Romans showed their appreciation of practical sanitation was the use they made of warm and medicinal natural springs. Almost every such spring within the wide circuit of their Empire still bears traces of their munificent baths. Our neighbouring city of Bath, the Aquæ Solis of the Romans, is a good illustration of the care and splendour with which they adorned the hot springs, to the use of which they were so much addicted.

* From the inaugural address of Sir Edward Fry, P.C., delivered at the opening of the Congress of the Royal Sanitary Institute at Bristol on Monday.

A few months ago I visited in North Africa the remains of the town of Thamugas (now Timgad), built by Trajan for the veterans of the third legion, and I was much struck by the evidence which they afford of the care of these matters exhibited in the construction of the town. These ruins now stand in solitary grandeur amidst the desolate Aurès mountains, almost on the northern boundary of the Sahara desert, and rival if they do not excel Pompeii in the impression they make upon the mind of the beholder, and not the least surprising thing in this magnificent city is the system of drains which were constructed down all its principal thoroughfares—drains that recall if they do not equal the dimensions of the Cloaca maxima of Rome. The city, moreover, was abundantly furnished with magnificent baths and cisterns of water, and in the house, I might almost say the palace of Faustus, a man of great distinction in this remote city, one still sees the bath-room, and on each side, as you approach it, two pillars or pedestals, one inscribed with the name of the god Æsculapius and the other with that of the goddess Hygieia—so consciously did the Romans in this remote spot recognise the duty of seeking after health.

It is needless to observe that the Romans were without any of those scientific appliances on which we so largely depend, and were without that exact knowledge of the enemies to health upon which we rely. Nevertheless, we find, as I have shown, that they were great sanitary engineers and constructed works of water-supply and drainage not only in their capital, but throughout their Empire, upon which we cannot even now look without something almost of envy. If Rome in her ignorance could do all this for herself and for her remote provinces, what ought this country to do for herself and all the branches of her empire?

Upon all this splendid civilisation of Rome came down the barbarous North. The internal forces of the Empire were unequal to resist the impacts of Goth, Vandal and Lombard, and the fabric of the Western Empire went to wreck and ruin, and with it disappeared all thought of sanitary science—to remain, so far as I know, dead during the dark ages and to revive only in the course of the last century, and then in a new form and with means of investigation and of the ascertainment of exact knowledge of which the wisest Roman never dreamed. Under such favourable conditions it is your good fortune to pursue your studies for the alleviation of some of the ills that beset poor humanity.

THE LATE STANFORD WHITE.

THE fact that the daily papers of the best type gave an unusual amount of space to the details of the murder of Stanford White on the roof-garden of Madison Square Garden, New York, may be taken, says the American *Architect*, as an indication of his standing in the community and the interest felt by many in his unusual personality. Unusual he was—an anachronism, in fact. He belonged not to to-day, but to the time of the High Renaissance—if not to the remoter times of Sybaris and Syracuse—when men seemed to live merely that they might pursue, enjoy and create beauty. There are men a plenty who can pursue and enjoy beauty, but not so many who can create it, and the murdered architect was a creative artist to the extremist limit, a man whose talent verged on genius, and as genius has been cleverly defined as a form of insanity, it is not, perhaps, to be wondered at that he was at times erratic in conduct and performance. But if he felt like indulging in an eccentric piece of brickwalling, as in the new woman's club on Madison Avenue, he re-established himself as a sane and conscientious as well as progressive artist by giving the most anxious attention to the details of the new church for Dr. Parkhurst, a few blocks away. It was rarely, though, that he allowed himself to indulge in meaningless eccentricity; there was everywhere apparent a striving after a desirable effect, an effect of texture and colour, rather than one of mere form. The consequence is that his work was always warm and human, never chillingly correct and conventional.

Born in 1853, the son of Richard Grant White, the well-known essayist, Stanford White began his architectural career in the office of Gambrell & Richardson. Then, after a few years spent in travel in Europe, he returned to New York, and at the age of twenty-eight succeeded Mr. W. B. Bigelow as the third partner in the now well-known firm of McKim, Mead & White. Owing to the peculiarly individualistic methods which this firm has adopted, each claim-

ing and being accorded the right to handle the jobs that come in through and because of his personal efforts or qualities, it is peculiarly easy to determine the authorship of the work that is turned out in the firm name, and it is generally known that Mr. White was responsible for, amongst other notable buildings, the Tiffany and Fish houses, Madison Square Garden, the Washington Arch, the Judson Memorial Church and a very large number of costly and picturesque country houses. Perhaps he was seen at his best in monumental work, properly speaking, as in the Adams Monument in Rock Creek Cemetery, Washington, and the pedestal for the Farragut Monument in New York, and many others in different parts of this country. He was a rapid, tireless and inventive worker. His death will be a serious loss to his partners, the profession and the public.

RATIONAL EXTENSION OF CITIES.*

THE modern city in this country has been built up piecemeal and in patches, generally without any regard for the artistic, with no attempt on a large scale to lay out building blocks for residences, separate areas for manufacturing, wide central spaces for schools, institutes, theatres, churches, &c. Everything in relation to these matters has been allowed to grow according to the idiosyncrasy of the individual, without any regard for the communal good. The result is large slum areas; dwelling-houses side by side with industrial works; *bona-fide* working men, in order to be near their employment, gradually accommodating themselves to the tenement system, all of which heavily handicap him in the race for bread and lower his moral vitality. In addition to the above drawbacks, in consequence of our system of rating and taxation, municipal debts are accumulating at such a rate that they become increasingly heavy. The pace we are travelling in the direction is somewhat alarming.

Without taking into account our increased financial responsibility due to the late South African War, our municipal debts are increasing in such degree that, though we are wiping off the National Debt over 10,000,000*l.* per year, our total indebtedness (national and municipal) increases because of expansion in local expenditure.

In passing, I would like to add the whole of this financial load has to be carried by the workers (brain and hand), whilst the financial profit finds its way into the pockets of the landlords, who do not as such contribute a penny through the rates.

The whole of these social difficulties and moral evils have been, and are, aggravated by that modern phenomenon, the migration of the village population to the towns and cities. Seventy years ago 70 per cent. of our people lived in the rural districts, 30 per cent. in the towns. To-day that has been reversed, and we see 70 per cent. of our people living in the towns, and only 30 per cent. in the rural districts.

The unemployed question is so closely linked with the one we are discussing that I think it pertinent, and it may be profitable to notice the statement made by the President of the Local Government Board in the House of Commons on the occasion of the unemployed debate:—

"Ninety per cent. of the unemployable in the cities are town-born men who have been pushed out of their employment by the village-bred men. These have drifted into the city, driven out of the village by, among other things, the dull, drab life, low pay, lack of vital interest in the soil, and attracted to the city by apparently higher wages, brighter life and the greater freedom which city life affords."

The efforts of reformers in the future, as taught by the above fact, must be of a twofold nature:—(a) To prevent the influx of village labourers into the cities, thus giving partial relief to the congestion, and (b) to secure big belts of land outside cities, but within reasonable distance of industrial works, for building purposes.

One of the principal aims of the intelligent reformer is the prevention of the growth of slums in the future. Every thoughtful and intelligent man who has devoted any serious attention to the housing problem of our great cities must have realised that much of our cottage property put up in recent years, or now being built, will show very little superiority over the dwellings it displaces when it has been in existence as long as the latter. Faulty design, faulty material,

* From a paper by Arthur Richardson, M.P., read at the Conference of Municipal Representatives at the Congress of the Royal Sanitary Institute on Tuesday.

faulty construction and want of surrounding space all combine to render the houses but little better than their predecessors, so far, at any rate, as the prospect of future fitness is concerned. Many of our municipalities and private owners know what ought to be done, and would be prepared to do it, but for legal and departmental difficulties of an insuperable character standing in the way. Local authorities can now buy land either within or without their districts for the construction thereon of workmen's dwellings, but the houses must be built at once, and the purchase money, if obtained from Public Works Loan Commissioners, repaid within thirty years. What we require is the power to buy large tracts of prospective suburb before it has acquired the price of building land, such suburban area to be laid out on plan after careful and expert consideration, but only to be built upon when the need for new building arises, and then only in accordance with the prearranged plan. The roads should be wide, straight and planted with trees, and should be arranged to intersect as far as possible at right angles. The area should be segmented, and certain definite sections set apart for certain definite and separate purposes, *e.g.* one section should be for good-class residences, another for workmen's dwellings, another for factories of various kinds and suitable railway sidings and depôts connected with them. Special attention should be paid to the question of provision of open spaces, municipal lungs, and specific sections of these parks and recreation grounds set apart and equipped for very young children. Baths (swimming and washing) should not be forgotten in connection with these. The minimum area allowed for these breathing spaces ought not to be less than one acre in ten. There should be no such thing as the intrusion of slaughtering establishments or other offensive trades into residential neighbourhoods. If we, in this country, were in a position to arrange for the future extension of our cities in this way, we should be able to deal with the so-called housing problem of the times in a far more satisfactory manner than at present.

Briefly, the obstacles lying across our path are:—The shortness of the term on which the loan is granted, thirty years; compulsion to build immediately; and the criminal indifference and sometimes active opposition on the part of the general public, brought about by the inherent difficulties of the problem, the details of which few understand. The financial risk consequent upon inaccurate estimates as to cost of demolition and removal of condemned property generates in the minds of ratepayers dissatisfaction, often resulting in opposition discouraging to the real reformer.

In 1880 a block of buildings in Parliament Street, Nottingham, was condemned by the authorities. It comprised 104 artisans' dwellings, with a population of 473 persons, 73 of these not being of the artisan class. It was estimated that the scheme would cost 90,000*l.*, but the actual amount ultimately paid was 191,000*l.*, or more than double the original estimate. This area had been condemned for many years as a fever den and moral pest, but financial difficulties prevented the improvement becoming an accomplished fact. On the heels of the money difficulty came the vexed question of rehousing. A municipality is hardly justified in pulling down 104 homes without making adequate provision for rehousing. This might have been done but for the red tape of the Local Government Board. Houses were erected in the Westminster Street district to accommodate the 400 unfortunate people turned out of Parliament Street, but here is the real difficulty. The rents in Parliament Street ranged from 2*s.* to 4*s.* per week; the houses built according to Local Government Board regulations could not be let under 5*s.* to 7*s.* per week, so that the whole of these poor people crowded into districts already congested.

Another example of the same difficulty arose through the Great Central Railway cutting through a poor district in Nottingham. One thousand three hundred working-class dwellings were demolished for this purpose. These were replaced in the Windsor Street district by houses which could not be let under 6*s.* per week, and in some cases 10*s.* And yet another—perhaps the worst of the three local cases. Three hundred and forty-two houses were pulled down in the neighbourhood of the old prison (St. Ann's Well Road scheme). Their weekly rentals were 2*s.* 6*d.* to 4*s.* 6*d.* The houses built in Coppice Road to take the place of these numbered only 120, but the lowest let at 6*s.* 6*d.*, and some as high as 7*s.* 6*d.* How are these social wrecks to make ends meet when, through no fault of theirs, their rent is trebled?

But what has been the effect of these public building operations on contiguous land? It has been to enhance the

value over 100 per cent. Land which previously barely sold for 200*l.* an acre is now readily sold at 500*l.*

These facts point one moral. The time has arrived when, in the interests especially of the poor, but also in the interests of the community, the municipality should secure wide strips of land outside the city borders.

What all reformers desire is power to build suitable dwellings for the poorest class. Seeing that the Board of Works Loan Commissioners have full security for money borrowed on land, the thirty years' term ought to be extended to sixty at least; one hundred would be better still. Municipalities would be greatly assisted if, when they borrowed money for building purposes of this description, they were not compelled to build immediately, but only as there arose an effective demand.

The housing problem cannot wait, but calls for immediate attention and solution. In Nottingham we have, according to the last census, 350 one-roomed tenements, with families inhabiting them numbering in some cases seven persons; and 1,760 two-roomed tenements, with families inhabiting them numbering in a few cases nine persons. How can we expect human beings to be physically fit and morally healthy under such indecent and foul conditions? It is impossible.

This blot on our municipal escutcheon can only be removed by personal effort, collective action and legislative enactment.

PROGRESS OF SANITATION.

THE summer meeting of the Institution of Sanitary Engineers has been held in the Municipal School of Technology, Manchester. Sir William Mather, C.E., who presided, said the Institute represented the most beneficial of all the branches of the engineering profession. The sanitary engineer laboured in a field in which, more or less, all branches were interested, but which had to do almost solely and alone with the well-being of the people in the highest sense of the word. To be occupied in projecting and carrying out schemes for the purpose of improving the health, the comfort and the means of life in large communities was a noble work. The sanitary engineer had to work without many of those incentives and rewards which attached to other branches of the profession. He was occupied in dealing with elements in life which were not generally regarded as delightful to look upon or to contemplate; it was a branch of engineering which did not offer many attractions to those who desired to win praise from their fellow-men or to erect monuments to themselves by the work of their hands. England, as they knew, enjoyed the reputation—or did enjoy the reputation some years ago—of being the most advanced nation in the world in sanitary science and in its application. He remembered some twenty years ago an eminent German scientist, Dr. Virchow, who came to England to consider institutions, educational, municipal and otherwise, reported on his return that England was one hundred years behind Germany in education, but one hundred years ahead of Germany in sanitation. He thought that figure of speech represented very much the difference then between Germany and England. He remembered Berlin when it was a city ugly and offensive in many respects, with no drainage system except that which was exposed to the street, with a vile atmosphere, bad water and bad lighting. But after twenty years Berlin was now the pride of the German Empire. That great transformation had been brought about because education had advanced and performed its perfect work in relation to applied science to the advantage of the inhabitants of a great city. The sanitary engineer, the civil and mechanical engineer, and the chemist could provide several essential conditions of life without which our boasted civilisation was all veneer and vanity. Every river and stream in the land might be pure, every town and city clear of smoke and noxious vapours, mills and manufactories, wholesome and healthy, and the housing of the people, even the most humble, sanitary and cheerful, with fresh air and open spaces adorned with grass and shrubs, common to all who inhabit the towns, together with good water and efficient drainage. All those science and experience—already possessed by those great professions—could accomplish. The architect, added to these men of science, would contribute the artistic feature to all necessary structures. One proviso, however, must be made, which could not be fulfilled immediately, and without which the advantages of such changes would not be reaped—he meant that education of the right sort must be given to the children

of the humblest classes, and to those above them in the social scale. That, also, was possible. We had already compulsory attendance at schools, and schools were universal. Only one thing was lacking, the right methods and right subjects of instruction for children, to form their minds, to quicken their moral sense, to create right mental and bodily habits. He would rather see the children of our working classes acquiring perseverance, a moral conscience, good manners, clean habits, clean minds, manual training, the habit of thinking, elementary knowledge of the simple laws of health and nature and physical strength, than the whole curriculum of the best elementary school we had. He was convinced that with children possessing the qualities of education he had enumerated all things necessary would be added by self-education. That was the education which would leave the child to grow strong and true, to use his natural gifts in the best way during youth and manhood and womanhood. Then would the homes, once made sanitary, wholesome, cheerful and pretty, become the delight and pride of the inmates. So must education and sanitation co-operate if our civilisation was to be something deeper than veneer and more thorough than vanity.

Human communities were structures depending on their foundations, like other physical structures, being well laid and strong. It was a frequent complaint on the part of our municipalities, when they were charged with neglect of the housing problem, that the expenditure of public money in this direction was not encouraged because such a vast number of people did not appreciate better conditions of life, and the greatest impediment in this country to the better housing of the people was not the want of will on the part of the municipalities nor the want of money—it was the difficulty of maintaining the habitations of the poorer classes in a fit condition for human comfort owing to the habits and want of cleanliness of the people themselves. The first consideration in the advancement of civilisation was to raise the lowest and humblest classes, the broad foundation upon which human society was based, otherwise the superstructure would always be faulty. No efforts to provide what science and natural laws enjoined on us, what ideals inspired, or refined taste and the love of beauty would promote, could avail if the masses of the people did not co-operate by their appreciation, their care and their proper pride to use and rightly enjoy cleanliness, health and the appliances that provide them.

ROYAL ACADEMY ARCHITECTURAL SCHOOL.

THE Architectural School of the Royal Academy will from October 1 next be open five evenings in the week (Monday, Tuesday, Wednesday, Thursday, Friday) from 6 P.M. to 8 P.M., instead of, as now, three.

Applicants for admission to the school who can produce a certificate of fair proficiency from an institution for architectural education recognised by the Royal Academy will be exempt from the necessity of showing the work required for the admission of probationers.

These institutions are:—The Royal College of Art; the Architectural Association; King's College, London; University College, London; Liverpool University; Manchester University. The list may be added to at the discretion of the President and Council.

The first date for the admission of probationers under this new system will be Tuesday, July 31 next; and the certificates, together with the printed form to be previously obtained from the Royal Academy and duly filled in, and the certificate of birth, must be delivered at the Royal Academy on Saturday, July 28 next.

The examination for admission as students of the successful applicants will be held in October next. Any further information can be obtained on application at the Royal Academy.

A Report of the College of Engineers in Venice states that the new campanile, if carried out as proposed, will not respond to sentiment, history or art. The Municipality have therefore appointed a committee to consider the subject.

The Matrix of the monastic seal of the Priory of St. Bartholomew used during the occupation by the Dominicans in Queen Mary's reign has recently been acquired and presented to the church of St. Bartholomew-the-Great, Smithfield. It is of copper and is Renaissance in character. It was in use from 1555 to 1559. The relic is shown to those who visit the newly-opened cloister, where impressions in red wax are sold for the benefit of the restoration fund.



Goodyear and his Critics.

SIR,—We owe a debt to Mr. Goodyear for the careful study he has made of certain "irregularities" to be found in Mediæval architecture in Europe. Whatever was the cause, the facts remain.

There has been a disposition on the part of some of his critics to dispose of the whole matter in a few sweeping words, or to concentrate too much attention on the cause and to overlook the result of these "irregularities."

As to the cause, there are three main influences that have been at work:—(1) Structural defects; (2) carelessness or indifference; (3) deliberate intention.

It may be an interesting study to consider how far any one of these three causes may have influenced any particular case (Amiens Cathedral for example). But beyond this question of design or accident, is it not much more important to consider what has been the result? What is the value in an artistic sense of effect produced by these irregularities? and to what extent may they be carried in modern building without degenerating into crudity?

We have been taught to look on the "refinements" of the Greeks as the perfection of art. Hand-work generally possesses charms that the machine-made article is supposed to be destitute of. A discussion on this point would be of more than academic interest and of value to the progress of architecture as an art.—Believe me to be yours truly,

Cork: July 11, 1906.

ARTHUR HILL.

GENERAL.

The Holborn Borough Council have selected the design of Messrs. Septimus Walker & Herbert Hall, of Gray's Inn, for the new offices. The cost is estimated at 19,205*l*.

Messrs. Clark & Moscrop, architects, Feethams, Darlington, have been awarded first place in a competition for designs for schools to accommodate 950 children at South Moor, co. Durham, for the Durham County Council. The same firm were also placed second. The third place was given to Messrs. Brown & Liddle, of Newcastle-on-Tyne.

The Bucklow Rural Council have decided to take proceedings against Mr. Hazzopulo, the Greek Consul for Manchester, for infringing their by-laws by erecting a building without submitting plans to the Council.

Messrs. Dixon & Potter, of Manchester, have been successful in the competition for the baths, fire station and library at Reddish; Mr. J. M. Smith, Chelsea, second; and Messrs. Shewbrooks & Hodges, Newcastle, third.

The Travelling Scholarships of the Architectural Section of the Liverpool University have been awarded to Messrs. M. Lyon and L. K. Adams.

The Report of the Building Act committee relating to the rebuilding of Regent Street was brought up for approval at the meeting of the London County Council on Tuesday. It was agreed to postpone the consideration for a week. Mr. J. Lewis expressed the hope that the Council would not hurriedly allow the one-storey shops in so important a thoroughfare to be covered with huge buildings.

The Members of the London and Middlesex Archaeological Society, by permission of the King, visited St. James's Palace. Rev. Dr. Edgar Sheppard conducted them over the State apartments and the Chapel Royal, and exhibited the Chapel Royal plate. The sub-dean also read a paper upon the Palace and its historical associations.

Mr. Maurice Greiffenhagen has been appointed professor in the life classes of the Glasgow School of Art. M. Jean Delville, who held the office during six years, is now professor in the Brussels Academy.

The Awards in the recent examinations qualifying for admission to the Glasgow Institute of Measurers have now been issued. In the preliminary examination the following candidates passed or were granted exemption, having presented the necessary certificates:—R. B. Dow, R. B. Stark, Howard Reid and Thomas Scott. In the final examination five candidates passed, and were placed on the register of associates, viz.:—James Brown, Wm. B. Dow, Alexander M. Walker, Frederick Smith and James M. Stewart.

Professor Darroch and Dr. Glasco have been elected by the Governors of the Heriot-Watt College as their representatives on the committee which has under consideration the proposed art school for Edinburgh.

THE WEEK.

It must not be supposed that the decision in the COLLIS case, although expressive of greater latitude in light and air cases is to be taken as warranting that everyone can raise his premises as high as he considers desirable for his own business, without any regard for his neighbour. The decision of Mr. Justice SWINFEN-EADY in the case between the Rector and Churchwardens of St. George's, Hanover Square, and Messrs. FRANCIS & ADAMS, suggests there is still a limit to what is allowable. The defendants admitted that the light would be affected, but only to a trifling amount, which would not cause inconvenience to the congregation. It was easy to imagine that the COLLIS case would cover the diminution of the light, for it cannot be said that the interest of the worshippers corresponds with that of an owner or occupier of business premises in the City. Able witnesses were heard on both sides, including several architects, and the Judge certainly took the closest interest in the evidence. He supplemented it by visiting St. George's on two occasions, and he came to the conclusion that not only was the light diminished, but that there was a material and substantial darkening. His Lordship considered that besides the worshippers those that ministered in the church would be prejudiced if the additional storey was erected, and he granted the injunction with costs. St. George's, Hanover Square, is too important a church to be deprived of the smallest portion of daylight. It is to be hoped that the judgment will be taken as admonitory by all who contemplate building in positions where there are neighbouring premises.

THE decision of the London County Council on the subject of non-provided schools is likely to have some effect on the operation of the latest Education Bill, should it ever become law. Last year the Council called the urgent attention of the managers to certain sanitary requirements. It is now proposed to apply after the summer holidays the smoke and chemical tests to the offices and drains of their schools, and if after the application of these tests it is found that the condition of the offices and drains constitutes an immediate danger to the children, the Council will cease to maintain the schools after October 19, 1906. It will be necessary to temporarily employ extra assistance to carry out the resolution. It may not be generally known how numerous are the assistants at present employed. A return has been prepared showing the number of the unestablished staff employed at the end of June 1906 in the architect's department. They number 229. That number is exclusive of clerks of works, and is divided as follows:—Building Act and factories, 23; means of escape section, 62; improvements, 10; establishment and fire brigade, 25; housing, 44; general, 18; highways, 27; measuring surveyor's, 20. The total weekly pay amounts to 485*l.* 19*s.* The architect's department contains more temporary assistants than any other, for there are only 54 in the engineer's department and 37 in the solicitor's.

SOME of the reports about the condition of the Vatican may be exaggerated, but there is no doubt that important works of reparation have had to be undertaken. The Vatican, it should be remembered, is a collection of buildings, and it would be difficult to ascertain its age. Some archaeologists believe there was a mansion on the site in the fifth century, and CHARLEMAGNE resided in the Vatican at the time of his coronation. Important works were carried out during the Renaissance period, and the names of the foremost architects, from BRAMANTE to BERNINI, are connected with different parts. As the Vatican had always to shelter a large population reparations were not always carried out promptly, and the neglect has produced the usual consequences. At first it was supposed that the necessary works could be carried

out for less than 5,000*l.*, but it is now believed the cost will exceed four times that amount. If all that is proposed should be accomplished the bill must be enormous. Pope PIUS X., being restricted to the palace, has been able to realise the defects which strike many strangers. The variety of people to be met with on the stairs and in the courts is remarkable, but the numerous servants and their still more numerous hangers-on are tenants of some or other of the numerous rooms not far from where the Pope dwells and holds audiences. It is now proposed to erect a large barrack for them near the Belvedere. Opportunity will also be taken to make the galleries more safe, and, in other words, it can be said that a constructive revolution will be accomplished in and around what is, in an historic sense, the most important of all European palaces.

A CURIOUS case was lately heard in the Southampton County Court, where it had been remitted from the High Court. A retired colonel saw an advertisement relating to building with cement slabs at two-thirds of the cost of bricks and mortar. He wrote to the company stating that he desired to make some alterations in his residence. He sent a rough sketch. He was surprised when Mr. CALWAY, who was the inventor of the system and the proprietor of the company, visited him with the surveyor. They came a second time with plans and an estimate amounting to 773*l.* That was double the amount which the colonel expected to pay. He then consulted a local builder who offered to carry out the work for 633*l.*, including grates, which were not allowed for in the other estimate. The company went into liquidation, and the liquidator sent in a claim for 49*l.* 14*s.* for advising on the alterations and additions, preparing two sets of plans and estimates, and travelling expenses. Mr. CALWAY stated in evidence that it was impossible to give an estimate without a survey, which he agreed to make at a cost of 5 per cent. on the outlay. The defendant said he never gave authority to prepare expensive plans, as the descriptive pamphlet stated it would be 1 per cent. of the estimate. The Judge considered that the correspondence between the parties was evidence of a contract, while there was nothing to show that the defendant had demurred to the preparation of the plans. He suggested an arrangement, and finally judgment was entered for 40*l.* and costs. The case demonstrates that it is not economical to dispense with the services of an architect.

ONE of the problems which perplex artists and archaeologists is the *Venus of Melos*. The figure is not according to any of the recognised types of APHRODITE. Some theorists have, indeed, supposed that the woman is a type of Nature, and was derived from a model who did not belong to any exalted class of society. When it was announced a few weeks ago that a reproduction on a reduced scale had been dug up at Delos, it was at once concluded that the mystery would be revealed. But, according to later accounts, the new statue is also deprived of arms. The replica has, of course, to be investigated by experts. At the present day if a restoration of the *Venus of Melos* appeared with any of the dealers it would not be recognised at first sight. If we assume that the figure found at Delos is a genuine antique, it demonstrates that long ago in Greece the imperfect *Venus* was in favour because there was no certainty about its original appearance. But that view does not suit the legend of the discovery of the figure which is now in the Louvre. When unearthed it was accompanied by one arm, if not two. But the officers of the Louvre imagined that the arms did not agree with the figure, and they were consequently suppressed. The discovery at Delos, instead of elucidating the mystery, only darkens it, and we may therefore assume that the disposition of the statue when it left the sculptor's hands will never be revealed to us.

THE INTERNATIONAL CONGRESS.

ALL who desired the success of the first International Congress of Architects, which has been held this week in London, must have regretted the announcement of the improvements committee of the London County Council about the northern line of frontage between Wellington Street and the Law Courts. After careful consideration, estimating and experimenting, it was decided to adhere to the decision of 1903, and consequently no deviation from the official line will be allowed. If the suggestion of the influential architects, members of the Royal Academy, surveyors, bankers and others had been adopted it would enable foreign architects to believe that municipal bodies attached great importance to the advice which was received from architectural societies, as well as from architects who do not belong to them, and other artists.

The main cause of the rejection of the memorials is the loss, which was estimated at 249,400/., involving a reduction of rates or revenue of 4,230/., per annum. But it is also stated by the committee that the obnoxious line was devised by the Royal Institute of British Architects. The improvements committee in their report say:—"We think it right to point out that before the Holborn to Strand improvement as submitted to Parliament was approved by the Council, we consulted the Royal Institute of British Architects, with the result that the scheme which was finally adopted by the Council embraced the suggestions made by the Royal Institute after we had slightly modified the Institute's plan, in order to make the crescent road (Aldwych) connecting the new main street with the Strand more symmetrical."

It will be said that the Further Strand Improvement committee's scheme was an improvement on the original suggestion of the Institute, but the remark of the County Council committee must affect the belief in the infallibility of institutes, societies, or committees composed of architects, and all general recommendations concerning the duties of public bodies or individuals in relation with architects will have to be received with hesitation. If the improvements committee wished to take revenge on architects they could not have adopted a more opportune occasion, for their conclusion is a condemnation of the part taken by some of the most prominent members of the Congress.

On all such occasions it is desirable to have the aid of fortune or accident in providing some item which is not in the programme. Experience has demonstrated that not one of the Congresses which have been held in connection with the Institute of Architects has been advantageous to the members. Expectation was excited, and architects may have imagined they were to derive from the meetings more than it was possible to attain. In the same room or hall or gallery only one paper can be read at a time, and it rarely happens that the readers are elocutionists. When there are several papers to be read at the same meeting discussion is not possible unless in a very abbreviated form. American architects, we believe, continue to go through the formality of responding to their names but then adjourn, and leave the reading and discussion of papers to those who have sufficient endurance to go through that kind of exercise, or a few are told off to sacrifice themselves for delegates who are to be found elsewhere.

At this week's Congress it was not only architects but representatives of the public interests who should have been allowed to share in the oratory, for the peculiarity of the present Congress, and by which it was differentiated from its predecessors, was the extent to which the duties of the non-professional classes of many kinds were laid down. Questions of fees, of modes of training, of history, or of biography were set aside in favour of others which may be described as especially applicable to laymen.

The first in the programme, if not in the order of discussion, related to the duties of municipalities when

ereecting public buildings. The authors of the papers were HERT WAGNER, of Vienna, MONS. OSCAR SIMON and MONS. GASTON TRÉLAT, who controls a private architectural school in Paris. It is a pity these gentlemen did not first define their notion of an English municipal surveyor. On the Continent there is a close connection between a vast number of architects and the State or with municipal councils. They are, so to speak, a reserve force, which can be summoned to perform certain duties, and, indeed, they believe they have a claim to the work. The class of functionaries whom the writers of the papers would exclude probably represent a class inferior to many of our English municipal surveyors. M. TRÉLAT as the director of a school was somewhat more liberal than his associates, and there are parts of his paper which suggest that problems arise in connection with municipal building which the scientific constructor, or, as we should say, the engineer, would best solve.

In dealing with property in designs and drawings M. TRÉLAT also expressed advanced opinions. He believes that the artist's mind is or should be fertile, and that few cases arise where a design can be re-used without more or less adaptation, according to the conditions of the site and other necessities. Señor SALVAT maintained that there should be rights to property in architecture identical with those admitted in material or intellectual property. For the latter we may suppose literature as representative. It is not allowable to introduce in a book anything which gave character to an earlier work. There are keen-eyed people who are always on the look-out for the apparent coincidences between a modern author and a predecessor. BYRON, who was possessed of colossal power, suffered because in his careless fashion he introduced phrases which he had met with in reading. If the rights of property are to be claimed we should start fairly, and act like patentees in describing the arrangements or forms in which an exclusive right is claimed, and which are not found in an earlier building. There is also another side to the question. A client, as Señor SALVAT suggested, would have the right to insist that the architect did not use the design for a different building. Mr. STATHAM's paper related simply to the English law or the English decisions through which a client can claim to have possession of the plans prepared for his building. Here also inconvenience has arisen from the meddling of the Institute, for, as was pointed out, the schedule says that the 5 per cent. commission comprises the necessary general and detail drawings, &c. The value of architectural Congresses is also indicated by the fact that the rule which is so harmful was sanctioned by a conference in 1872. If architects were allowed to make their own arrangements with clients there need be no difficulty about drawings.

It is curious that the only constructional subject treated related to combinations of concrete and steel, in which it is admitted there are few opportunities for the exercise of architectural skill. The papers did not make it clear that the authors had had much experience with that class of work, nor did they explain whether it was possible to have the construction carried out by ordinary builders.

It is devoutly to be wished that the public should be educated in architecture. It would, no doubt, increase their pleasure when looking on buildings, but the question must arise as to the period in which the instruction is to begin and who is to impart it. The debates on the Education Bill, which we have been enduring for some months, made it plain that the children of this country are being over-educated, or rather, over-crammed with knowledge. They cannot take in all that is poured out for them, and, in order to make them more capable, it has been found necessary to give them extra food. Now, for the majority of children, production of some kind will be their way of making a living. The tendency, therefore, is towards what is called secular knowledge, that is, knowledge that will be useful in trades.

One class of educationists maintain that there is neither time for instruction in theology nor the mental power to acquire it without a sacrifice of the indispensable secular knowledge. Is there room for architecture in the curriculum of national education as we understand it at the present time? Professor VON LEIXNER called attention to the fact that the public do not pay any attention to architectural designs or models. According to him they do not understand the plans. It would be interesting to know whether he found the architects who possessed the necessary knowledge are gathered in crowds at the exhibitions of drawings in his country. That kind of spectacle is not afforded either in Paris or in London. As a rule, architects glance at designs furtively through fear they will be suspected of cribbing ideas. So long as architects do not display any open admiration for contemporary designs it is not to be expected that ordinary dilettanti will take as much interest in architecture as in pictures or statues.

Another educational difficulty arose out of the question whether the architect should receive the theoretical and practical training of a craftsman. The late Sir WILLIAM ANDERSON, who was not only one of the ablest engineers of his time, but one who was most often consulted in cases of difficulty by engineers of eminence, used to say that when it was decided he was to be apprenticed to FAIRBAIRN he took lessons in surgery. At that time "first aid" was not popularised by lectures and exhibitions, and he found the benefit of it when accidents arose. Another man under similar circumstances might conclude that a short time with a barrister in studying the law of contracts would be necessary. Others would say that acquaintance with foreign languages was a condition precedent with anyone who had to carry out works in various parts of the world. Whatever knowledge holds good in working is desirable, but since every craft requires at least a couple of years to master it, how is an ordinary architect's pupil to combine it with other branches of knowledge? We must also remember that genuine craftsmen would judge the architect's ability by his dexterity in their particular craft; as in the majority of cases he would be inferior to them they would undervalue his general ability. M. TRÉLAT, who has had more experience than any other author of the papers, says that the advantages are not commensurate with the time that has to be expended.

Connected with the subject is the superintendence of craftsmen. In dealing with important artistic works such as the wall-painting or the statuary of a building, it is well for painters and sculptors to accept the definition of the relation which their works hold to the general scheme. M. NÉNOT acted rightly when he informed the President of the French Republic that if the late BENJAMIN CONSTANT was allowed to paint an immense fresco in the theatre of the Sorbonne, as was desired, he would prevent it by filling the space with some architectural ornament. The question is different when it concerns artisans. The architect's superintendence may be desirable, but who is to pay for it? If there is interference with their workmen contractors will necessarily charge much higher prices. With the additional work the architect's fees would have to be increased. It is doubtful whether the public would be satisfied by the arrangements.

M. BULS has acted so efficiently as the Burgomaster of Brussels that he must be recognised as a great authority on the laying out of cities. He used the familiar line of TERENCE as expressing the spirit of his recommendations, "*Homo sum: humani nil a me alienum puto.*" The words should be liberally interpreted. A city, he says, should not be merely a commercial warehouse or an industrial factory, but "un home humain." In London we seem to think only of traffic, and would drive the homes to other regions. M. BULS regrets the loss of picturesque charm and of national character which has been the result of improvements in cities, but in Brussels he has contrived to

make many relics of antiquity gain in importance, and visitors as well as inhabitants have reason to be thankful that he is no HAUSSMANN who would sacrifice the past in order to create opportunities for cavalry charges against the disaffected.

The Preservation of National Monuments was the subject treated with general accord by most of the authors. M. TRÉLAT, who is somewhat of a revolutionist, considers them to be important elements of public beauty, and their preservation should be undertaken by the Government. Professor POGGI has been advocating the necessity of respect for them in Italy since 1845. M. BESNARD recommended that in case the removal of a monument was imperative photographs and casts should be taken and deposited in the museums. He also recommended the encouragement of costly monographs on particular buildings which might be beyond the enterprise of ordinary publishers.

International competitions may be taken as sign of the good time coming, when universal brotherhood is to be accepted and fostered. But there need be no more precautions than are necessary in ordinary competitions. Indeed it may be doubted whether judges and assessors of several nationalities are needed. Architecture is a universal language and can appeal to men of all lands. We can hardly believe it was necessary for BURGESS to produce drawings in so antiquated a style as to deceive VIOLETT-LE-DUC until he saw the water-mark "WHATMAN" on the sheets. The treatment was more likely to be due to BURGESS's love of antiquity than to any other cause.

A short time ago the question of registration in one form or another would have been considered the most important of all the questions brought before the Congress. There is no denying the change, for it has become doubtful in what manner to restrict architectural commissions to a limited number of architects. When BURGESS asked a cook in Lille (we may be allowed to again refer to him) how long it would take to learn the art of cookery, the man replied, "With a fine art like mine, monsieur, one is never master; one has to be continually studying." The knowledge which will prepare a man to pass such an examination as will be required by an Act of Parliament would not make him a complete architect, although legally he would be entitled to practise and to express an opinion which practical builders would have to respect. The managers of the Congress, accepting things as they are, relegated the discussion of the diploma question to Saturday, when, to use a common expression, "all the fun of the fair will be over," and even earnest Congressites will be asking with the Lotus Eaters, "Why are we weighed upon with heaviness? Why should we toil who are the first of things?" The International Congress is not likely to do much towards the passing of Registration Bills.

THE REMBRANDT TERCENTENARY.

THE people of Holland have been true to themselves in celebrating quietly but worthily the three hundredth anniversary of their great countryman, REMBRANDT HARMENS VAN RIJN. Because he stands among the greatest painters of the world, Holland must always be proud of such a son. But there are other reasons for remembering him. REMBRANDT, to many of the people of the staid Amsterdam, was during his life an irregular, extravagant and often an impecunious citizen, but all must now realise that he resembled a star and was an indication of the beginning of a new era for the country.

If we turn to the diary of JOHN EVELYN, which is so valuable for information about art in the seventeenth century, we learn that in 1640 he left England, partly through fear of the impending breach between the Crown and Parliament, and partly with the

intention of serving as an agent of CHARLES I. He was a refined amateur, and he tells us that when he saw the landscapes and drolleries which were exhibited at the fair of Rotterdam he was amazed at what he called "clownish representations." The pictures were cheap, and were produced in such large quantities that even the farmers used to invest in them as a commercial speculation. He saw a great many curiosities in Amsterdam, but it is remarkable that he does not mention a painting of any account as existing in the city, although at the time REMBRANDT had produced several masterpieces. Even at The Hague he acquired an "excellent drollery" by COVENBERG, an artist who had painted the *Rape of Ganymede* on the ceiling of the Prince's palace. Prejudice is difficult to overcome, and amateurs like EVELYN could not believe that a Dutchman could be a great artist.

The absence of information in EVELYN's diary may be taken as evidence as to the low state of art prior to his time. Holland was long without an independent existence. The land which had been created with such difficulty was by some confounded with Belgium, and was really part of the possessions of the Duke of BURGUNDY, when it fell into the hands of the Spaniards. If a native of Holland arose who possessed ability as an artist he sought patronage in Bruges or Antwerp. It is therefore difficult to make out the early history of the Dutch school on account of the impossibility of distinguishing between the painters of the Northern and Southern Provinces.

Under the guidance of the House of Orange the Dutch Republic arose, and the sense of liberty must have produced a remarkable effect on art and artists. MIREVELD, who was born in 1567, is said by one authority to have painted 5,000 portraits of his countrymen, whilst another biographer puts the number down at 10,000. It would now be impossible to count the number of portraits which FRANS HALS painted, but numerous examples show signs of expedition, as if several men were waiting impatiently in his studio for their turn to be represented. The love of portraiture suggests a desire for reality, and the Dutch landscapists might be described as the portraitists of Holland, its green but monotonous fields, its long avenues, its windmills, its canals, towns and other examples of Dutch industry. The people emancipated themselves not only from Spain, but from the religion the Spaniards would impose on them. An artist could not expect to obtain commissions for painting the walls of churches as in Italy, for the Puritanic people covered with whitewash the walls which were decorated, and might on that account be supposed to be indifferent to art. But compensation was to be found in the patronage for art of a domestic kind. Dutch pictures were therefore produced in order to be hung on the walls of rooms, and were generally of limited dimensions.

When therefore REMBRANDT, after leaving the jurisprudence classes of the university of his native Leyden, and after an imperfect training under a couple of artists, began to paint the portraits of his townsmen, the prospect before him was sufficiently encouraging. His removal to Amsterdam when he was about twenty-five is evidence of a demand for his works. As well as can be made out, he was at once successful in his new home. If the famous *Lesson in Anatomy* was produced in 1632, as was likely, it suggests that a class of men who desired to be surrounded with mystery arranged with him for a representation of a dissection, a kind of inquiry which was not altogether in favour. They could not resist to be immortalised by his pencil. The work is so effective that we can almost imagine what TULP, the operator, is maintaining, and the degrees of attention to his words are suggested with impartiality. It may be described as a work in black and white, and those who begin their acquaintance with REMBRANDT's works by seeing it in The Hague gallery are to be excused if afterwards they have a preference for that mode of treating a picture.

Amsterdam can afford a delightful spectacle when there is sunshine, but the colours to be seen do not correspond with those of Venice. The Dutch people in the seventeenth century were more soberly clad than those of the South. But REMBRANDT also painted pictures which are more dazzling than those of Venetian painters. Through what causes he allowed his imagination to have ample liberty in displaying a peculiar kind of colouring cannot be explained with any certainty. Although he had passed through the Latin school and was a university student, REMBRANDT was no writer of books or letters. It is only therefore mere guesswork to try and discover his practice.

It is not irrational to suppose that as he was well acquainted with many of the numerous Jews who lived in Amsterdam, and even in the same street with the painter, REMBRANDT may have been able to enjoy the sight of textiles which were produced in Eastern looms and of jewellery which once belonged to queens and princesses. JAMES BARRY, who was opposed to all men who were indifferent to the "gusto grande," like REMBRANDT, supposes that the Dutch artist must have seen examples of the Venetian school. Nothing, says BARRY, "can exceed the beauty, freshness and vigour of his tints. They have the same truth, high relish and sapidity as those of TITIAN. Indeed, they have the closest resemblance to the hues of TITIAN when he had GIORGIONE most in view. There is identically the same attention to the rilievo and force obtained by his strong shadows and low deep tones." REMBRANDT's love of costume has created one of the difficulties which prevents a satisfactory interpretation of the so-called *Night Watch*. The Dutch soldiers of the present day are enough to horrify an English or German sergeant, but there is at least some recognition of uniformity in dress, and whether we consider the members of the Guard as belonging to a particular company or as units of other companies, the variety of their costume is unaccountable, and as if to add a climax to the variety the artist has introduced the figure of a little girl who is dazzling in her bejewelled robes. It is no wonder some of the volunteers rebelled against the manner of representing them, for they failed to recognise the right of a painter to treat them as mere elements of a coloured scheme.

REMBRANDT was to be pardoned if, on seeing rich costumes and ornaments, he resolved to possess them as if they were properties which could always serve for models. His house contained much which was costly, but the Dutch folk of that time could not understand the ardour which compelled a man to exceed his income for the sake of such vanities. He obtained forty thousand guilders with SASKIA UILENBURG, and, judging by the portraits, they were a happy couple during the six years they lived together. But the wife's trustees seemed to consider that the fortune was not to be expended and on SASKIA's death it was to be paid over in full to their son TITUS. His supposed improvidence was not favourable to winning the estimation of his countrymen, and all that is known of him suggests that after his wife's death he lived amidst financial difficulties. Before his death he had to endure the neglect of the Amsterdam people, who preferred the skill of younger men.

REMBRANDT, besides painting pictures which would not be too large for the houses of merchants, further popularised art by means of his etchings. With them he could allow himself more freedom than on canvas in experiments with light and shade. The subjects of some were no doubt imaginative, but others were records of landscape scenes which were familiar to him and his friends. They suggest by their *finesse* that his hand was as delicate with the needle as it was vigorous when painting. His work on copper must often have diverted his thoughts from oppressive matters.

We have mentioned that EVELYN was in Amsterdam in 1640 when REMBRANDT was likely to be occupied with the *Night Watch*, yet he never mentions the artist's name. During many years there was no less indifference

to the painter and his works. RICHARDSON visited Holland in the early part of the eighteenth century, and he informs us that in Amsterdam "Mynheer VANDER SCHILLING has several pictures, but chiefly of Dutch and Flemish masters." There is no mention of his seeing a work by REMBRANDT in any of the towns he visited. REYNOLDS often referred to RUBENS and other Flemish artists, and he does justice to FRANS HALS. But all he found to admire in REMBRANDT was the absolute unity of his manner of treating light and shade, which, he said, consisted in having one spot of light in the midst of a large quantity of shadow. In another discourse he said that the Dutch artist appears to have used the palette knife to lay his colours instead of the pencil. In no parts are the painter's works recommended as objects for study. It was to be expected that the early professors of the Royal Academy should take their cue from the first President. FUSELI described REMBRANDT's figures as "swampy excrescences," "uniform abstracts of bumpy or meagre deformity." He admits that REMBRANDT was endowed with a gigantic but barbarous genius. BARRY also condemns "the obtrusive, licentious, slovenly conduct of his pencil or his trowel, which he is said to have used." It is worth noting that of the examples of REMBRANDT in the National Gallery, *The Christ Taken Down from the Cross*, once belonged to Sir JOSHUA REYNOLDS, and the portrait of *An Old Lady* was in the collection of Sir CHARLES EASTLAKE, who was also a president of the Royal Academy.

REMBRANDT has, in spite of opponents, gained an exalted position in art. Men of all nations took an interest in his tercentenary. His countrymen may have helped to increase the interest of the work with which he is mostly associated by erecting a special gallery which will resemble the hall for which the large *Night Watch* was ordered. It was pointed out in this Journal several years ago that the room in the Ryks Museum which contained the work was so lighted as to cause some confusion in the colours. The new room is lighted from the side, and under the conditions the painting appears to be improved. REMBRANDT was an experimenter, and it would be an advantage if all his works could appear under similar conditions as those adopted by him when painting them.

LIABILITY UNDER A LESSOR'S COVENANT TO REPAIR.

By Professor W. S. HOLDSWORTH, D.C.L.

THE moral of the case of *TORRENS v. WALKER* is that it is legally inadvisable (as well as practically inconvenient) to become the lessee of a house in a tumble-down condition, even though the lessor covenants to keep the outside of the premises in good and substantial repair. In the case in question the plaintiff leased from the defendant's predecessor in title the three upper storeys of a house in London, to be used as a private hotel. The lessee was to do the inside repairs, the landlord the outside. On July 13, 1905, the London County Council served on the premises a notice under the London Building Act that the premises were in a dangerous state, and requiring the front and back walls to be taken down in so far as they were broken, decayed or out of form. The plaintiff (the lessee) at once informed the lessor (the defendant) of the service of this notice. The notice was the first intimation that either the plaintiff or defendant had had that the building was in a dangerous state. In the following August all the guests staying in the hotel were given notice to leave, and in November, under a magistrate's order, the walls were pulled down and the premises became uninhabitable. On these facts it was held that there had been no breach of the lessor's covenant to repair. The decision will no doubt surprise lessees, and it is therefore the more important that they should understand its grounds, that they may escape a similar fate. It was

held (1) that the obligation of a covenant to repair attaches when and only when the lessor has notice that the building is out of repair. Till the notice has been given he cannot be held liable, so that in this case the landlord's liability did not attach till July 13, 1905. And it should be observed that this rule as to non-liability before notice applies whether or not the covenant provides anything as to the necessity of giving notice to the landlord. The reason for this rule was very clearly explained by BRAMWELL, B., in another case. He said that it was absolutely necessary to interpret a landlord's covenant to repair as a covenant to repair upon notice—otherwise a landlord might be bound to keep in repair that of which he has no means of ascertaining the condition. It was held (2) that the extent of the obligation of the landlord's duty to repair depended on the state of the house when it was let. In this case the house was nearly 200 years old when it was let. It was practically a worn-out house, and it could not have been put into a good state of repair by any measures short of taking-down and rebuilding. Several cases have decided that when the lessee covenants to deliver up a house in a good state of repair, the extent of his liability must be measured by the state of the house when he leased it. He is not bound to deliver up a new house when he leased an old one. "With regard," it was said in another case, "to the walls, the floor, the doors, the windows and all the different parts of the house, the tenant is bound where there is a breakage . . . to repair it to the best of his ability; but he is never bound, when a portion of the structure has become absolutely worn out and necessary to be replaced, to substitute a new structure in the place of it. All that he undertakes to do is to patch the thing up so long as it is, in the nature of things, right and reasonable that the thing should be patched up. But when it has got to such a state that patching up is of no avail . . . then the tenant is not bound to put in anything new, or to pay any proportion of the cost of putting in the new thing, because the old one has become unfit to discharge its duty." What is law for the lessee is law for the lessor. The house in this case was when leased in such a state that repairs were impossible. The only thing that remained to do was to rebuild; and this was no part of the lessor's obligation under his covenant to repair.

TRANSVAAL INSTITUTE OF ARCHITECTS.

A MEETING between sub-committees of the Institute of Architects and Master Builders' Association was recently held in the Institute Room, Provident Building, to discuss the new drainage by-laws which will shortly come into force. Mr. J. F. Beardwood presided, and there were also present Mr. Granger Fleming and Mr. Seton Morris, of the Institute of Architects, and Messrs. R. S. Seago, Thos. Clark, A. Moig and J. J. Jowett, of the Builders' Association.

For several weeks both Societies have been formulating amendments to various clauses in the proposed by-laws, and the object of the meeting was to enable architects and builders to thoroughly discuss their respective amendments before sending same to the municipality. The meeting, which lasted nearly three hours, was practically unanimous on the majority of points discussed.

The Following Minute has been sanctioned by the Treasury:—"Their Lordships are pleased to declare that for the due and efficient discharge of the office of keeper of the National Gallery of British Art at Millbank, professional and other peculiar qualifications not ordinarily to be acquired in the public service are required, and that it is for the interest of the public that persons should be appointed thereto at an age exceeding that at which public service ordinarily begins. Their Lordships are at the same time pleased to direct that any holder of the aforesaid office be entitled to superannuation, but without any addition of years, although he may not hold his appointment directly from the Crown, and may not have entered the services with a certificate from the Civil Service Commissioners."

INTERNATIONAL CONGRESS OF ARCHITECTS

SEVERAL congresses of architects have been held in London in connection with the Royal Institute of British Architects. This is the first year of an International congress of architects in London, being the seventh of the series. It was arranged that the subjects for discussion were to be:—

1. The Execution of important Government and Municipal Architectural Work by Salaried Officials.
2. Architectural Copyright and the Ownership of Drawings.
3. Steel and Reinforced Concrete Construction.
4. The Education of the Public in Architecture.
5. A Statutory Qualification for Architects.
6. The Architect-Craftsman: How far should the Architect receive the Theoretical and Practical Training of a Craftsman?
7. The Planning and Laying-out of Streets and Open Spaces in Cities.
8. To what Extent and in what Sense should the Architect have Control over other Artists or Craftsmen in the Completion of a National or Public Building?
9. The Responsibilities of a Government in the Conservation of National Monuments.
10. The Organisation of Public International Architectural Competitions.

The order followed was different.

Monday, July 16. Preliminary Meeting.

THE Congress opened on Monday morning by a well attended informal reception by Mr. J. Belcher, A.R.A., at the Grafton Galleries. The visitors were much interested in the large collection of architectural water-colours, drawings and photographs which have been hung on the walls and on screens, as well as in the collection of furniture, silver, &c., downstairs. To avoid confusion, the delegates were instructed to apply for tickets, &c., at the special tables over which the name of their country was inscribed. The arrangement worked admirably.

The formal inaugural meeting took place at the Guildhall in the afternoon. Her Royal Highness the Princess Louise and His Grace the Duke of Argyll, K.G., were received by the executive committee and the ladies' committee. The chair was taken by the Right Hon. the Lord Mayor of London, who, after a few words, vacated it in favour of the Duke of Argyll, the chairman of the meeting.

Mr. JOHN BELCHER, A.R.A., president of the Royal Institute of British Architects, was then called upon to read the following presidential address of welcome:—

Presidential Address.

As President of the Royal Institute of British Architects I have the honour of being invited to preside over the work of this the seventh International Congress of Architects, and on behalf of the executive committee I take the earliest opportunity to heartily welcome the distinguished delegates and architects who have honoured this country by their presence, and to assure them of our high regard and esteem.

Gentlemen, I have every hope that our deliberations will prove of great interest and value, and will tend to the advancement of our beloved art throughout the world. It is by interchange of ideas, comparison of methods, and the statement of experiences under new and changing conditions that that advancement will be assured. These Congresses, therefore, may be expected to bring in their train fresh life and vigour, increased enthusiasm, broader views, and new ideas which cannot fail to benefit the community at large.

I say "community" advisedly, because the fact is beginning to be recognised that architecture as a fine art is not, or must not any longer be, one of the luxuries of the rich, but is of vital importance to the physical and moral wellbeing of all sorts and conditions of men, especially in cities and large towns. Environment is a tremendous factor in education and development. A man's surroundings have enormous power over him, whether for good or for evil; a power that acts continuously, without cessation—almost, we may say, by day and by night. This fact is being more and more clearly recognised every day, and efforts, we hope, will be made to introduce a stricter supervision over buildings of every kind, that a better order of things may gradually be created. But here, at the very outset, we are confronted

by a popular misconception concerning the true nature of architecture. In past years public interest has been almost limited to the scientific side of the question, viz. that houses and other buildings should be well built, sound and wholesome; that drainage and ventilation should be carefully attended to, and other so-called "practical" matters. Occasionally, and more frequently of late, a certain amount of ornament and so-called style has been demanded, and this has been thrown in or daubed on afterwards, and the result dignified with the name of Architecture. Such work is not true architecture at all. It is mere building—sound and good perhaps, but still mere building, plus certain ornamental and decorative features. Now, if our architecture is to be an elevating and refining influence, if it is to be an enduring power for good, still more, if it is to be a witness to coming generations of earnest purpose and high aspirations, of moral power and intellectual greatness, the artistic element must not be something merely added: it must interpenetrate and blend with scientific knowledge and experience from the very first.

Architecture is both a science and an art, and the mathematical symbol of the relation between the two is not that for mere addition (+), but for multiplication (×). In other words, science supplies the facts and the laws which art takes and presses into the service of noble ideals. The scientific and artistic elements in a good building may perhaps to a certain extent be distinguished, but they cannot be separated: they are as inseparably connected as mind and body.

The primary motive for all building lies in the practical needs of life, in the demand for shelter and comfort; but the architect's work calls for a much wider range of thought and purpose than is necessarily implied in such provision. If the task entrusted to him is to be honourably as well as adequately fulfilled he must be an artist, with an artist's motives, aspirations and ideals, as well as a man of practical skill and scientific knowledge. In this way the elementary necessities of life may be made to serve high and noble ends, and much that is elevating and refining may be brought into the lives of the people as a silent but continuous power for good. Their homes, the streets they traverse and the buildings they work in may all be made, as Lord Leighton once observed, to contain "the fire-germ of living beauty," quickening and invigorating the deep springs of health and joy. The proceedings of this Congress and the publicity attaching to them will help, we trust, to bring this important subject into greater prominence, and we shall, I am sure, find, as we have often before found, the public Press most ready and most powerful in helping on anything that concerns the common weal. It may, perhaps, be as well here to inform those of our honoured guests who are not yet aware of the fact that in this country we have no Minister of Fine Art or similar authority to watch over the interests of the public in this respect of the art, as distinguished from the science of building. We have a First Commissioner of Works, it is true, but, however able and enlightened he may be, tradition and custom limit his activity and his authority within certain fairly well-defined lines.

There has been, however, of late amongst the educated portion of the public a wonderful awakening to the interest and value of architecture as a fine art. On all hands we discover a receptive spirit, a disposition to inquire and a readiness to learn something of the mystery of our art, not merely to admire and study its past achievements, but, treating it as a living art, to ascertain its true functions and vital principles. Everywhere intelligent men are asking how they may distinguish between good and bad, and asking, too, why this is good and that bad.

We are taking steps to supply the public with some simple criteria of a general character which may serve as a basis for the formation of a critical taste and sound judgment; and the question of how best to carry this out is a subject that will come before the Congress for consideration and discussion.

If we can thus give the public an insight into some of the living principles of our art—and here I beg to emphasise the word "living"—we shall unlock to them a veritable storehouse of interest and information. For no man has a richer field lying before him for exploration and research than the man who takes an intelligent interest in architecture, who can appreciate its points and decipher its meaning. Everywhere, at every turn, he finds a new "subject" to exercise his perceptive and reflective faculties

upon. Every truly good work will be to him a fund of information as well as a revelation of character and purpose. He will read the mind of a people in their buildings and understand the social conditions that prevailed in each age. For all true architecture is instinct with life, the life of its people and of its age.

We may study the thoughts and purposes of past generations, not only in their poetry and their prose, but also in the architectural work that they leave behind them. No historian's verdict is more reliable than that which is written as with a pen of iron in brick and in stone. How much have we learnt of the brilliance of Greece and the majesty of Rome from the monuments of their architecture that have survived. So also our buildings tell of our daily life and doings, of our noble aims or our sordid interests, of our broad, large-hearted views or of narrow-minded selfishness. A private residence is an index to the character, tastes and disposition of its owner. So, too, our public buildings will declare aloud to after generations the ideals and sentiments that govern our municipal and national life. The educational value and historical interest and importance of architecture are enhanced by the fact that, unlike literature, architecture is cosmopolitan and universal in its language: its great works, its priceless treasures are open to be known and read of all. Every nation, it is true, has its own accents and its peculiar idioms even in architecture, but this is to be counted for a gain rather than a hindrance by the man who visits other lands. As he travels from one country to another, or even from one city to another, he finds an infinite diversity of expression, throwing an ever-shifting light upon the various aspects and sides of human life and thought and feeling. Many a record of the past, too, is opened to his eyes, speaking of men and manners that have passed away. The study of architecture may, indeed, be made one of the most entrancing of pursuits, but if it is to be delivered from that touch of pedantry, that archæological flavour that so often clings to it, the student must be brought into contact with living principles. The monuments of the past, as well as the work of to-day, must be read and judged in the light of those principles that hold good for every age and for every nation.

In addressing my brother architects from other lands—and I am proud to see so many distinguished men amongst them—I may venture to point out that our architecture, like that of other nations, has a distinctive character of its own, being of a severer and graver type than is found elsewhere. This is partly accounted for by the dull grey atmosphere which so constantly wraps us round, by the comparative rareness of clear and sunny skies and our generally unfavourable climatic conditions; but I am afraid we must not throw all the responsibility upon nature. We are insular in character and disposition—there is no doubt about it—and more so perhaps as individuals than in our corporate life. Every man is his own island—a sort of moated grange, in fact, with the drawbridge habitually raised. We are reserved, and apt to shut ourselves up within ourselves. In our railway trains, and even in our clubs, we sit apart in silence, or merely throw remarks at one another over the top of the morning paper. We habitually repress our emotions and hide our feelings. Naturally, therefore, our buildings also are often stolid, even grim and forbidding in appearance; they lack the charm and brightness which distinguish the architecture of other and sunnier lands. We hide them away too—in back streets or (if they be in the country) behind high walls and as many trees as we can press into the service.

But let me hasten to add that I have a purpose in speaking of these external characteristics of British architecture, and that is to beg my illustrious *confrères* from abroad not to stop at the external features, but to pursue their researches a little further, and they will find set forth in our buildings another characteristic of the people of the land they are honouring with a visit. Under a somewhat grave and sedate appearance it will be found that our people possess warm hearts. Once within the doors of their houses there will be no lack of a heartiness of welcome and a sincerity of goodwill which may be firmly relied upon. The many mansions and other beautiful residences with which our country abounds reflect this deeper element of our hearts and lives, and will be found worthy of your notice. I believe it is generally agreed that our modern domestic buildings present a noteworthy development of our art, and one that is almost peculiar to this country. We cannot show you streets leading to public buildings of such stately character as may be seen and admired in other great cities of Europe, and our public buildings themselves are consequently at a

disadvantage. The new approach to Buckingham Palace and the memorial to Queen Victoria—designed by Sir Aston Webb—show what might be done if only such opportunities were more frequently given. Had Sir Christopher Wren been allowed to carry out his plans for laying out the City after the Great Fire, there would have been no lack of fine streets to show you, or of splendid vistas opening up to view every building of importance. But there was no Minister of Fine Arts to turn the scales in favour of an enlightened policy.

Having drawn attention to some of the features and conditions of British architecture, let me acknowledge, on behalf of my countrymen, how much we have learnt from, and how much we have profited by, the many splendid examples of architecture which are to be found and admired in your respective countries. We naturally and instinctively turn to the south for that which is bright and beautiful. The warmer temperament of the southern artist is favourable to productive fancy. We see that the nations amongst whom the love of beauty is a national trait, instinctive and inherited, seek it in all their works, and set forth their national greatness in their public buildings—an element in the education of the people which no Government can afford to despise. The union of the arts in which we believe the secret of your success to lie is not so advanced amongst us as with you; but signs are not wanting even here of the growth of a closer bond between them, and architects and sculptors will be found collaborating on a building to present its distinctive purpose with greater clearness and beauty before the eyes of men. The utilitarian cast of mind, running ever in its one groove, may laugh or even sneer at this; but from a national as well as humanitarian standpoint there can scarcely be a greater mistake than to overlook and neglect the emotional side of man's nature. The greater the advance in civilisation, the more pressing the claim of the emotions of the people to due recognition and well-balanced development on true and right lines. Feats of engineering, appealing to the intellect, astonish but do not move us; but works of beauty, buildings of graceful proportion and appropriate design lift the beholder above the vulgar and commonplace into a higher region, and fill the heart with lofty ideals and pleasurable emotions.

The aim and purpose of the Congress is the welfare of the people. This can only be accomplished by raising the ideal both of architects and the public by setting a higher tone and proposing a nobler end for all work, and thus lifting that which would otherwise be blankly material, utilitarian and commonplace into the region of the beautiful, the elevating and the inspiring.

In conclusion, permit me once again to offer you all a heartfelt and most cordial welcome. I trust that the Congress will be a great success, and that your visit to London will prove both a profitable and an enjoyable one.

SIR ASTON WEBB said he had been asked to propose a vote of thanks to the Corporation of the City of London for their very great kindness in lending the Congress the Guildhall for the purpose of their inaugural meeting. The first hall was built in 1211, rebuilt in 1320, and built once again in 1411. It suffered considerably at the Great Fire, and later from the misguided zeal of George Dance. The hall was connected with the great names of latter-day history and steeped in associations. It was for that reason that it had been selected for the inaugural meeting of the Congress.

The vote of thanks was acknowledged by the Lord Mayor.

Mr. W. J. LOCKE, in his official report as the secretary of the Congress, stated that never before had the full privileges of an International Congress of Architects been extended to ladies. It was believed that every practising architect had had conveyed to him notice of the Congress. There were an unprecedented number of members, the total being nearly 1,700, and of these about 700 came from abroad. Although the British Government were unable to send invitations to the various other governments and practically stand aloof, official representatives have been despatched from other countries.

Replies were made by the representatives of the following foreign countries:—Professor Otto Wagner, Austria; Monsieur J. J. Caluwaers, Belgium; Etatsraad Vilhelm Dahlerup, Denmark; Mynheer J. T. Cuypers, Holland; Monsieur H. Daumet, France; Herr H. Muthesius, Germany; M. A. Metaxas, Greece; Monsieur J. Berczik, Hungary; Professor D'Andrade, Italy; Mr. S. Chujo, Japan; Senhor Ventura Terra, Portugal; M. R. Böker, Russia.

Señor Don Velasquez Bosco, Spain; Professor Clason, Sweden; George B. Post, United States.

Herr H. MUTHESIUS, speaking on behalf of Germany, said that architects had come in great numbers from his country because of the deep interest they felt in English architecture and English art, and also in the hope that this good understanding may be furthered by the Congress. He considered that there is that in contemporary English Domestic architecture that will revolutionise the art of all civilised countries. He ventured to express a wish that arrangements might be made whereby the delegates from abroad might be allowed to visit some selected specimens of modern English houses.

Mr. S. CHUJO, speaking on behalf of Japan, expressed a hope that the time might not be far distant when the Congress would hold their meeting in his country, where he could promise a hearty welcome.

Mr. GEORGE B. POST recalled the time when an architect was considered as a person of absolutely no consideration in America, even in the character of engineer. All that has been changed. To-day they are the arbitrators in all matters of taste, and they have secured the respect of the community. They have organised great architectural societies, and classes of instruction that are in operation throughout the length and breadth of the land.

His Grace the DUKE OF ARGYLL in his inaugural speech said that from the conciseness of the speakers who had just replied on behalf of their respective countries, it was not unnatural to suppose that they were capable of designing a house in five minutes. There were doubtless at this time of year many things to be done by everybody, so that it was unfair to make any considerable demand on their precious hours. He would like to give a most emphatic welcome to all the members of the Congress, and in this he was joined by the Princess Louise. Her Royal Highness was certainly more intimately connected with sculpture than architecture, but she was deeply interested in all forms of art. Everyone should feel obliged towards the members who came from abroad to visit this country. His own experience told him that it is the greatest of pleasures to talk to architects and one of the greatest delights is to erect buildings, most especially when there is the national or municipal purse to fall back on. But the architecture of the past, and above all of foreign lands, can give extraordinary pleasure to all who behold it.

Mr. JOHN BELCHER then proposed a vote of thanks to Her Royal Highness Princess Louise and the Duke of Argyll. Prior to leaving the platform the foreign delegates were presented to the Princess by Mr. Locke.

Tuesday, July 17.

A section of the Congress met at the Grafton Galleries on Tuesday morning to discuss questions relating to the new form of construction. Mons. J. J. Caluwaers (Belgium) was chairman, supported by Mr. Frank Miles Day (president of the American Society of Architects), who undertook the control of the proceedings. Mr. F. N. Jackson acted as hon. secretary.

STEEL AND REINFORCED CONCRETE.

JOINT REINFORCED CONCRETE COMMITTEE.

THE great and increasing use of reinforced concrete in buildings and other structures, and the need of having some authoritative pronouncement on the proper conditions of its use, have led the Royal Institute of British Architects, with the co-operation of other bodies, to appoint a committee to inquire into the subject.

The aim of the committee's deliberations is to prepare a report, stating their recommendations and conclusions as to:—

1. What drawings and details should be prepared before work is commenced.
2. The nature of the materials which may be employed, and the standards to which these should comply, i.e.:—
 - (a) The metal in reinforcement.
 - (b) The matrix.
 - (c) The sand.
 - (d) The gravel, stone, clinker or other aggregate.
 - (e) Water.
3. What are the proportions for concrete to be used in different cases.
4. How the ingredients for concrete are to be mixed and deposited on the work.
5. The distances to be allowed between the reinforcing bars and what covering of concrete is necessary.

6. What precautions are necessary in the design and erection of centring and false work, and how long the whole or portions of centring and false work should remain in position.

7. The rules which should be used in determining the dimensions of the several parts necessary for security, and what safe stresses should be allowed.

8. The supervision necessary and the special matters to which it should be directed.

9. The fire-resisting properties of reinforced concrete.

10. Its adaptability for structures where resistance to liquid pressure is essential, and what special precautions may be advisable under these conditions.

11. What are the necessary conditions for its permanence; resistance to rusting of metal, disintegration of concrete or effects of vibration.

12. The testing of the materials employed and of the finished structures.

13. What provisions are desirable in building laws or Government regulations relating to buildings and other structures, so far as these affect the use of reinforced concrete.

The committee having been recently constituted and only two meetings having been held, no conclusions have been arrived at, and members of the Congress are invited to send communications, either the results of experiments or other information or suggestions that may be of use.

By HENRY ADAMS.

In early designs no provision whatever was made to resist the shearing stresses, which were either overlooked or ignored, and it is interesting to observe the gradual recognition these stresses obtained in the hands of the designers, until in recent construction they receive nearly as much consideration as what are called the "direct" stresses of tension and compression. The importance of considering shear was brought prominently under notice by the failure of experimental beams which had no special provision for meeting the shear stress towards the ends, where of course it is greatest. Various methods are employed in the different systems, but the Kahn trussed bar seems peculiarly suitable, the fin on either side of the core being left attached throughout the middle portion where the tension is greatest, and separated and bent upwards towards the ends to take the shear where the tension is least.

The question of adhesion between the concrete and the steel at one time caused some anxiety. It was naturally supposed that with increase of temperature the steel would expand more than the concrete, and it was thought that this would be sufficient to impair, if not to destroy, any adhesion that might be otherwise obtainable. As a matter of fact the linear change for a given variation of temperature is about 15 per cent. less for concrete than for steel, but when the actual figures are compared the difference is very trifling. Taking the range of temperature between summer and winter as 70 degrees Fahr., the change of length in 100 feet produced by this variation of temperature will be for steel 0.546 inch and for concrete 0.464 inch, the difference between the two materials in a length of 1 foot being less than a thousandth of an inch.

With equal care in mixing the concrete the adhesion varies with the condition of the surface of the steel. When coated with red oxide paint it is extremely light, and even a bituminous paint reduces the adhesion below that due to a clean unprepared surface. It is, however, found that the best adhesion occurs when the steel is rusted all over before being embedded in the concrete. This appears to be due to the formation of some chemical compound, or salt of iron and lime, which may not be detrimental in the absence of further moisture, but the final result is doubtful in such cases as reservoir walls, tanks and dams. Painting the steelwork over with cement wash is a simple method of commencing the contact, and this would seem to prevent further rusting, on the principle of the pail of limewater into which the Sheffield grinders dip their small goods to resist the tendency to rust when left wet.

Professor Bauschinger found the ultimate adhesion to be from 569 to 668 lbs. per square inch, but Mr. J. S. Costigan found it not to exceed 65 lbs. per square inch. Probably in the former case it was measured by the resistance of a rod to withdrawal, and in the latter by the insertion of small plates in a briquette. At any rate, it is not safe to reckon upon more than 50 lbs. per square inch as a working load for adhesion. Allowing 16,000 lbs. per square inch as the working load on steel, the embedded

length that would make the strength and adhesion equal would be 16,000 times the sectional area of steel in square inches divided by fifty times the surface area per inch in length, or briefly $320 a \div s$; so that a quarter-inch square bar embedded for a length of 20 inches would be equally strong against tearing or slipping, and similarly a 1-inch square bar would need to be embedded for a length of 80 inches. There are many different constructions in which this fact may be of importance; for instance, in a simple beam, if the span is less than twice the above lengths, there will be a tendency for the rod to draw before the tensile strength is utilised, unless the ends are turned up to form cleats. In the edge of a circular ferro-concrete tank, instead of overlapping the ends of the rods, for which the above distance would be a minimum, it would clearly be more economical to turn up the ends and slip a welded link over them. There are several specially prepared bars giving greater resistance to withdrawal, e.g. the Ransome twisted bar, the square corrugated bar and the Columbian bar, which relies for efficiency upon its large surface area compared with its sectional area, but plain rods which can be obtained everywhere should be adopted whenever possible, on the score of economy and avoidance of delay.

Ferro-concrete does not at first sight lend itself readily to architectural effect; the warehouses and coal stores constructed of it can hardly be called visions of beauty, but some of the recent arched bridges have a decidedly pleasing effect, and when the adaptability of the compound material becomes better known we may confidently look forward to the expression of taste as well as utility in the designs.

By E. P. GOODRICH (America).

Associations of insurance companies in the United States have had the effect of standardising requirements. All the most important points thus developed were carefully considered in the design of the Bush factories, which thus were provided with special fire walls, special stair and elevator shafts, waterproof floors, automatic fire doors, a complete sprinkler equipment, windows of wire glass in metal frames, &c.

The reinforced concrete design was prepared with special care as to the fire-resisting qualities of the structure. A "unit" system of reinforcement was devised, which proved effective and economical, not liable to derangement during construction, and especially advantageous because allowing of the use of special fire-resisting materials at points of greatest danger. The columns, even though built of concrete, were fireproofed with cinder concrete shells, which served at the same time as a vehicle for the steel reinforcement and as a mould for the construction of the main body of the column.

The building now completed enjoys the lowest rate of fire insurance, both as to structure and contents, accorded any similar risk.

By Professor LOUIS CLOQUET (Belgium).

The old-style edifice was characterised by the separation between two distinct parts, the walls and the gable. There is a lack of solidarity between the two. At the point where the trusses of the frame rest upon the walls there is something like an articulation. The introduction of the metallic frames has not at once remedied this characteristic defect of buildings formed of stone walls and gables of wood. For a long time it was customary to combine trusses of iron similar to the wooden trusses. The solution of the problem of the large halls only made a decisive step in advance when the centred trusses were introduced, which have their starting-point on the ground, like the trusses of the Dion pattern. From that moment the solidarity between the vertical and the inclined parts was secured. However, it is only the trusses which cannot be deformed. The solidarity between the vertical and the inclined parts is not realised in the enclosing surfaces. There is lack of homogeneity between the two parts of the building, that is to say, its skeleton or frame and its wall. Logic claims a more radical solution, which would consist in establishing solidarity not only between the uprights and the trusses, but rather between the wall and the roof. This is what the use of reinforced concrete enables us to realise. The side wall may even disappear or be made one with the vault. The whole will show almost uninterrupted surfaces on the outside as well as on the inside, with the absence of the encumbering internal protrudings of the frames. The new arrangement has, therefore, as a result to save the trusses, and only

to maintain a surrounding wall which supports itself without any assistance. Now experience has shown that buildings conceived on this plan do not cost more than those carried out in thick stone walls with metallic gables, and that they are solid.

If it is the question of a building with storeys the floor of reinforced concrete takes with advantage the place of the old systems. The most characteristic consequence of the use of reinforced concrete is the suppression of the roof, as the uppermost ceiling can be used as a cover and constitute an inhabitable terrace. This kind of construction lends itself, moreover, to the boldest rakes or overhanging structures.

This system, if applied in a rational manner, is able to bring a change into the architectural forms. It simplifies the forms; it causes the cumbersome complexities of the frames and floorings to disappear; it simply carries out all the surrounding or separating surfaces. It makes disappear every distinction between the wall and the roof. It introduces an architecture consisting of so elastic surrounding walls that these can be given any dimensions required, according to the space it is useful to enclose. The habitations will take the shapes of parallelipeds terminated by terraces, and the large buildings with curved vaults with visible estrades. We must be prepared to see sculptures and moulded relief work disappear and coloured ornaments to prevail. A radical change in the internal and external forms of the buildings will be the consequence of the substitution of a concrete solidary, homogeneous structure for our former architectonic organism. All the forms proper for a combination of marked-out stones and covered over with plaster, which will henceforth no longer be used, would here be devoid of expression and æsthetic value. They must be given up and other methods must be found.

We have in mind three kinds of form: those of "convenience," those of "structure" and those of "expression."

The forms of convenience, by which the building receives its complete usefulness and a character in harmony with its destination, satisfies the mind without causing pleasure to the eye. Those forms of convenience which are, if not the most pleasing, at least the most excellent, can be carried out to perfection by making use of the processes, so eminently practical, of reinforced concrete.

The forms of expression are those by which the architect and his assistants put their imagination and their soul into the building, in order to impart to it the eloquence of a pleasant aspect. The ideal is that they shall form an integral and inseparable part of the structures. In the buildings constructed of reinforced concrete there is little scope for the artist's talent, especially the sculptor's. There remains hardly anything except the superficial decoration by painting and some polychromic, ceramic or other adornments, but for the artists in colour a vast field is opened for their creations.

The forms of structure, either real or fictitious, are the principal ornament of the buildings produced by the old methods. They are those organic forms which give life to the aspect of buildings with walls of marked-out stones.

In the old-fashioned conception a building is to be compared with a living organism where we can distinguish a skeleton, various members and a sort of muscular system. Reinforced concrete does not afford these elements of interest and charm; it leaves the impression that the work has been carried out in too docile a material, on which the sacred labour of the workman and his traditional processes have not left the traces of the noble struggle between the artisan and matter. We do not find the same beauty in this work all cast in one block in a dead and dull-coloured material, without apparatus, without organism, with which the best thing that can be done is to hide them beneath a superficial decoration.

In conclusion, the new processes, economic and powerful as they are, are precious from the point of view of certain bold and complex accomplishments. They are devoid of the charm of an artistic expression. Besides, economy is only a relative law and of a secondary character, and the boldness of the structure is not always required. A process which is prevalent from these two points of view does not impose itself to the exclusion of the others. Recourse may be had to it for the economic satisfaction of utilitarian projects, for the realisation of comfort and for the solution of bold problems. But it will never eliminate from architectural practice the noble and artistic combinations of masonry work in marked-out stones, moulded and sculptured, of frameworks in wood and in metal, of superstructures with vaults, &c.

By JOAQUIN BASSEGODA (Spain).

Building in reinforced concrete does not solve any new problem either in art or construction. It is a composite building of stone and metallic materials by means of which, profiting by the qualities of the two components, difficulties are more economically solved than could be done with either of them alone.

Economy in the use of reinforced concrete does not depend on the low price of the materials of which it is composed, which are comparatively dear, but on their accurate combination, which allows of the quantity being reduced. Economy consequently has a limit in the maximum co-efficient of ironwork and concrete.

There is no reason why these co-efficients, especially that of the concrete, should be higher than in homogeneous constructions, for there are many circumstances, all difficult to foresee, which may produce lower resistances than those which have served as a basis in the calculation; such as the quality of the cement, the nature and size of the sand and gravel, and the manipulation and use of the different materials.

This consideration has produced various systems from which cementwork has been almost completely eliminated, or in which, at all events, it has not been taken into consideration in the calculation. It is then considered as a simple exterior covering destined to protect the metal against agents which would tend to destroy it, such as oxidation and fire.

Security reaches its maximum in these systems, but, on the other hand, economy diminishes. It may happen that this kind of masonry may become less economical than other homogeneous kinds, such, for example, as brick laid with cement.

In countries where they have excellent brick which, according to an already old-established custom, they use in very reduced thicknesses, either in the parts which give support or in the parts which are supported (arches and horizontal floorings), one might introduce the system of fortifying these constructions, thus obtaining a greater economy in homogeneous masonrywork and in fortified concretework.

In places where construction in brick does not meet the conditions required, the use of fortified cement offers a real and effective economy over all other systems of construction; an economy which should not be exaggerated whilst admitting coefficients of work very superior to those which experience found to be absolutely safe. One can recommend such systems in which the ironwork is adjusted to be able to resist all external force.

With regard to the artistic point of view of the question, reinforced concrete has no exclusive form; on the contrary, like every concretion, it takes that which is given to it. The supporting element, covering an empty space, may be straight (beam) or curved (arch): the length of the former is comparatively restricted; the length of the latter can be much extended, as is also the case in homogeneous constructions.

In the straight form, as in the curved, the theoretical limit of reinforced concrete requires, on account of the weight of the concrete itself, the use of a greater volume of iron in the ironwork than is required in homogeneous metallic constructions. The relation or proportion between the units of resistance and of weight is thirteen times greater in cement than in iron. It follows that in proportion as the absolute dimensions of the works in reinforced concrete are increased, so must the importance of the iron over the cement be increased also, and in consequence the forms then have the characteristics of metallic constructions, as may be noticed in the large bridges.

On the other hand, in architectonic works, in which it is scarcely ever desired to attain the maximum of possible dimensions, the artistic character must come from the lines, projections and colouration. With regard to the first the architect can choose freely without any restriction; the second, whatever they may be—mouldings, ornamental decorations, &c.—can also be obtained with ease and comparative economy, but with the drawback that for their execution one must have recourse to moulding, which indicates a limitation of artistic effect to which architectonic art cannot bring itself. With regard to colour one cannot admit the only one, that of cement; but, on the contrary, this modern concrete must be treated as the ancients treated it, that is to say, by covering it either altogether or in part with other materials of which the varied colouration permits the desired effect being obtained, as certain architects and engineers are already doing who have

succeeded in using fortified cement in their works with a particularly artistic effect.

By PETER B. WIGHT (America).

The purpose of this paper is to treat of the actual use of burned clay in building construction according to the present practice in constructing fireproof buildings in the United States.

The American system is not impracticable in any other country on account of cost. Experience, as well as fabrication in large quantities, will reduce cost. High price of labour in the United States should naturally make it more expensive there than elsewhere. Reduction in cost of transportation an important economic item. The whole subject especially pertinent to the present occasion. We are here to learn as well as to teach each other at the same time; to contribute what we know to the fund of information to be here accumulated for the benefit of our brethren throughout the world.

By GASTON TRÉLAT (France).

Steel and reinforced cement are destined to see their use become general. They are fit to be easily and conveniently used together with other materials such as burnt clay and, above all, sandstone; and in this way can be formed a substantial body provided with solidity and of a nature to assure beauty, a quality not to be neglected. Moreover, the walls built by this method are excellent with regard to the health of the inhabitants in consequence of the absence of dust produced by sandstone, and as offering no harbourage to disease germs, against which an incessant war must be waged. The advantages of this particularly healthy kind of installation are, above all, to be appreciated when it is a question of buildings to be used as hospitals or refuges or as cheap lodging-houses. In consequence of the easy disinfection of the walls, the number of dwellings placed one above the other in buildings of great height is considerably more free from inconveniences.

Steel and reinforced concrete are materials with which it is possible to erect very high buildings and at the same time to reduce the thickness of the parts such as walls and floors. Owing to the mechanical nature of these materials they are provided with resistance to compression and to bending which render it possible to gain useful spaces with regard to the total space covered. From the plastic point of view they can form a body with the enamelled sandstone, forming walls which have a pleasing effect to the observing eye. With regard to hygiene the advantages are not inferior to those which may be expected from enamels in consequence of their delicacy of tone. The enamel of the flamed sandstone allows the construction of walls which are impervious to germs. Finally it produces surroundings whose salubrity one cannot too highly extol. Solidity, economy of space, plastic beauty, salubrity, are thus four qualities produced by the use of these materials.

Mr. MAX CLARKE proposed the following resolution:—"That an inquiry in the direction of what failures have taken place in reinforced buildings and their causes would be desirable."

Mr. MILES DAY seconded the motion, which was carried.

Mr. E. O. SACHS submitted a second resolution as follows:—"That where reinforced concrete is intended to be fire-resisting the greatest possible care must be taken as to the nature of the aggregate and its size, and also to the protection of the steel."

The motion was carried.

Among those who joined in the discussion were Messrs. H. Adams, E. Seward, H. K. Bromhead, F. E. Harris, E. W. Fritchley, H. D. Searles-Wood, E. P. Goodrich, A. Augustin Rey, A. W. Ruddle, L. Cloquet, G. Trélat, Ellis Marsland and E. Prioleau Warren.

The chair was taken by Mr. Reginald Blomfield, A.R.A., M. E. Cannizzaro, M. Bartaumieux and Mr. Harbottle Reed acting as secretaries. Mr. Blomfield, in calling on M. Honoré Daumet to read his paper, said that he was the doyen of the Institut de France. Fifty years ago he won the Grand Prix, and since then his career has fulfilled the brilliant promise he then showed. Both as a scholar and an architect he has done most distinguished work. Amongst other achievements he was the joint architect of the Palais de Justice, Paris. For many years he had been engaged on St. Germain, second only to Versailles, which for Englishmen has the additional interest of being the last refuge of the Stuarts.

THE CHÂTEAU OF SAINT-GERMAIN.

By HONORÉ DAUMET, Membre de l'Institut de France.

THE origin of the Château de Saint-Germain-en-Laye, one of the most important that France possesses, is not known for a certainty. The kings of the first two lines probably came to indulge in the pleasure of hunting in the vast forests which covered the hills at the foot of which flows the Seine, but there is no certainty that they had any buildings there. King Robert I., in the beginning of the eleventh century, founded a church on the high land which dominates the village of Pecq. It is only in the twelfth century that there are positive proofs that there existed a royal residence on the spot where stands the present castle. Louis VI., who reigned from 1108 to 1137, is the first sovereign from whom an authentic document makes known to us his presence at St. Germain. His successors made frequent sojourns there: Louis VII., for instance, who resided there in 1143, and held a conference with Henry II., King of England; Philippe Augustus, who made his will there and built the first chapel of the castle. St. Louis received there in 1247 the Latin Emperor of Constantinople, Baldwin II., who made him a present of relics of the Passion. In order to enshrine them the pious monarch gave orders to build the Sainte-Chapelle of the palace in Paris.

The castle of St. Germain was therefore already during the thirteenth century an important royal residence: it was then composed, besides a dungeon, of two blocks of buildings for habitation, placed one in continuation of the other, the foundations of which still exist, and which have been recognised as such by excavations. The chapel of Philippe Augustus being found insufficient, it was replaced in the reign of St. Louis, between 1230 and 1240, by a more sumptuous building, which has remained almost intact until the present time. This is a piece of architecture of remarkable beauty, the merit of which may perhaps be attributed to Pierre de Montreuil, who during the same period built part of the abbey church at St. Denis, certain details of the two monuments being identical.

Inhabited successively by Philippe le Bold, Philippe le Bel and Philippe of Valois, surrounded by a park, the first mention of which is to be found in 1331, the castle was burnt during the English invasion in 1346, but it was not completely destroyed. The chapel fortunately escaped the fire, and steps were soon taken to rebuild from its ruins and to enlarge a residence where the various successive sovereigns were so fond of staying. Charles V. seems to have been particularly fond of the place, and we know that he had important work carried out there: it is to him that we owe the present circumvallation wall which encloses in its perimeter the big dungeon built by Louis VI. and the chapel by St. Louis. This wall, which is fortified in the manner of the period, had the form of an irregular pentagon; it was afterwards used as a sort of sub-basement for the building erected during the reign of Francis I. Inhabited still by Charles VI., the castle was during several years occupied by an English garrison. Subsequently it remained uninhabited during the end of the fifteenth and the beginning of the sixteenth century.

Francis I. gave orders to rebuild it and to follow the surrounding wall of Charles V. The new buildings must have risen quickly, the simplest materials being used for them. The work of the Middle Ages disappeared almost completely, with the exception of the chapel, which was left standing, but which was partly hidden on the side of the apsis by new constructions, whilst the rose window was obscured and crushed by the wall of the *salle des fêtes*, a magnificent hall illustrated in Du Cerceau's precious work, "The Most Excellent Buildings in France," the original drawings of which are now the property of the British Museum. De Cerceau does not give the name of the architect who worked under the orders of Francis I., but it is safe to affirm that he was an innovator, because there exists no other type of architecture similar to the work he produced. To convince oneself of this it is sufficient to look at the very original aspect of the exterior, the beauty of the staircases and of the vaults which have been preserved, the majesty and the vastness of proportions of the *salle des fêtes*, called the *Salle de Mars*, where the great royal assemblies were held,

as well as the festivals rendered so brilliant by the luxury and the elegance which distinguished the Court of the Valois. Henry II., like his father, was fond of St. Germain. Philibert Delorme changed the arrangements of the chapel, and Guillaume Marchant began to build the Château Neuf, whence an admirable view was afforded over the Seine valley. Of the Château Neuf nothing but a pavilion has been preserved, called the Henry II. Pavilion, which contains on the ground floor a curious hall of rustic architecture. In order to put the two buildings into easy communication, a door was made in the southern part of the Vieux Château building, which was surmounted by a very fine piece of sculpture, now placed in the Louvre Museum, and which has been faithfully reproduced above the present entrance. The last Valois did not often stay at St. Germain so far as can be ascertained. Louis XIV. took refuge there during the Fronde, and there passed nearly all his youth. By his orders Jules Hardouin Mansart added to the castle five large pavilions, which completely altered its exterior aspect. The beautiful and original order invented by the master of works of the Renaissance period doubtless impressed the architect of the seventeenth century who imitated him—a very remarkable fact for that time. Balconies in wrought-iron supported by rich consoles were run all round, and the patios' beats of the Middle Ages were converted into terraces. The castle with its wings built in this manner covered double the former area, and the Court of a luxurious king with its numerous retinue was able to be in residence there. Assemblies were held in the château, and it is there that were celebrated especially the feasts on the occasion of the christening of the Grand Dauphin, the exact representation of which is preserved to us in engravings of the period.

Being deserted for Versailles, St. Germain, since 1689, gave refuge to an unfortunate king. The family of the Stuarts received there the hospitality of Louis XIV. James II. died there in 1701 and his wife Marie d'Este in 1718.

From that time onward the Vieux Château only plays an historic part. Its magnificent *salle des fêtes* was sometimes used for theatrical performances. In 1803 there was a project for establishing a hospital with 800 beds there; later on a cavalry school was established in the building; then it became a military barrack and a military penitentiary. It was only in 1862 that the architect Eugène Millet started the work of restoration, which is still going on. The Museum of National Antiquities, which has been installed in the castle of St. Germain, is a guarantee for the preservation of a monument precious on account of the memories it recalls and for the material traces that French art of the best periods has left there in spite of the alterations and mutilations.

Mr. BLONFIELD said they regretted that pressure of time would only allow of each speaker on the subject being allowed five minutes. They must regret that a similar reason had prevented them from hearing M. Daumet at greater length on a subject he knew so well.

Mr. PHENÉ SPIERS, in proposing a vote of thanks in French, regretted the absence of illustrations.

M. CANNIZZARO, who seconded it, said that M. Daumet was an example to all architects as to the proper way of carrying out works of restoration. He lived the life of that period, and thereby was enabled to enter into its spirit. In consequence all the buildings with which he was connected remained buildings of the time of their erection. And that was the only proper way for architects to conduct their restoration.

Mr. E. W. HUDSON expressed a hope that M. Daumet might be persuaded to lend photographs of the sculpture at St. Germain, so as to reveal to England the secrets of the French sculptors' art.

Colonel PRENDERGAST said all must be grateful to the architects who had come so far to attend the Congress. It was fit and proper that the first paper should be read by a Frenchman. Not only were they their friends, but England was deeply indebted to France in her architecture.

Mr. BLONFIELD, at the close, announced that a book was to be brought out by M. Daumet on the château of St. Germain, illustrated with photographs.

The chair for the second subject was taken by Señor H. M. Repullés y Vargas, supported by Mr. John Slater, the secretaries being M. H. Peschl (Austria) and Mr. G. H. Fellowes Prynn (England).

(Continued on page 45.)

NOTES AND COMMENTS.

ALL varnishes are difficult to manufacture, and, it may be said, difficult to test. Unless it dries hard and quickly the surface runs the risk of losing its lustre. But elasticity is also necessary to that end. Results cannot be easily ascertained. Professor BAILEY and Dr. A. P. LAURIE lately brought before the Scottish Society of Arts a new method of testing the hardness and toughness of varnishes. The instrument they invented appeared to a special committee appointed to examine it to be an ingenious attempt to test mechanically the hardness and toughness of varnishes applied to a varnished surface, and was a novel and useful apparatus. The interesting fact ascertained was that when a point was weighted to 1,200 grammes and did not injure the surface varnished, the quality might be regarded as a fair standard of hardness. It had, however, to be ascertained by observation whether hardness alone could be relied upon as a test of the true value of the varnish, for eventually the test of time might demonstrate it to be brittle and inelastic owing to deterioration. The committee considered the researches and the apparatus so desirable that they recommended the invention to the favourable consideration of the prize committee.

A PARTY of members of the Society of Antiquaries visited the remains of the Roman villa at Bignor, in Sussex. The pavement, which is one of the finest in Europe, is on the farm of Mr. RICHARD RUPPER. It was in the time of his grandfather in 1811 that a part of the pavement was discovered. The work of excavation was undertaken by SAMUEL LYSONS, the archæologist. A marvellous drawing by him, showing all the details, hangs in Mr. RUPPER's parlour. Care was taken to cover the principal pavement by a roof, and it suggests the watchfulness of the owners that so little disturbance has taken place. Occasionally some of the tesserae were lifted by underground vegetation. Last autumn the Society of Antiquaries had the mosaics cleaned and the loose tesserae fixed in their places by Italian workmen. The restoration was conducted under the supervision of Mr. W. H. ST. JOHN HOPE, M.A., secretary of the Society, and Mr. R. GARRAWAY RICE, F.S.A., the latter being a resident in the neighbourhood. The object of the visit on Friday was to examine the work, and it was considered satisfactory by all who were competent to judge. Bignor is within a few miles of the railway stations of Pulborough, Littleworth and Arundel.

THE Russian Government has been supposed to be desirous to compel the Finns to abandon all their racial pride. Even the friends of Russia would be opposed to that policy, for the people are among the most interesting in Europe. In our time, when the alliances between languages receive attention, Finnish speech is as interesting as Celtic. The Russian Government must have listened to wise counsel when it agreed to the erection of a national museum in Helsingfors. That city has not only several fine buildings, but the university has also a valuable ethnological collection. Scattered through the city are several small collections which it is proposed to bring together in the new building, of which the foundation-stone will shortly be laid. The museum is expected to cost about 800,000*l.*, and will represent history and ethnography as well as archæology. The Finns have believed that learning and liberty were closely connected, and although it may seem to be rather late to collect relics of the people, their enthusiasm may be able to accomplish much. Helsingfors only dates from the sixteenth century, but it would be difficult to say when the Finns first appeared in Europe.

It is commonly supposed that public markets are a great convenience, as goods are obtainable in them

at a less price than in ordinary shops. As the stallholders have to pay rent, and as dealers are governed by the prices paid in shops, it is not clear where economy can be secured. If by-laws existed which fixed prices at a definite percentage below shop prices then the advantage of markets would be plain. If the stalls are let at too moderate a rate then the public market is costly, and the expense of upkeep must be borne by the ratepayers. This has just been exemplified in Southport. On the recommendation of the markets committee, it has been decided to convert the front of the market hall into shops. In adopting this course they have been guided by the example of Bolton, where 20,000*l.* has had to be expended in building shops on two of the sides of the market hall. It is needless to say the Town Council ascribed the loss to the architect who designed the structure. It was said that the belief was that an imitation of Newgate Prison would look well in Southport, and a similar mistake was made in Bolton. It is impossible to go against economical laws in markets as in other ventures, and considering the difference of English trading, it may be taken for granted that markets are a delusion which arises from absence of knowledge.

ILLUSTRATIONS.

ELEVATION OF PROPOSED CHAMBER OF COMMERCE, LONDON.

IN the year 1891 my late father, Mr. FREDERICK SANG, architect and artist, submitted designs to the London Chamber of Commerce for an Imperial Chamber of Commerce in the heart of the City of London. Four years later he laid the following scheme before Mr. BALFOUR, the Premier, and Mr. JOSEPH CHAMBERLAIN, the Colonial Secretary. The scheme was this, viz. to establish a commercial parliament in the heart of London, the chief city of the British Empire, on similar lines as at present exists in the German Empire (Zollverein). The proposed building to contain a grand parliamentary chamber for meetings of the commercial members and representatives of England and her colonies, where they could consult and discuss matters regarding the commerce of the Empire. All the colonies to have their representatives in the building, as well as a museum, library and show-rooms, where specimens of raw materials and manufactures of our vast colonial possessions could be exhibited and inspected by our merchants to see at a glance what our colonies could supply us with and also their requirements, as well as our commercial dealings with foreign countries. Our consuls all over the world to supply the Imperial Chamber of Commerce in London with commercial particulars of the requirements and productions of the countries they are accredited to. The Imperial Institute in Kensington is too far west for the merchants of London to refer to, and does not sufficiently give the necessary information required. The design represents the side elevation with principal entrance near London Bridge (King William Street) facing the Fishmongers' Company's hall. The principal elevation, over 400 feet long, facing the river Thames, to be built on a quay similar to the present Custom House. The ground floor of this building to be used as offices, &c. for the commercial navy of the British Empire, telephone, telegraph and post offices, &c. As I said before, all the existing chambers of commerce to be represented under one roof in the heart of the greatest commercial city of the empire, which thus would be concentrated and in direct touch with the whole world. HENRY H. B. SANG.

LOWTHER TERRACE, GLASGOW.

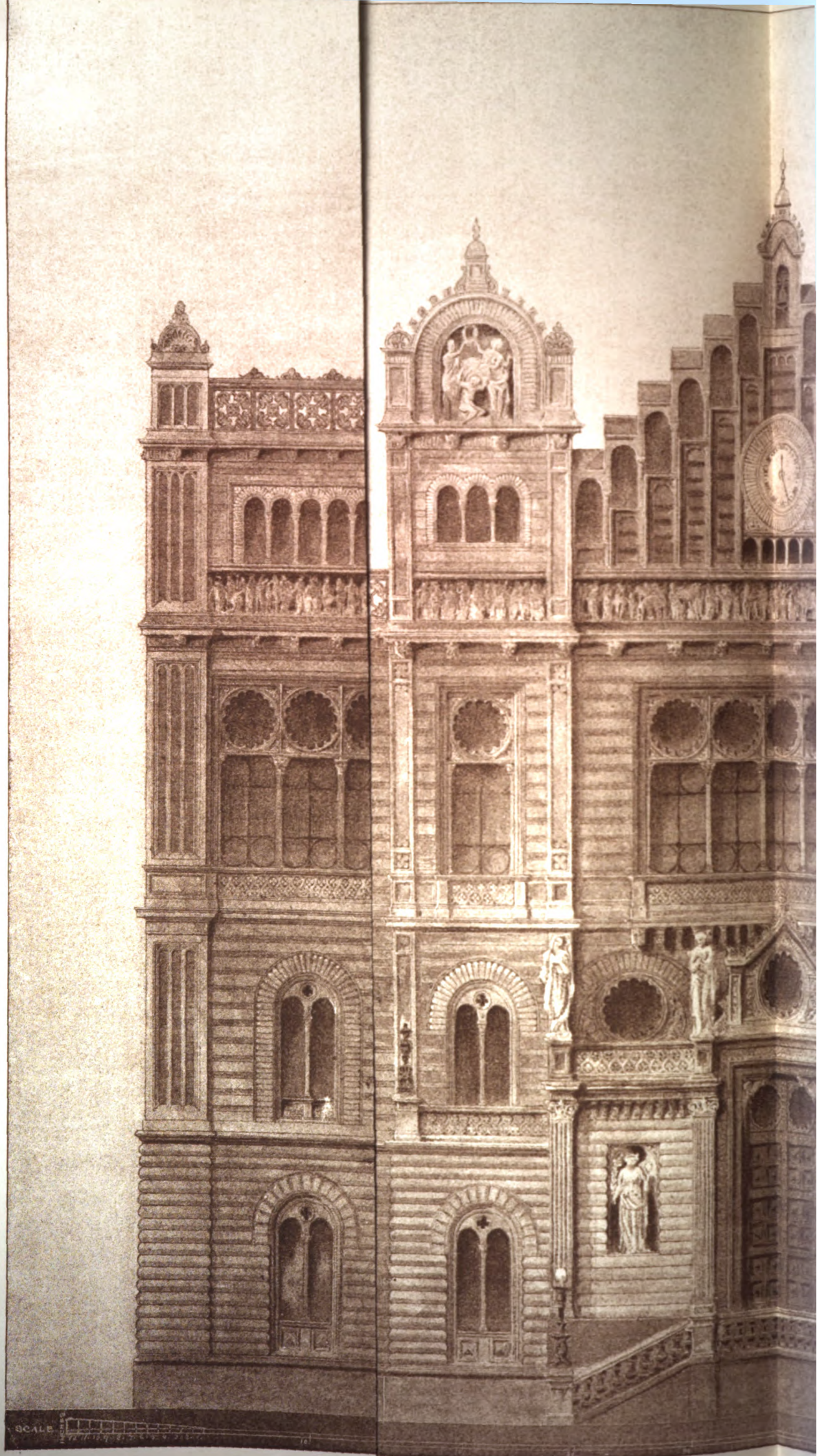
CATHEDRAL SERIES.—ST. DAVIDS: VIEW OF NAVE FROM WEST DOOR.

FULHAM TOWN HALL.

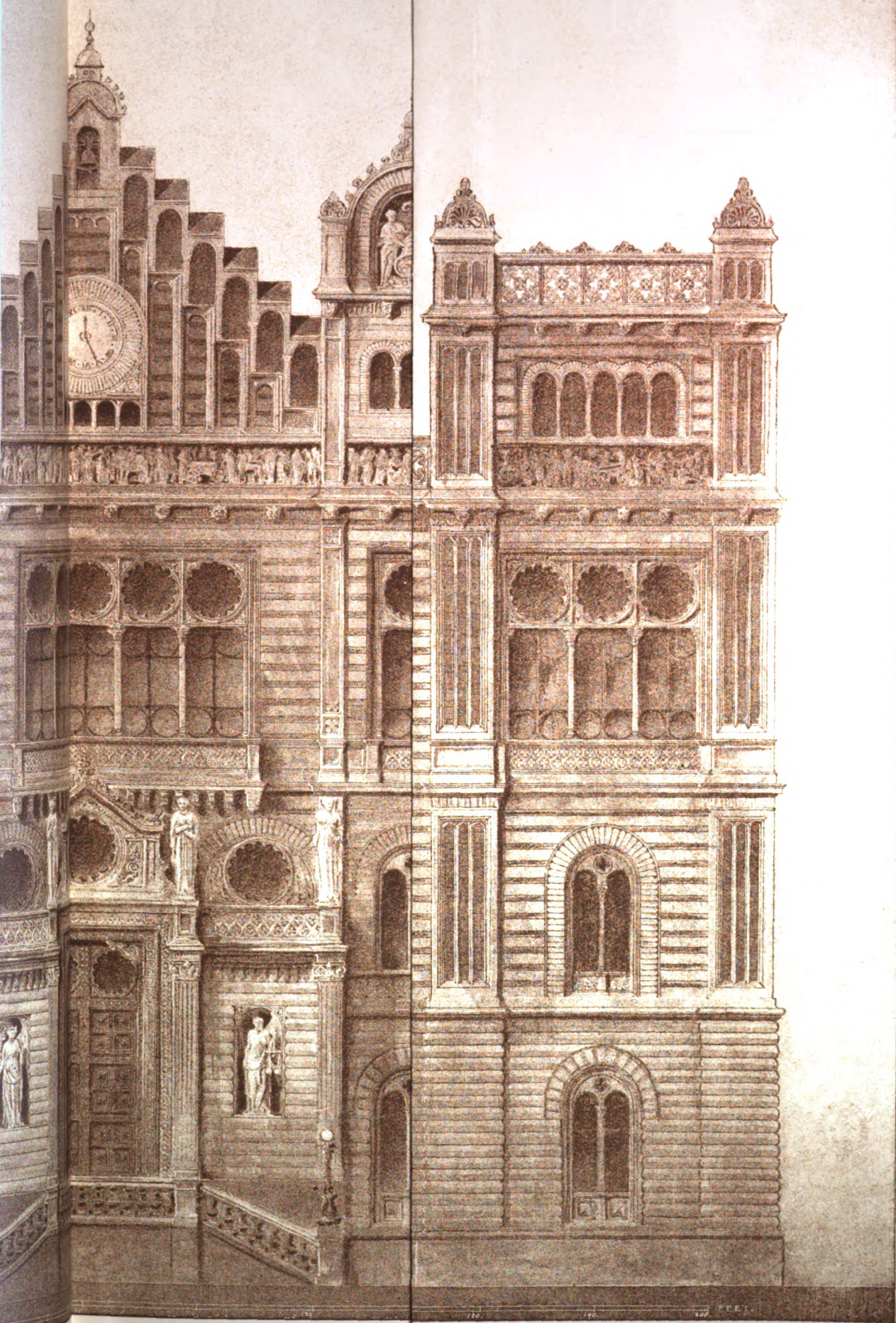
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ELEVATION OF PROPOSED CHAMBER OF
By FREDERICK SANG

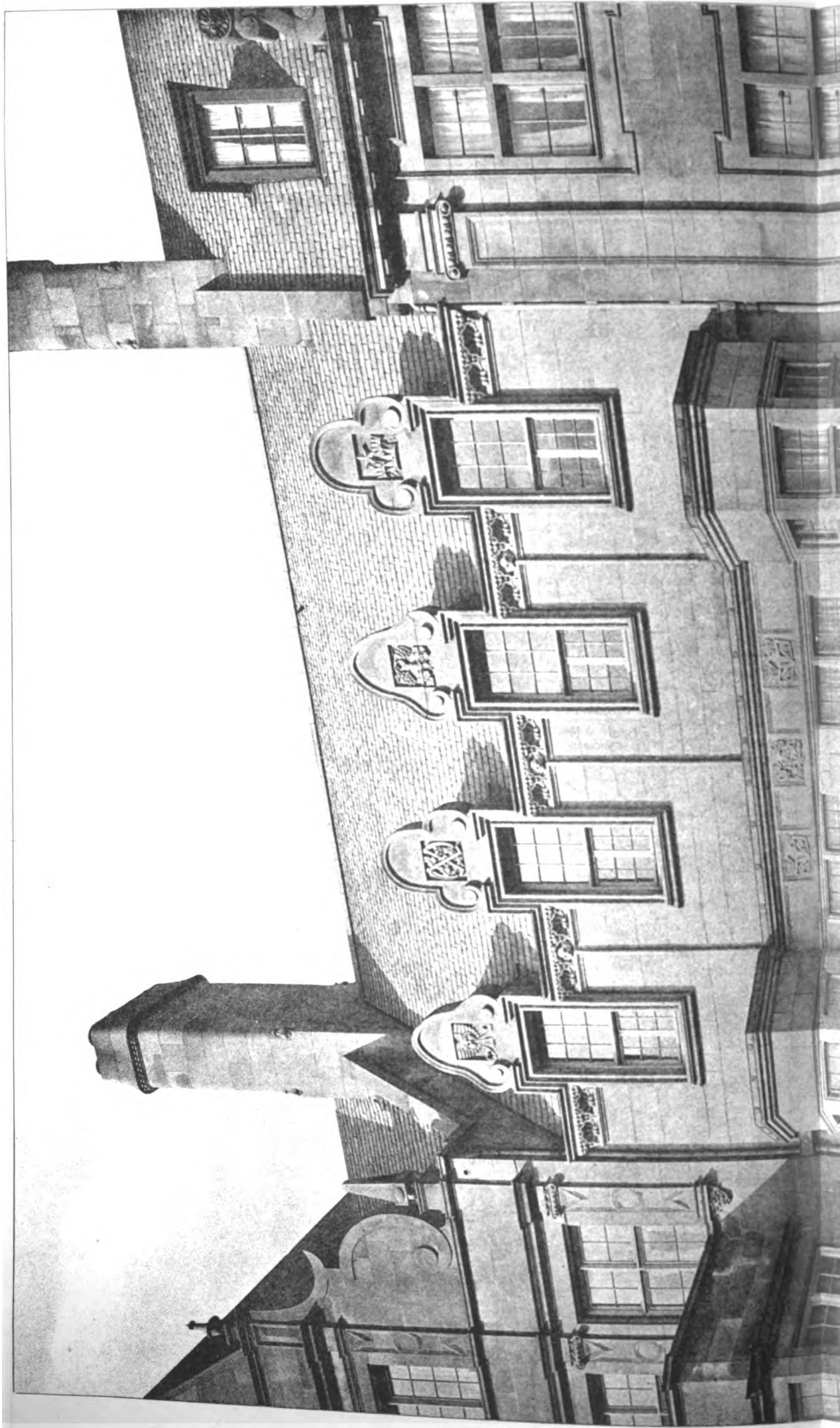


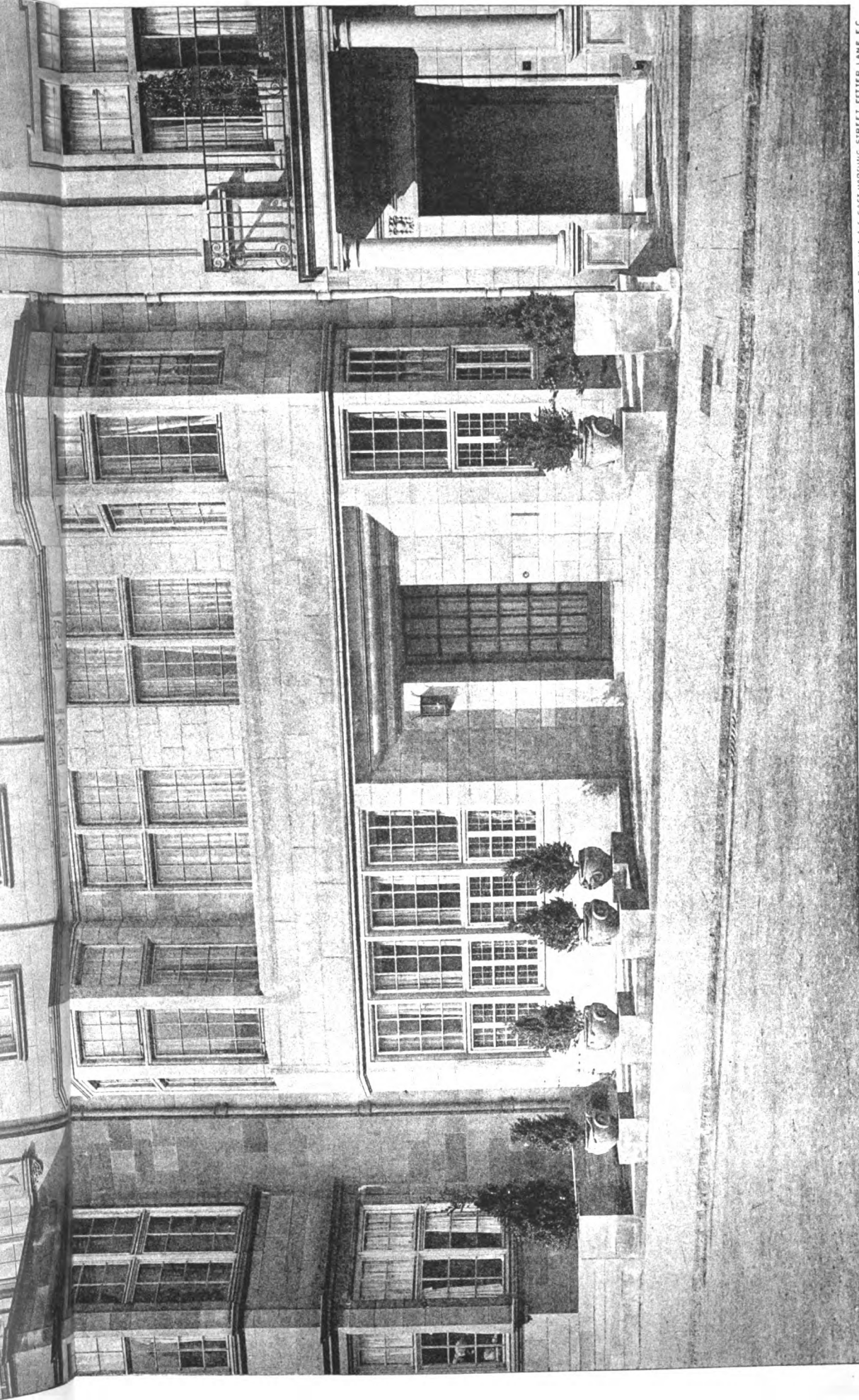
CHAMBER OF COMMERCE, LONDON.
OF PROPOSED
RICK SANG.

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The Architect, July 20th 1906.





PHOTOGRAPHED BY BELFORD LEMBERT & CO. 187, STRAND, W.C.

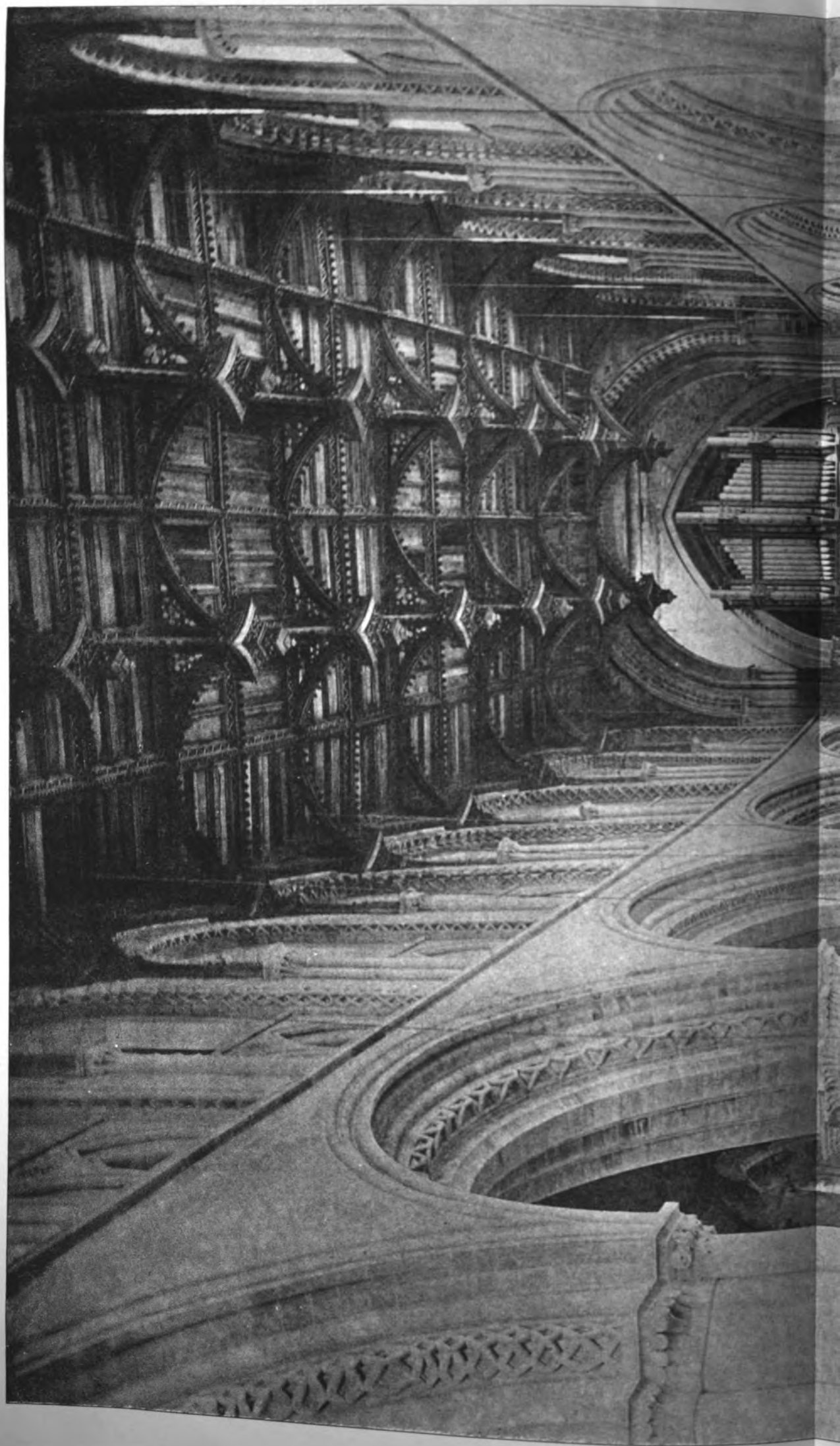
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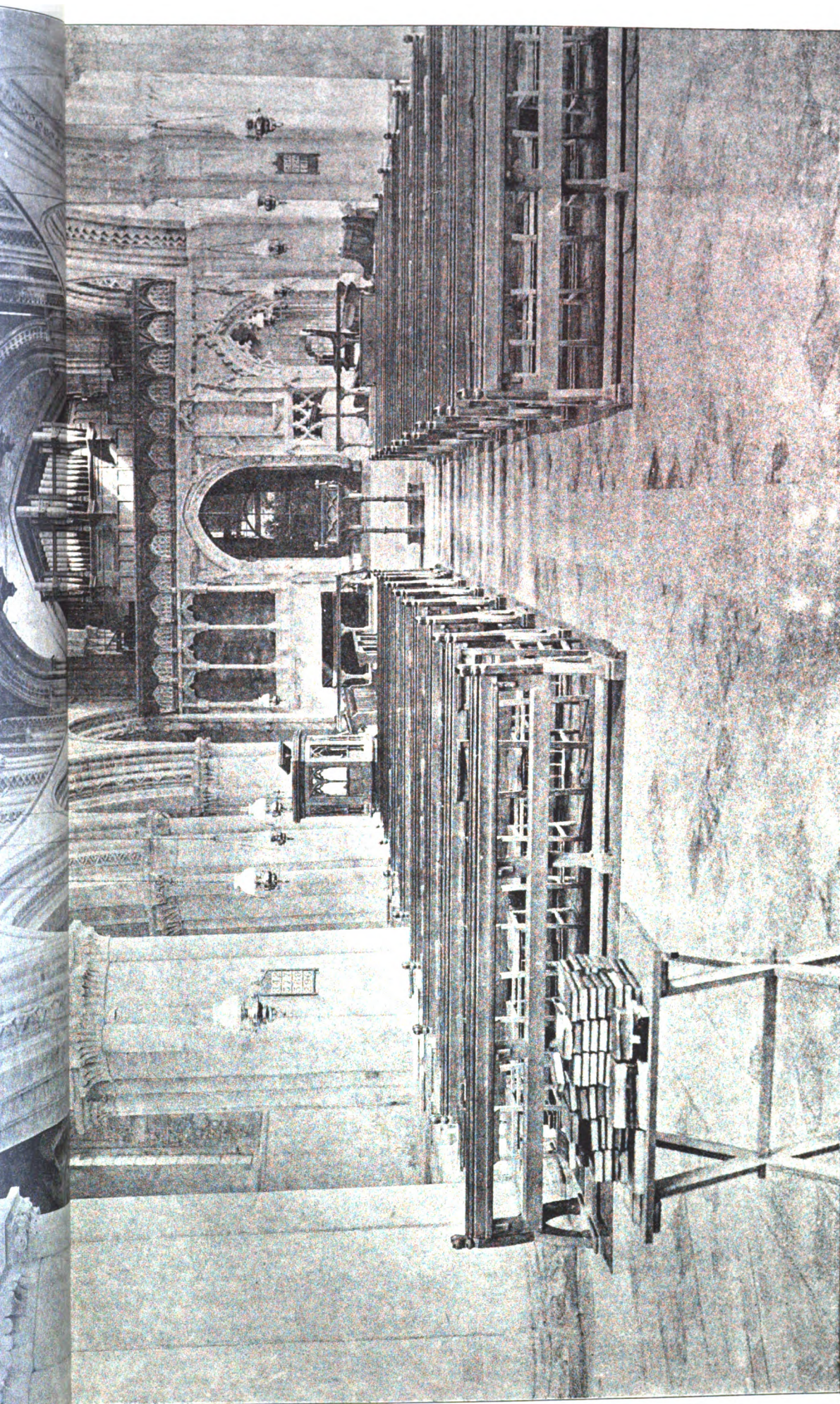
9 LOWTHER TERRACE, GLASGOW.

SYDNEY MITCHELL, Architect.



The Architect, July 20th 1906.





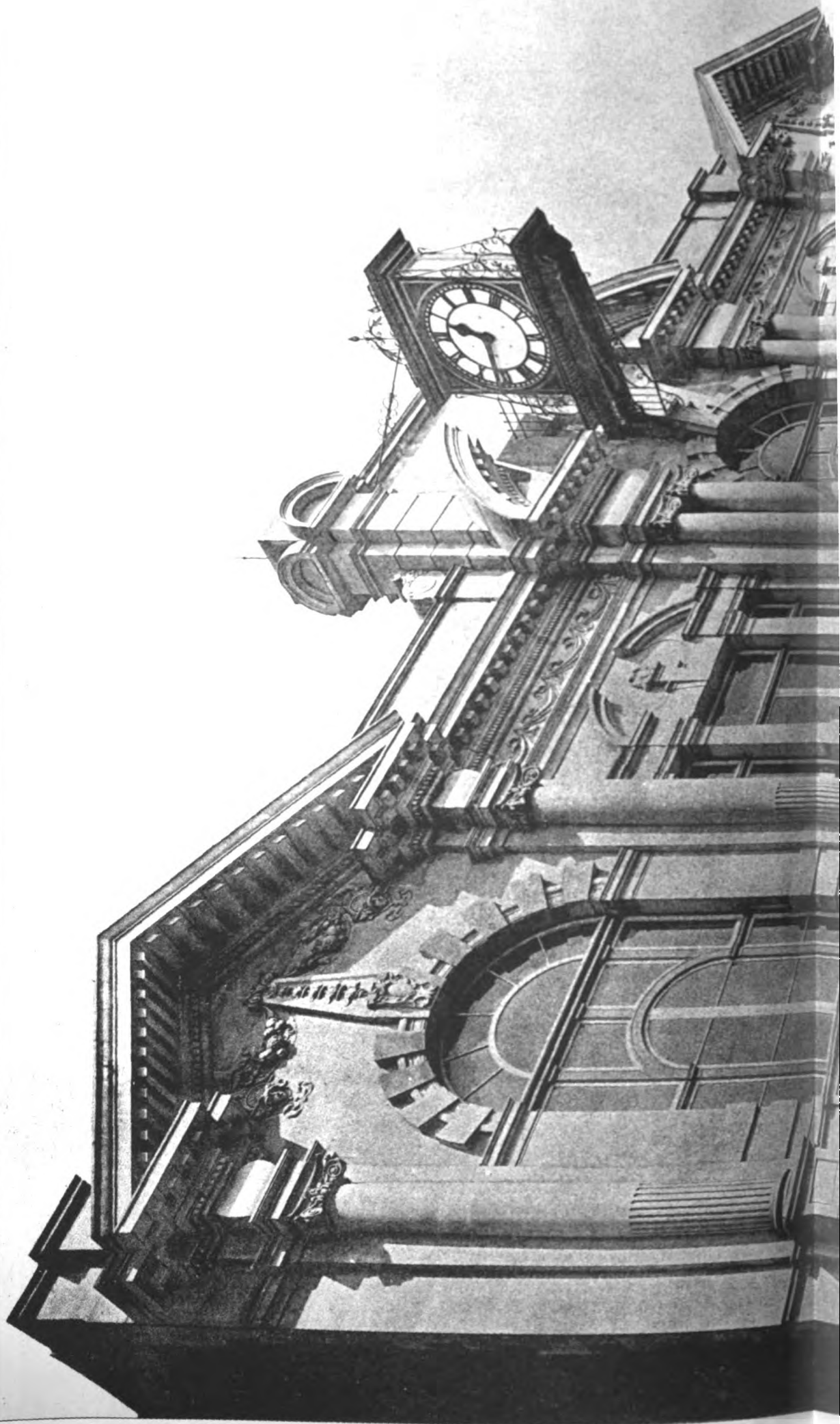
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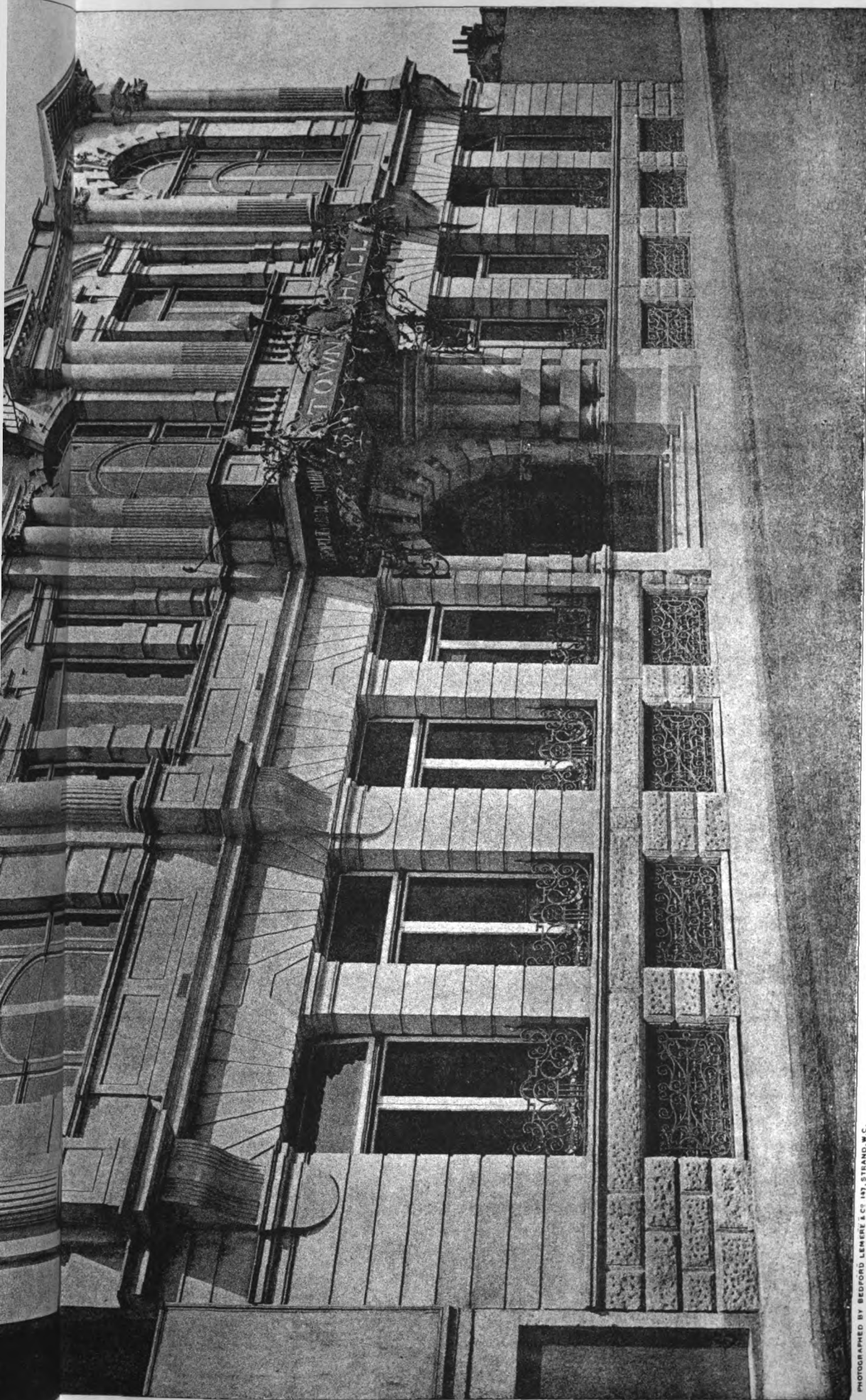
CATHEDRAL SERIES, No. 567.—ST. DAVID'S: VIEW OF NAVE FROM WEST DOOR.



22

The Architect. July 20th 1906.

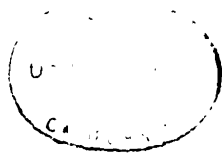




PHOTOGRAPHED BY BEDFORD LEMERE & CO. LTD., STRAND, W.C.

"INK" PHOTO SPRAGUE & CO. LTD. 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

FULHAM TOWN HALL.
FRANCIS WOOD, Architect.



(Continued from page 43.)

ARCHITECTURE AND SALARIED OFFICIALS.

By OTTO WAGNER (Austria).

THE fact, which it is impossible to dispute, that the first architects in the world in a great many cases are not agreed on the question as to what constitutes an architect, gives the certain proof that the title of architect cannot be protected by letters patent, and that a judgment of artistic qualities is possible only by the artists themselves, consequently by the grouping of the artists among themselves.

In the latter circumstance we find also the proof that municipal and State administrations are not even in a position to make the proper choice of an artist to fill an office.

Still another important factor comes into consideration for making such a choice. The architect appointed to an office will, while occupying it, certainly not play the leading part. His individuality, his taste, &c., must therefore subordinate themselves to the same qualities in his superior, or even of more than one superior. The works carried out under the supervision of the office would therefore not show the capacities, the taste and individuality of the creating artist, but certainly the less valuable ones of his superiors, and as such superiors in most cases are laymen in questions of art, and often even in technical matters, it will be hardly necessary to give any more reasons why from such a combination no good can come.

It must also be mentioned that the artistic gifts of an artist oppressed by the yoke of office can never undergo the absolutely necessary development. These considerations prove sufficiently that a municipal or a State administration is never in a position to obtain the services of first-class artists as salaried officials.

But municipal and State administrations have certainly the sacred duty of cultivating the fine arts, which means with regard to architecture that the buildings erected by them should exercise the effect of models. Buildings of such a description can only be expected from great artists, and not from officials of an inferior artistic capacity.

For the same reasons the competence of the officials must only extend to the practical, technical and economical, but never to the artistic control of buildings in the course of construction. If, finally, it is taken into consideration that, by the awakening which took place in the region of art, a lively controversy raged everywhere, and that even to this day public opinion has hardly returned to calmness, and therefore is not in a position to judge with unbiassed artistic feeling works of art, such a large number of reasons has been put forward that the correct answer to Question I. becomes easy. It can only be this:—

Important municipal and Government buildings can only be constructed by eminent artists, and not by salaried officials.

By OSCAR SIMON (Belgium).

The Central Society of Architecture of Belgium is of opinion that no advantage can result from the execution of public buildings by salaried officials (surveyors, &c.), neither for the administration, which protects its agent and takes upon itself the civil responsibility, nor for the public, which pays and suffers from the imperfect arrangements of the buildings destined for its use, and the æsthetic feelings of which are too frequently hurt and painfully impressed by the permanent sight of buildings generally devoid of artistic character.

We hold that it is an abuse that certain officials (surveyors) should offer to private parties on the look-out for authorisation by administrations services which are prohibited by the regulations, and which are a form of unlawful competition highly prejudicial to the independent architects existing only on the income from their professional art.

It is desirable that more energetic action should be taken by architects, with a view to obtain legislative powers:—

1. By bringing into harmony with the modern requirements of life the rate of the out-of-date tariffs still enforced upon the architects.

(A juridic consecration should be given to this principle: "To a superior talent higher fees should be allowed.")

2. By putting a stop to persons invading the architectural domain who do not exclusively exercise the profession of an architect.

3. By the revising of the laws on building in those passages where the text, or the interpretation given to it, imposes on the architect obligations and responsibilities

inconsistent with his mission as an artist and out of proportion to the fees which are allowed for them.

(Apply juridically to the architect and to the contractor the common law principle, "To a larger profit must correspond a more extended responsibility.")

4. The Central Society of Architecture of Belgium is of opinion that if it be essential that the execution of public buildings should be entrusted to private architects it is ardently to be desired that all the work, whatever its importance may be, of construction and arrangement of plan of buildings for the public use should be exclusively given to practitioners of the architectural art.

Moved by a feeling of professional solidarity the seventh International Congress of Architects, meeting in London in 1906, wishing to affirm with all its power the claims and just aspirations of the architects, with a view to an improvement of the economic conditions of their existence, formulates the resolution:—

"That in the future the administrations of States, departments or provinces, municipalities or communes, as well as the administrations of benevolent institutions which may be founded by the former, shall give instructions for professional architects to be appointed by way of public or limited competitions, or whose special capacities or notoriety shall be universally recognised, for the projects of works or buildings to be carried out within their jurisdiction;

"That an absolute prohibition shall put an end to the interference of agents paid by the public administrations, that they shall obtain through private persons an authorisation which can only be granted by public authorities;

"That within the limits of their influence in the legislative assemblies our representatives shall take the initiative to bring about the reform of the laws in force in such cases where the obligations and responsibilities imposed on the architect are incompatible with his mission as an artist and in disproportion to the emoluments attached thereto."

By GASTON TRÉLAT (France).

The buildings we may have to erect or to rearrange answer the requirements of the moment or of the future. What is required is knowledge and experience. Teaching is not sufficient to develop the necessary capacity. Something more is demanded than a cramming of characteristic facts acquired by instruction. The latter must be completed by a personal training in the profession. It is to be recommended that the latter be not started too late, and that the simultaneity of the two operations be secured. The intellectual and the technical education combined generally carries with it a considerable widening of ideas. It may be infinite; not seldom even it lasts as long as life itself. There exists something like a stimulus to acquire new knowledge, the want of which is accentuated in intensity by the existence of personal ideas. But, above all, it is the true source of the original points of view as opposed to the knowledge acquired by study.

In the exercises offered by the workshop, the laboratory, or by that other vast workshop which is the nation, education is ever active and imparts a particular course to the mind. Then it is that the capacity for hypothesis and for the ideal asserts itself in matters of science and in matters of art. The fact remains that art and science are in our days considerably nearer each other than they were in the past. They are two leading branches of human activity, each having no longer any right to remain indifferent towards the other.

The question of public buildings gives rise to a great many questions which interest our societies. This is one of the general features of the mission inherent to the architect. He must therefore keep in touch with the time and constantly interrogate it about the requirements it may manifest to him. Science and art enable a selection to be made of remarkable solutions. The consequence is a knowledge and experience which the different modes signalled will call forth. It is useful to propagate their habit.

Mr. G. OAKLEY TOTTEN (U.S.A.) in opening the discussion said that the subject of "The Execution of Important Government and Municipal Architectural Work by Salaried Officials" was one of the few subjects before the Congress in which it would be possible to see material effect. He had informally brought it before the last Congress at Brussels, where it was warmly taken up.

Professor V. NAGY (Hungary) followed.

Mr. F. E. P. EDWARDS (Bradford) complained that the title of the subject was a little misleading, for it suggested a strong doubt whether any good work could ever come out

of the office of a salaried official. He presumed it was really intended to be a protest against architectural work being confided to engineers, road surveyors, &c., who lacked architectural training. He himself admitted to being a salaried official, but he nevertheless hoped he was an architect. A great number of instances might be quoted where most excellent work had been achieved by official architects. He considered that the matter should be put on a clearer basis. The root of the matter, in his opinion, lay in the fear among architects that they were losing their bread-and-butter. There was a growing custom for large business concerns to employ at a fixed salary someone to do their architectural work. This evil was the outcome of the large number of young men who took up architecture as a livelihood, and who after their days of pupilage were glad to seize any assured means of supporting themselves. These would willingly accept an offer to devote themselves to a firm at a fixed salary.

Mr. A. W. WEISSMAN (Holland) said he had once been an official architect, though now he was in private practice. He thought the crux of the question was whether the official architect was competent or incompetent. The fact of a man being an official did not make him a bad architect, nor did the reverse hold good, though if a choice was to be made between a good official architect and a good non-official one for carrying out the work, he believed the preference should be given to the latter. His experience was that work emanating from the offices of a public official architect on the Continent was only in very rare instances to be attributed to his hand. The real authors were his clerks and assistants.

Mr. A. W. PLUMMER said that the question was of even more vital importance to practitioners in the provinces than to those of London. An official architect had no one to criticise his work, and he practically passed his own plans. The public were naturally inclined to go and explain their requirements to a man who was peculiarly able to gratify them. He hoped it would be made illegal for salaried officials to take up private work in unfair competition with other men. It was not necessarily cheaper for a public body to have a permanent official architect, because he and his staff were being paid whether the work was plentiful or slack. It was desirable that the matter should be thrashed out.

Mr. G. H. FELLOWES PRYNNE said that in England architects greatly suffered through officialdom. It was undeniable that a large amount of good work was done by official architects. Yet it must be remembered that in large towns the share of the head of the department in much of the executed work must be small. It was a dangerous prerogative for an official doing private work to pass judgment on the plans submitted by private practitioners. He hoped that any decision arrived at by the Congress would not remain as a mere passing of a resolution, but that it would be brought to the notice of the various Governments.

Mr. MAURICE B. ADAMS said that, however estimable official engineers and road surveyors might be in their own departments, another feeling was introduced when they took up architectural work. It was another matter when the architect was fully qualified. If the employment of a salaried architect was proved to be cheaper it was useless to kick against the practice. However, in some cases it must necessarily be anything but economical. When an official took up special work without any special training the result must be a loss of money. If a staff was formed and there was no employment for them work would often be made. If assistants engaged for a special job, they were kept on until the quantity surveyors had done the measuring up. The matter was bound up with municipal trading.

Mr. J. SLATER reminded his hearers that the subject had received in the past long and anxious consideration from the Institute, who had sent a resolution thereon to the public bodies of the country. It was the principle they were fighting for. Undoubtedly some official architects were men of capacity, and with ability to carry out praiseworthy work. But under normal circumstances such a man could not have the time at his disposal for properly executing large undertakings. Any decision they came to in the matter ought to have weight throughout the world.

Herr BODO EMBIARDT (Germany) stated that the question had long been one of the most absorbing under the consideration of German architects. It was at first intended that no official architect should be admitted as a member of any architectural society. But after several years it was found to be impossible to hold that those officials were

lacking in genius. Nevertheless, the German architectural societies meant to agitate, in the hope that all great public work should be open to public and private architects.

Mr. W. E. RILEY claimed that qualified officials should not be excluded from carrying out big schemes.

It was then proposed that owing to the extent of the subject, and the comparative smallness of the members present, compared with the number of architects affected, that resolutions should be formulated and discussed by a special committee. Another proposal was that the discussion should be adjourned. Both were negatived, and the following resolution was passed:—"That in future in the interests of the administrations and of the public, and in the highest interests of the art of architecture, public administrations, whether Governmental, provincial or municipal, should entrust important works of architecture only to professional qualified architects, either by competition or by other means."

Wednesday, July 18.

On Wednesday the chair was taken by Herr Otto Wagner (Vienna) and Mr. R. S. Balfour, with M. G. Wickman (Sweden) and Mr. H. O. Tarbolton (Scotland) secretaries. Herr Otto Wagner, in opening the proceedings, thanked the audience in his own name and on behalf of all Austrian architects in conferring on him the honour of acting as chairman. His ignorance of English and slight acquaintance with French prevented him from fulfilling his duties properly. His English colleagues had, however, organised the Congress so admirably that nothing was left to be done. The Austrian architects meant to take this organisation as their model if his distinguished colleagues would accept the invitation he was deputed to give at the final meeting, viz. that they should make Vienna the meeting-place of the eighth congress.

THE ARCHITECT-CRAFTSMAN.

By REGINALD BLOMFIELD, A.R.A.

THE idea of the architect-craftsman suffers from uncertainty as to the extent in which craftsmanship is necessary to the architect and to what extent a training therein should form part of his education. In the early days of Italian Renaissance he was almost invariably a craftsman, or rather as an artist he practised architecture. In the middle of the sixteenth century he detached himself and specialised in architecture. The result was that inferior men usurped the decorative art. Inigo Jones was the only English architect of the seventeenth century who went outside architecture. By the end of the seventeenth century architects had ceased to care for anything beyond their buildings, and they were able to dispense with much of the detail drawing now essential. The loss in certain directions was counterbalanced by increased skill in design. The best work of Wren is more mature than that of Inigo Jones. At the end of the eighteenth century architects again resumed multifarious designs, and for the first time architecture became a literary fashion. But it died and opened the way for the fads and revivals of the nineteenth century.

In England architecture went plunging down the slopes of Mediævalism, with A. W. Pugin at the head. The Old Guard, like Burton, Barry and Cockerell, made a stand in the fight against sentimentalism. Except for them, we should to-day be floundering in a quagmire. English art sank to its lowest depths in 1851. This was the turning-point. The pre-Raphaelite brotherhood appeared, and influenced ideas on architecture and craftsmanship. This movement was seized on by literary men, and its inspiration became literary, anything rather than artistic. Mr. Hunt declared that he and Rossetti agreed that architecture came within the proper work of a painter who, learning the principles of construction from nature herself, would apply them by shaping and decorating the material he had to deal with. Ruskin urged that architects should learn their art not in cities, but in the hills, and study what nature understands by a buttress and a dome. Such views could not lead to greater knowledge or skill in architecture, and art ceased to be regarded except as a material for copy. Morris had tried architecture and given it up in disgust. To him it was a great assemblage of the arts in which architecture was merely a vehicle for carving, tapestry, &c. He never approached it from the standpoint of the architect, but rather as a socialist and craftsman. Gothic was the art of the future because it admitted the guilds. Morris had his eyes so firmly fixed on detail he never rose to the concep-

tion of the art of architecture, which is concerned with the rhythm of building, with thought in great spaces—an art in which detail reinforces a dominant idea. The pre-Raphaelite brotherhood dwindled down to a championship of the handicrafts. But Morris did invaluable work. He taught people to value good workmanship, material, colour, to dislike empty-headed art and to aim high. The Arts and Crafts Society produced the effect that the proportion between architecture and the crafts was lost. It cannot be too often insisted that architecture is not mere decoration or ornamental building, but it is something outside and beyond the various crafts.

Hence the architect is not a craftsman in the sense that are cabinet-makers, and must have a different training. We are taught architecture is a science and also an art, but it is not a science like botany or chemistry. The real science of architecture is that knowledge of the effect to be aimed at and of the means of realising it. It is only by prolonged and intimate study of buildings that a mastery can be obtained. Architecture must satisfy utilitarian and æsthetic requirements. It inspires a sense of organic thought moving in orderly sequence through particulars to the total effect. A fine architectural composition may be compared to a concerto of Bach. Both show restraint, the selection and interweaving of motives, the definite and consecutive construction in which each detail falls into place. However much architecture may be enhanced by sculpture and painting, it is yet independent of them in producing its peculiar impact on the sense. The Pantheon would if shorn of all its ornament remain impressive.

This aspect has dropped out of view. Much of modern English decorative art is done with laudable zeal but inadequate technique, and resulted in "art nouveau." The architect must reassert himself, and take his stand on the true function of his art. Architecture presupposes in its exercise full knowledge of the resource of the art in detail. An architect must be acquainted with his materials and with the laws that govern their behaviour; he must know what he can fairly get out of them. The earnest student must ever keep his ultimate goal in view. The range of architecture is too great to be taught in a given number of years. Great architects usually reach the maturity of their powers in early middle age. All that can be done for students is to lay a good foundation, to familiarise them with their tools and materials, and to give them an insight into the means available for architectural expression. In doing so it is essential to keep before the student the ultimate end of all his training, viz. skill not in draughtsmanship or craftsmanship, but in architecture.

William Morris and the Arts and Crafts Society have tended to substitute architecture for craftsmanship. The former is at present under a cloud. Nevertheless admirable work has been done by English architects of to-day, like Mr. Norman Shaw. There are signs of improvement here and there, but it is impossible to feel certain that the art is back on the lines of true development. If architecture is to hold up its head again in this country it will be through unwearied efforts of architects to realise, and make others realise, that there is such a thing as the art of architecture, and it is worth devotion on its merits.

By W. R. LETHABY.

The practice of modern architectural design is based on custom. In some countries there seems to be a more general agreement than in others, and in the former there is a nearer approach to the existence of style. Beyond this, what are the possibilities by which modern architecture may enter on a course of development, and how can we attain to reality in building?

The styles of the past were shaped by a growing mastery of craftsmanship, and only this will produce art akin to the old, an art which is discovered rather than willed. The architect's store of forms is for the most part degraded memories of the discoveries made by ancient craftsmen. Whence is new energy in modern architecture to be derived? In part it may come from the investigations of science; but even so it will require a resourceful craftsmanship to deal with the new material.

At present the architectural profession is isolated from workmanship, and is thus imprisoned within a small sphere of ideas. Architects have aimed at bringing back the appearance of masterly craftsmanship, but this outward appearance has no vitalising force.

A closer contact with labour may mean at least three things. We need, first, to be in closer touch with the executants of our buildings, and to be anxious to learn from

them what they think is good work. In the second place, it may mean the acceptance by the scientifically trained directing architect of more help from independent workmen of a high order, painters, sculptors, metal-workers, modellers, and the like, while giving up the commonplaces of office-designed ornament. And, thirdly, it may mean the practical training of architects themselves. This idea is liable to two misconceptions; as if it were proposed that the architect engaged on important work should make his own mortar, or as if the claim might be satisfied by receiving lessons in enamelling or wood-carving. The crafts essential to an architect, of course, are masonry and carpentry, while they remain the principal factors in construction, and, so understood, craftsmanship should form the basis of architectural education. The student should cut stone, frame up wood and handle bricks. Often, of course, he could not afford much time for this, but even a month's practice with materials and tools would be better than nothing.

A short course should form a part of the education of all students, but some would probably become much more interested in this side of things, and could follow it out further. Thus we might train architects of varying capacities for various requirements. It is the mistake of all systems to form men of one pattern. However desirable it may be to train some men to the highest degree of academical skill, these are best fitted to deal with the complicated problems of practice in a big city, while the humbler works of the country require equal devotion, but of a different kind. A basis of craftsmanship in architectural education should open out channels for diversities of gifts which may correspond with the diversities of requirement.

By FR. VAN GOBBELSCHROY (Belgium).

The importance of the mandate of the architect is great, because it expects from him extensive knowledge, without which the artist cannot consider himself to be at the height of his mission.

The great drawback the profession suffers from is due to the fact that the title of architect may be assumed by persons who have neither obtained a diploma nor received a special education, and that this unjustifiable tolerance places in the hands of inexperienced persons an art which they will never be able to understand, and still less to practise.

The architect must be able to judge, as a real expert, of the most minute details of the construction—in a word, he should possess the technical knowledge of all the trades which he employs, and this to the extent of being in a position to discover and to have put right without hesitation any part of the work badly done. And in the presence of this vast knowledge, which one should expect him to possess, there is no doubt that the architect would recover the prestige he always used to exercise in the building industry.

Besides, it must be stated that this perfect knowledge of the technical part of the crafts which we ask the architect to possess is not an innovation. In fact, many architects of the Middle Ages and men of science, such as Galileo, Newton, Leibnitz, Stephenson and others were, at the same time, manual labourers. They knew how to manipulate matter in order to put their ideas into practice.

Of course it is not necessary that the technical knowledge of the architect should enable him to perfectly handle the tools of all the crafts—this would be useless; but it is necessary that his knowledge should enable him to carry out everything in accordance with the rules of art; and for this purpose it is necessary that he should himself, within the limits of possibility, have practised under the eye of an experienced master all the kinds of work which later on he will have to carry out in his projects.

This education, which would form part of the whole, would not require more than two years of supplementary studies, because it would only be a question to extend in a practical and convenient way a known programme.

The present programme followed for the studies of the architect could remain, with a certain revising, and there would have to be added to it that which is wanting for the training of the artisan.

By OTTO WAGNER (Austria).

Concerning this question we beg to make the following observations:—

Reference has repeatedly been made to the scientific education of the architect, and stress has been laid on the fact that he has to learn such a vast amount of facts, and that, for the reasons given in the beginning, this learning

cannot embrace everything. In going through the technical studies of the architect, what is required is a good grounding, which will enable him to acquire what is further needed in the course of his subsequent period of activity.

The actual work of the architect and a number of artistic matters, such as the cultivation of the allied arts of painting and sculpture, the keeping pace with the professional literature, &c., cannot fail to induce him to be very economic with the time he is able to give to these occupations, and moreover, he will have to reserve a very considerable part of his time to the supervision of the works to be carried out by him. It will therefore not be wrong to affirm that these matters can hardly receive much attention, from sheer lack of time. To this must be added the loss of time which is caused by the fact that the desire to create, and consequently the capacity to create, are faculties which the artist cannot command at all times.

A further accumulation of work by learning one or more trades (to learn them all is utterly out of the question) certainly exceeds that measure of time which the architect has at his disposal to devote to such work. If besides it is taken into consideration that handicraft of the kind in question sometimes requires considerable physical strength, and may therefore be injurious to the steadiness and the fine touch of the hand, it is dangerous to penetrate so far into the manual work of the architect's craftsmen. The knowledge how any given part of a building is to be made belongs to the sphere of practice, which the architect will acquire in the course of his career all the more readily because his innate gift of invention will serve him as an auxiliary.

The question under consideration can therefore be correctly answered in the sense that the architect must know in a theoretical relation, and with regard to intuition, every trade and the qualities of the materials which he uses in his constructions, but that it is not necessary that he should become proficient in the manual skill belonging to the handicraft.

By GASTON TRÉLAT (France).

The theoretical and practical education of artisans can certainly become an abundant source of development in art. But then it must be judiciously led. Otherwise it would have dangers which would soon show themselves in the work produced.

I wish to say at once that it ought to be consistent with the direction which the professional life takes. And this latter entails the general affinity with all the trades which contribute to the execution of the architect's works. From this results a real theoretical and practical education, which latter embodies itself in an extension of conscientiousness in the artist. Hence a vivacity of spirit which shows itself in the particular character of the elements conducing to the harmony of the *ensemble*, to which they remain subordinate, without which would be exceeded the taste and proportion taught us by a certain philosophy drawn from manners of arrangement to which matter is subject. As can be seen, it is an education to which one consecrates one's life.

But for that there would be no reason to rely on an initiation from the commencement of life. Before all else, it must endeavour to show the disadvantages of making the different elements that the variety of trades represent dominate too much in a work. For this would expose one to a cause of incongruities which should be avoided in architectural conception and execution. Certain masters, whose memory is surrounded with the respect which is due to them for the harmony of their lives, and certain schools could supply evidence of this, if the thing needed to be supported by material proofs. But this is not the case.

Therefore, in order to prevent confusion in the mind, this education will be carried on by the fact of the career itself. For the architect it will result exclusively from the experience he will gain from all the trades contributing to the execution of his buildings.

The education of an architect-artisan is sufficiently gained by the routine of a life practically absorbed in the applications of the art.

With regard to a theoretical and practical education at the commencement of the career, the advantages would in no way make up for the time spent, and the disadvantages of it would predominate.

By ROBERT LESAGE (France).

Should technical teaching be given at the school of architecture and at the fine art school, or should it be given in a school absolutely independent of these?

It is impossible to answer this question in a general manner. The organisation of a technical school for the crafts of the building trade, complementary to the schools of architecture, will of necessity work in unison with them.

To each special case will correspond a special and adequate solution.

The same answer must be made to the question, Is the technical teaching to precede, to accompany, or to follow the teaching of the art of architecture?

We beg to propose the following resolution:—

This Congress, considering that the architect, the master of the works, having under his immediate direction workmen and artisans of the most varied bodies of the State, and utilising the services of the most varied industries, has no means of acquiring in each of these trades and in each of these industries the complete knowledge of a specialist; considering that there exist already in the majority of European countries training schools for artisans, schools for practical application and laboratories for engineers where specialists are trained, expresses the desire that there should be created specially for the architects and for the general contractors schools in which, in the limited space of two years, they could acquire in a general but exact manner the technical part of the various trades and industries of the building trade, without claiming to practise these trades and industries. It also expresses the wish that between these schools international and continuous relations may be established.

A general discussion followed, in which the following took part:—Professor V. Nagy (Hungary), Mr. Maurice B. Adams, Mynheer J. T. Cuypers (Holland), Mr. H. P. Maule, Mr. E. P. Howard and Mr. C. H. Walker (United States).

The following resolution was then carried:—"This Congress, considering that the architect, the master of works, having under his immediate direction workmen and artisans of the most varied bodies of the State, and utilising the services of the most varied industries, has no means of acquiring in each of those industries the complete knowledge of a specialist, expresses the desire the opportunity should be given to architectural students to acquire in a general but exact manner the technical part of the various trades and industries of the building trade without claiming to practise the trades and industries. It also expresses the wish that between these schools international and continuous relations may be established."

A section of the Congress, Herr H. Muthesius presiding, met at the Royal Institute of British Architects on Wednesday morning, and debated upon the reports forwarded by several foreign societies.

INTERNATIONAL COMPETITIONS.

By J. GUADET (France).

THE regulations must allow the same time to all competitors. Programmes must be given out simultaneously in every country. The programme should be issued everywhere in the language in which it is drawn up, and not in translation. Every further communication should be addressed to all the competitors. During the competition no change should be made in the regulations governing it. The same date for sending in designs should be obligatory everywhere, and designs should be sent in to a place specified for each country. The premiated designs should become the property of the promoters, but without prejudice to the laws of artistic copyright. An exhibition of designs before and after adjudication is necessary. The regulations must indicate whether the designs should be signed or distinguished by a motto; signature is best, but the adoption of a pseudonym should be allowed. No envelope containing an author's name should be opened without his consent, except in the case of premiated designs. The technical programme should be clear, precise and drawn up under the advice of experienced architects. It should avoid directions which cannot be followed, and should not impose excessive work by means of drawings that are useless or too large a scale. The competitors' personal expenses should be reduced to a minimum.

The jury should be formed of architects of each nation represented in the competition in the proportion of one assessor to ten competitors or fraction of ten afterwards. Every nation represented by less than ten competitors, with a minimum of five, should have the right to one assessor.

Special conditions for competitions in two stages.

THE SOCIETY "ARCHITECTURA ET AMICITIA"
(Amsterdam) proposed:—

The conditions of the competition must be the same for all competitors. Exceptional conditions, no matter under what form, are prohibited. The delivery of the designs must be made anonymously.

The date of the sending off, proved by the stamp of the stations of departure, which must be delivered to the jury, shall be taken as the final term for the closure of the competition. The programme of the competition shall be published or placed at the disposal of the applicants in all the countries, or groups of countries, at the same date.

The jury of an international competition will in principle be formed by half the number, less one, of the members of the nationality of the country in which the competition is opened. Architects must form the majority of the members of the jury. The names of the members of the jury and of their substitutes, with the declaration which contains the approval of all the conditions, shall be inserted in the programme.

The jury of the country in which the competition is held forms the information bureau. The publication of announcements relative to the competition will be made in such a manner that it may be considered to have come to the knowledge of all interested parties. These announcements shall have the same value as the conditions of the programme.

The programme must express in precise terms the conditions made, making a distinction between the absolute requirements and the optional requirements. It would, however, be preferable that optional conditions should not figure in the programme of the competition.

The number of drawings to be sent is to be limited to the quantity absolutely necessary, in order to avoid all useless work and superfluous expense.

The total amount of the prizes to be distributed shall be at least equal to double the amount which would be paid for the architectural part of the work carried out to an architect who had been entrusted with the execution of the design.

By GASTON TRÉLAT (Paris).

The argumentation of the previous subject bore, in the first place, on the spirit which in general dominates architects. Contrary to the intentions of a generous application of art, the architect often seems too pre-occupied about not doing certain things. And one spends a good deal of time in learning those things which must be avoided. Wasted years, it seems: how much more preferable would be an education which faced the realisations to be deduced from contemporary science? This would adjust itself to the standard authorised by experience.

Competitions, as they are now held, have not the scope they ought to have. Conventions take up too much place, one has a sense of things learnt: book learning of a kind and without influence on the mind of the masses.

Public beauty, like public health, corresponds to the contemporary movement of democracy, of which these two capitals are a momentary crowning. The architect has no right to separate himself from it if he wishes to fulfil the function expected from the social competence it is his duty to show.

Internationalism and publicity will give to competitions a youthfulness and a vitality which they have not had up to now, and which are a part of the movement of contemporary effort.

These competitions should have exclusively in view the services of which they are the object. It must be so, in order to insure to the operation a normal rectitude which would keep it above the paltrinesses which are too well known and are lowering to art, causes lowering alike for competitors and judges, and injurious to the solutions to be gathered.

The competitions being international, the nations taking part in them through their artists will all include the same number of judges.

In this way the competition agents, whom the judges represent, will doubtless be less inclined to look upon themselves as a delegation having to represent the interests of compatriots or the idea in fashion currently admitted in their country. The jury will be more particularly engaged in selecting and bringing about a solution, while the competitors themselves, in consequence of the absence of preconceived ideas represented with a show of authority, will strive to elaborate and present different sides, to the exclusion of all party spirit. And, in these days, if one

wishes to respect personalities alike useful in art and in science, it is impossible to be sufficiently on one's guard against these fatal influences. In effect, whatever may be the interest of contemporary evolution, with its abundance of curious observations and generous comparisons in their knowledge, ill-luck will have it that, in revenge, we must endure the narrow ideas of little groups and clans, which bring confusion into the service of the human collectivity. It is, however, to this that all our efforts should directly refer, free from this impediment, very regrettable socially.

To bring this *résumé* to an end, with regard to competitions I must again say that the spirit of augmentation followed in these lines endeavours to insure the supremacy of the decision, uniting the choice of the work and the choice of the artist charged with its execution. The author of the first idea ought to complete the studies and accomplish its realisation. And the same spirit which the decision has intended to make clear will be found in the accomplished work. This is how things should go, if one would keep to the rectitude that the situation demands and respect the responsibility that the decision imposes on the jury.

And the organisation, as sketched here in its characteristic features, would perhaps be destined to give results still unforeseen. But this would be on condition of always keeping in the path that would normally be deduced therefrom, once agreement was come to on the ideas which support the solution I submit to the Congress.

Conclusion.—Without consciousness there is neither art nor artist. It is only by a wide comprehension of things, all leading to the consciousness of his time and of humanity, that the artist can do a useful work. In these days the widening of science serves as a basis to this consciousness. And the applications of the art take a special character in order to supply the needs and aspirations of the period.

The organisation of international competitions showing a greater amplitude of intellectual horizon would be in accordance with the ideal of the day.

Again, these competitions would have the advantage of extending the character of educations which up to now have remained restricted to present requirements.

But measures would have to be taken to insure the entire liberty of intellectual expansion amongst the artists entering into competition, to afford the jury an unlimited independence and to enlighten the consciousness of the verdict they would give.

After discussion of the reports the following resolution, proposed by Mons. G. Harmand (France) and seconded by Mr. Walter Reid (Transvaal), was adopted:—"This Congress, taking into consideration the Reports submitted to the Congress, recommend them to the attention of the permanent committee of the Congress in order to submit a special Report to the next Congress."

The questions on copyright and ownership of drawings were discussed before a large representative meeting on Wednesday morning at the Royal Institute of British Architects. The chairmen were Mons. H. P. Nenot (France) and Mr. W. S. Eames (America). Mons. J. Urioste y Velada (Spain) and Mr. Walter Reid (Transvaal) acted as hon. secretaries.

OWNERSHIP OF DRAWINGS.

By H. HEATHCOTE STATHAM.

THE question of ownership of drawings is distinct from that of architectural copyright in designs, with which it must not be confounded. It turns on the question whether the drawings and specifications made by the architect in order to carry out a building are to be retained in his custody or to be handed over to his client. In France and Germany no legal question is raised on the subject; the architect retains the drawings as a matter of law. In England the custom has been almost universal in the same sense. But in the case of *Ebby v. M'Gowan* (1870) the Court ruled that, the building not having been carried out, the drawings must be handed over to the client on his paying for the time expended on them. In the case of *Gibbon v. Pease* (1904) the Court, to the surprise of architects, ruled that the precedent of *Ebby v. M'Gowan* covered all cases, whether the building had been carried out or not, and that the client had a right to demand all the drawings, the Court refusing to hear any evidence on the side of the architect, whose drawings and specification can therefore, in England, be legally claimed by the client, although he already has what he really paid for, viz. the building itself. It is pointed out that an architect is not

paid for making drawings, but for producing a building, the drawings being only his necessary instructions to the workmen; under some circumstances he might even dispense with drawings altogether. To require him to hand over to the client drawings and specification, which represent the result of his professional experience over many years, for the client to use as he pleases is a manifest injustice to the architect. Moreover, the custom in the profession of handing over the drawings to the client when the building has been planned, but not carried out, is a mistake on the part of the profession; as in such a case an unscrupulous client has only to say that he has changed his mind in order to get possession of the drawings and use them as he pleases, with no further compensation to the architect. The wording of Clause I. of the Institute Scale of Charges is most unfortunate, as it appears to state (though not so intended) that the architect's commission is for producing drawings of a building. The wording of this clause should be amended. The author moves the following resolution:—

"That, in the opinion of this meeting, the Royal Institute of British Architects, having revised the wording of its paper on the professional practice as to the charges of architects in the sense indicated above, should as early as possible take steps to get a Bill introduced into Parliament for securing the adoption of their scale of charges, so amended, as part of the law of the land."

By D. PABLO SALVAT (Spain).

1. Architectural property ought to be recognised and enjoy identical rights with those of intellectual property in general.

2. Each country ought to fix, as far as it is concerned, the limit of duration of copyright, but in no case ought this limit to be less than twenty-five years, counting from the death of the author.

3. In no case ought the design, that is to say, the idea expressed in terms of architectural art, to be reproduced without the author's consent.

4. The architectural work ought never to be reproduced either in its whole or in any one of its details, no matter for what constructional purpose, without the author's consent.

5. The architectural work may be reproduced in sculpture, drawing, painting, photography or engraving, provided the author has not expressly and publicly signified his absolute prohibition.

6. The right of ownership is inherent in artistic work. It is constituted *de facto*, without need of registration or deposition of any kind. For copyright to be guaranteed signature and date should be sufficient.

7. Assignments of copyright should be made in the same form as assignments of personal property at the will of the contracting parties.

8. The author should specify in the assignment the points as to which he reserves copyright.

9. Any contract without restrictions implies an assignment also without restrictions.

10. Assignment without restrictions does not deprive the author of the power to reproduce his own works, but the assignee can, by an express condition, demand the right to oppose it.

By GASTON TRÉLAT (France).

In the matter of art, in the matter of architectural elaborations, there is no artistic property. In architecture the proportions of a piece of land, the building site, the surroundings, are all elements which must be taken into consideration in making the studies for the composition of the plan. The mind of the artist is haunted by too many equally decisive ideas in the orientation of his work that any other mind could grasp the leading idea of his conception. The arrangements and the co-ordinations are all connected with it. It is a law from which the artist will never be able to free himself under the penalty of turning out bad work, and consequently of injuring his own personality. Artistic property does not rest upon a sufficient examination of the question; it could not support a conscientious and logical analysis. The result of it is therefore, in my opinion, an action without profit and a regrettable loss of time.

By GEORGES HARMAND, Avocat.

Maitre Harmand proposes to move the following resolution:—

This Seventh International Congress of Architects assembled at London in 1906, recalling on the one hand the resolutions passed during the past twenty-eight years by the International Congress of Architects and the International

Congress of Artistic Copyright, as well as by the International Congresses of the Association Litteraire et Artistique Internationale, notably at Madrid in 1904; recalling, on the other hand, the *Protocole de Clôture* of the Diplomatic Conference held at Paris in 1896, which upholds the principle of complete protection of works of architecture; recalling, finally, the Spanish law of 1879 and the French law of 1902, both of which expressly protect works of architecture.

This Congress is of opinion:—

1. That architectural designs comprise designs of façades, exterior and interior, together with the plans, sections and elevations, and they constitute the first manifestation of the architect's idea and the work of architecture.

2. That the building is but a reproduction, on the site, of the architectural drawings.

And this Congress renews the resolution that works of architecture be protected in all legislative enactments and in all international conventions equally with every other kind of artistic work.

The following resolution was passed:—"That this Congress is of opinion that the architect is employed to produce a building, and that all drawings and papers prepared by him to that end are undoubtedly his."

Messrs. G. Harmand, G. O. Totten, W. Reid, A. Augustin Rey, W. H. Atkin Berry, A. Kelsey, E. Fritchby, H. H. Statham and others joined in the discussion.

Papers dealing with the laying-out of streets and open spaces in ancient and modern times were read before a section of the Congress on Wednesday evening at the Grafton Galleries. M. Ch. Buis (Belgium) occupied the chair, supported by Sir William Emerson.

THE PLANNING AND LAYING-OUT OF STREETS AND OPEN SPACES.

By CH. BUIS (Belgium).

IF it is desired to lay down the rules to be followed for the creation of streets and squares, the following three hypotheses must be considered:—

First, an entirely new town to be founded. This is a rare occurrence in Europe; an instance of it is Zeebrugge in Belgium.

Secondly, a quarter of an old town to be transformed into a modern quarter. In this case it is necessary to leave untouched the picturesque aspect of the quarter, to preserve the historical monuments, while endeavouring at the same time to satisfy modern requirements.

Thirdly, a new suburb to add to an old town. Establish the plan of the principal directions of circulation, adapt it to the topography of the place, determine the character of the quarter according to its destination, *i.e.* whether to be of a commercial, industrial, administrative, popular, university, middle-class or aristocratic character.

Servitudes to be established to preserve to it the character it is intended to have. Expropriation by zones or participation of the owners of the land in the management expenses.

FORMS OF THE STREETS.—Straight or almost straight principal arteries; sinuous secondary streets. The straight streets must not be too long; after every thousand metres they must be deviated or end in a monument. The squares arranged in these streets must not be circular, but oval. They can, besides, be varied by not giving a uniform width to the whole street.

INTERSECTION OF THE STREETS.—Avoid converging the circulation to a single point; it must, on the contrary, be distributed over the whole town. Cross-shaped intersections should be avoided.

OPEN SPACES.—In ancient times the public squares were the forum as the political centre and the market-place as the commercial centre. In the North in the Middle Ages there was the open space in front of the church and the large market-place in front of the town hall.

1. *The Squares for Circulation.*—The star-shaped squares are to be condemned; they lead to congestion in the circulation and form a too cut-up picture. The streets must end in the corners of the squares.

2. *Markets.*—The centre of the market-place must be free; the streets leading to it must not be numerous and must end in the shape of turbine paddles.

3. *Garages.*—Squares outside the railway stations; there the circulation must be divided by open spaces, fountains and statues. Towards the town there should be a monu-

mental entrance. Within the town spaces must be reserved for cab-stands.

4. *Ornamental Squares*.—Squares planted with trees. They can be made of any shape.

5. *Monumental Squares*.—Squares created to produce an artistic effect. The height of the houses should be in harmonic proportion with the dimensions of the squares. Rules established by M. H. Martens. Rectangular squares in the proportion of 1 to 3, trapezoidal and triangular ones. Circular and octagonal shapes to be condemned. Oval shape admissible. Framing of the squares to be recommended; dissimulate their openings by gates, arcades, &c. Streets opening into them in turbine-paddle shapes. Grouping of the squares produces a picturesque effect. These squares may surround an edifice. Decoration of squares. Sometimes symmetrical, but as a rule the absence of symmetry is preferable. It is better not to place the statues and fountains in the centre of the square. Levelling of the squares. The concave surface is to be preferred for æsthetic and practical reasons.

The principles which we have just explained are the result of the research of practical means which can make a modern town comfortable and hygienic and impart to it a beauty which renders a sojourn in it pleasant.

A town must not only be a commercial store and an industrial factory, but also a home for human beings.

Since the towns are no longer formed by the slow increase of centuries they have lost their picturesque charm and their national character.

To the unconscious work of the builder of ancient times must be substituted the conscious work of the modern builder. The mission of our town architects must therefore be to adorn the towns with a new beauty, the elements of which will be furnished by the wants of a heavy traffic, of a healthy life, by æsthetic principles, derived from the study of the laws of artistic enjoyment.

By B. POLLES Y VIVÓ, J. MAJÓ Y RIBÓS, M. BERTRAND DE QUINTANA (Spain).

In laying out open spaces account should be taken of various circumstances, those especially which are attendant on the climate of the locality, though varying according to latitude, altitude, direction of dominant winds and the greater or less distance from the sea and great rivers, the position of neighbouring mountains, frequency of rains, nature of soil, &c. Of all these circumstances, those which have a preponderating influence are the direction of the dominant winds and the latitude.

What evidently demonstrates the importance of the direction of the dominant winds is the position of edifices included in the category of insanitary buildings, which, on account of the many emanations affecting the atmosphere, should not be so situated that the currents of air may carry these insanitary emanations into the open spaces of a city, thus converting into a focus of infection the air which our dwellings receive from outside.

In consequence of this, one ought to study conscientiously the situation of a cemetery, a crematorium, an establishment for the filtration of infected water coming from a system of sewers, a hospital, a lazaretto, certain industries, &c.

With regard to the latitude, or distance from the equator, and setting aside the differences of temperature consequent on the greater or less distance from the poles, and following the geographical points which are under consideration, one of the most important factors in the solution of the problem, and one on which we ought to fix our attention, is the consideration of the angle formed by the solar rays with the plane of the horizon of each locality, an angle which diminishes as the latitude increases.

According to the reports of the International Congresses of Tuberculosis, and of Salubrity and Hygiene, held recently at Paris, it cannot be doubted that one of the essential points to be secured is to place the dwelling in hygienic conditions, and that its façades should be so exposed as to receive the rays of the sun and pure air for as long a time as possible. To obtain this result it is obvious that we ought to orientate the streets, determine their width and fix the height of houses, so that the access of the sun's rays should be assured.

The various open spaces for each city, streets, squares, promenades, &c., and those by analogy reserved as courtyards to facilitate the access of air and light to houses, ought to increase in breadth as the latitude of the locality increases, whilst the heights of the houses ought to lessen as the latitude increases; in other terms, to avoid one façade

casting a shadow upon another the breadth of the streets must increase proportionately with the latitude of the locality, and the heights of the houses must lessen in the same proportion.

To give to the subject we have just sketched all the development that it deserves would take a volume filled with scientific and learned explanations, and as these notes are intended for an audience composed of experts we would like to avoid falling into this error, and we will conclude our remarks on the portion of the hygienic problem intimately allied with the title of the theme we are discussing, with the following conclusions:—

1. That the means of communication in cities should be laid out so that in no case should they serve as a canal to conduct the impurities coming from unhealthy industries, which necessarily exist in all centres of population; that is to say, that strict care must be taken that the situation of these buildings be fixed in such a way that the dominating winds can never carry into inhabited localities the unhealthy emanations from them.

2. That the dimensions of open spaces in a city should be subordinate to the density of the population as well as to the latitude; in other words, the more populous a city the greater should be the area of its open spaces; a condition which can be obtained through the means of communication and the courtyards belonging to houses. Considering besides that the sun is essentially the purifying element, in order to obtain its presence for the longest time possible in the fronts of buildings it is necessary to increase the area of open spaces and to diminish the height of constructions as the latitude of a city increases.

By Dr. J. STÜBBEN (Berlin).

I. *Planning of Streets.*

The direction and width of streets depend on the claims of the traffic to be accommodated. Traffic must everywhere and in every direction find a clear view and an unimpeded path. In main thoroughfares the width desirable may be 50 metres or more; in by-streets, where the traffic is solely for the service of the residents, the width may be reduced to 8 metres. All intermediate widths depend on the circumstances of each case.

The gradients of streets should be as flat as possible. In level districts gradients of more than 1 in 70 should be avoided as far as may be, because they interfere with the asphaltting of the road surface. In hilly districts gradients up to 1 in 20 are permissible in the case of main thoroughfares, and up to 1 in 10 in the case of side-streets. Where steeper inclines have to be dealt with stairs or footways should be provided. The latter should be employed more frequently than is at present the case on mountain slopes and for diagonal crossings of long blocks.

For hygienic reasons streets running due east and west should, where possible, be avoided, because the houses on the south side during the greater part of the year do not receive direct sunshine. The width of a street should be at least equal to the height of the houses in it. Broad streets should be planted with rows of trees and garden plots. Forecourts in front of the houses favour the access of light and air, and often allow a reduction of the width of the roadway. Very wide and bare streets are to be avoided, owing to dust clouds and lack of shade. The same remark applies to long straight streets, especially when they lie parallel to the direction of prevailing winds.

On purely æsthetic grounds there is as much to be said for straight streets as for crooked ones, and for a regular as for an irregular building line. In hilly districts curved streets facilitate traffic and the laying-out of sites. In level districts the adoption of straight or crooked, regular or irregular lines depends both on practical considerations and also on the artistic intentions of the designer. Straight streets of great length should be avoided; the remedy is to curve or change the direction, also transposition of the direction or building lines. Transpositions are, however, only permissible in so far as they do not interfere with a clear view of the traffic. Convex changes of gradient are to be avoided in straight streets as far as possible. Concave levelling is to be preferred. Unavoidable stopping points ought to be treated artistically as terminal points. Every street ought as far as practicable to be planned individually. A change of width in different parts of the same street may serve to add to its beauty. Self-contained street pictures are everywhere to be aimed at.

II. *Planning of Open Spaces.*

Open spaces are required for dealing with streams or traffic at points where streets converge, at railway stations

bridges, city gates, &c. For practical reasons it is desirable that the various lines of traffic should not intersect one another at one point. Spaces devoted to traffic lack, as a rule, one quality of artistic importance, viz. the setting of a proper frame. They can, nevertheless, be made to present a pleasing appearance. The lack of a suitable frame may be to some extent compensated by so arranging the lines of the streets that the eye travels over the open space and rests on a boundary wall. Useless traffic areas resulting from the unnecessary meeting of streets are to be avoided.

Market-places should be near to some main thoroughfare, but their main area should not be open to vehicular traffic.

A considerable number of open spaces are desirable in the interests of fresh air. They should occupy at least one-tenth of the total area of a town. Spaces planted with trees and flowers, such as gardens and recreation grounds, are important to health, as are also public parks and promenades.

The chief artistic quality of open spaces lies in their being as far as possible enclosed in a proper setting. This applies to market-places and gardens, but especially to spaces of a purely architectural character, i.e. spaces intended as sites for monumental buildings. The preferable position for these buildings is at the side of the open space rather than in the centre. In this latter position the necessity of a framing for the remaining portions of the space holds good. Porticoes and porches, which can be carried out into the street openings, help to close in the frame. Errors in scale, especially unduly large open areas, are to be avoided. Convexity of the open space is inadmissible. Concavity is preferable. Each open space should, as far as practicable, be laid out individually.

Combinations of spaces are subject to various requirements, according to the purpose for which each is intended, e.g. whether it be for purposes of traffic or as a site for monumental buildings. The grouping of several separate spaces can be made to produce fine effects from an artistic point of view.

III. Planning of Cities.

Modern ideals are in the main based on the principles given above for the design of streets and spaces. We cannot simply imitate the cities of an earlier age, since the requirements of the traffic and of hygiene have altered. That the ground plan of a city should be clean and orderly is of importance. The task of the artist lies in a perfect adaptation to use, combined with beauty of form. In other words, the arrangement of the open-air space shall satisfy æsthetic demands, while at the same time it must provide, as completely as possible, for convenience of locomotion and health.

In addition to the claims of traffic, health and beauty, economic and social considerations require attention. The streets and blocks of buildings must, in their character and dimensions, conform to the economic and architectural necessities of the inhabitants. Broad main thoroughfares must be provided for the bulk of the traffic, narrow side streets of private houses serve to divide the area to be built on into separate blocks. The various parts of the city ought, even in the first rough plan, to be divided up in accordance with the purposes they are intended to serve, viz. into rows of houses or detached and semi-detached buildings; into tenements or private houses; dwellings for the upper, middle, or working classes; shops and retail or wholesale manufactories, &c. Attention should be paid to their relative position in regard to the centre of the town, the surrounding country, the railways and the harbour.

As in the case of isolated thoroughfares and open spaces, so too in the case of whole quarters of the city individual character should be aimed at.

Ancient monuments of all kinds, as well as fine existing streets and views, ought not only to be preserved, but should be taken advantage of in order to secure a characteristic development of the city on artistic lines.

By GASTON TRÉLAT (France).

Streets are never wide enough to allow the traffic in the roadway to develop without leading to obstructions. These latter occasion loss of time inconsistent with the rapidity which the means of locomotion tend to insure; again, they lead to a confusion in the streets which is not in harmony with objective beauty. The leading fact of the day is a more and more accentuated rapidity of movement from place to place, thanks to which the former suburbs of capitals or towns are joined, or can immediately be joined, to the centres of the agglomerations. Hence the possi-

bility of assimilating these new localities to the old districts where the urban employments are centralised. Thither, then, should be transferred the dwellings which up to the present have crowded the centre of the towns, where they tend to spread transmissible and preventable diseases.

The enlarged agglomerations would gain considerably in healthiness and brightness, in contrast with these faulty concentrations of dwellings, cramped and one above the other in comparatively restricted spaces.

Uninhabited areas could take the form of parks, squares, gardens, avenues planted with trees, and even private squares could be made on pieces of ground large enough, so that the buildings would line the public roads. And all this should be planned and settled before it is too late. This necessary preliminary work should be carried out under the ægis of the municipal authorities independently of the exigencies of execution, which should be effected according to financial possibilities and intentions. Nothing should be executed which is not in accordance with general harmony, of which it is expedient at once to have some idea, in order to insure the realities, such as present knowledge bids us consider them.

This would therefore be a technical focussing of the progress that science faces in our days. From this would follow later the prescribed realisations in accordance with the views that our intellectual life may well admit of.

It is necessary to get away from the antiquated methods which up to now have served as the bases of the regulations of the highway authorities. In order to do this it would be expedient to appeal to competent meditations and deliberations, all having as their primordial object the health and well-being of the community. For it is in the exclusive interest of the community that such regulations ought to be made.

Conclusion.—Consequently there is reason to express the desire that for all important agglomerations plans should be studied without delay. They would have to take into account the conditions inspired by science and which interest health, such as rapidity of movement from place to place.

These plans would therefore require a focussing of the technical solutions to be drawn from science. They would be carried out according to local requirements and budgetary possibilities. But nothing would be done which was not in accordance with an ideal in keeping with the knowledge of the age.

By RAYMOND UNWIN.

It is the regulation of the vast growth of residential districts around our towns which is most required in this country. Valuable suggestions may be obtained quite as much from old English villages and towns as well as from the ancient continental towns which the school of Camillo Sitte have taken so much as their model.

Both alike suggest the great importance of defining and limiting suburban areas. Old towns were often defined by their walls with beautiful effect. We need to replace with some more comely girdle the ragged edges and rubbish heaps which surround our modern suburbs; belts of park land, meadow, wood or orchard, often of quite narrow width, might be used with good effect.

In suburban areas the larger buildings will be few, but should be grouped so as to produce some enhanced effect and some definite centre for the life, as well as for the plan, of the suburb or district. The judicious use of planting may help to link together buildings in centres where there may not be enough fine buildings to make an adequately large enclosed place. The growing desire for greater space and more openness of outlook is an important and difficult element in our problem.

Before attempting to lay out a new area the site must be very carefully studied, a contour plan must be made, and a survey of trees and many other features of interest. Even well-grown hedgerows may sometimes be helpful: anything that will break the naked newness of a suburban area should be preserved. The plans should be thought out on the ground and committed to paper afterwards. It is impossible to study too thoroughly a site and its conditions; the proper directions for the main roads, the various centres, factory areas, &c., should be all settled on the site. A symmetry which will look nice on the drawings is of no value, but definiteness of figure in the main framework formed by the chief roads of a town or district is certainly valuable to enable people easily to find their way about. The whole of the plan should be based on definite reasons rather than abstract rules, and one cannot be too willing to consider suggestions from the site. Rules cannot be laid

down in favour of straight or curved roads; each form has its beauty and use; the mere aimless meandering road will be quite as monotonous as the straight road. The contour of the ground or existing features having curved lines springing from natural causes may suggest very beautiful curved roads, but straight roads opening up a beautiful view, or affording fine avenue effects, may be equally satisfactory. Each road should be given some distinctive character, which may be enhanced by planting it with a special kind of tree. Greater variety than at present should be allowed in the width of the roads, in their construction and decoration, according to the purposes they will serve; by-laws need revising in this respect. Great care is needed in decorating roads with trees or gardening; everything must be kept very simple and broad in effect. The dignity of many fine streets and parks in continental towns has been destroyed by the introduction of wriggling lines, of beds of variegated foliage and such like.

The best direction for roads to take for residential purposes depends so entirely on the designing of the houses that no rule can be laid down. Roads running east and west may give a south aspect for all the houses, provided only that the superstition that a house must have a tidy front to the road and an untidy back away from it can be exploded, and houses for the south side of the road be designed with their living-rooms facing from the road and their so-called backs made tidy and presentable to face the road. The advantage of roads running north and south, or thereabouts, is that both sides of the houses get an equal amount of sunshine. An important improvement required in suburban districts is the better grouping and arrangement of the houses. Endless repetition of detached or semi-detached buildings becomes quite as monotonous as the endless rows of houses. Valuable suggestions may be obtained from our old village greens, cathedral closes and college quadrangles. Even the throwing together of a few front gardens may help matters, but where smaller houses can be built in groups, and the groups be designed as a whole, and where such groups of houses can be arranged on two or three sides of an open garden or green, or even where they can be set back from the road at varying distances, not only may variety and beauty be given to the road, but greater openness of outlook may be provided for the houses, and very often some small distant view may be given.

Variety of effect in the streets is very desirable, but it must never be forgotten that mere variety is not in itself necessarily pleasant, in fact is seldom really satisfactory unless it is variety within some enclosing unity. For the town-planner it is most necessary that he should understand wherein consists what we call natural beauty, and while he should seek every opportunity that the site may afford of pleasant natural beauty and the interest and picturesqueness of happy accident, he must never forget that he cannot design happy accident or natural beauty.

Mr. F. MILES DAY, at the conclusion of the papers, explained the proposed schemes for the laying-out of Cleveland, San Francisco and other American cities. His remarks were illustrated by lantern views, which appeared to illustrate the ideas advanced in the papers.

Mr. A. KELSEY and Mons. A. RAY also expressed their views.

The chair was taken by M. E. V. Dahlerup (Denmark) and Mr. Graham, with Mr. Cowper and Franze de Vestil acting as joint secretaries.

Preparatory to the papers being read, Commendatore Alfredo d'Andrade, on behalf of the Italian Government, proffered several illustrated volumes dealing with their attitude towards the conservation of national monuments.

CONSERVATION OF NATIONAL MONUMENTS.

By Professor G. BALDWIN BROWN, M.A.

THE buildings and works of art that have come down to us as a legacy from the past represent national assets which can never be increased, and the problem how best to deal with them is the same in all European countries, though it has been approached, grappled with or evaded in different fashions. A knowledge of the principles and practice that obtain abroad must necessarily be of value to those interested in this question in our own country.

Continental governments have expressed their solicitude on this matter in various fashions, the most common and one of the most effective of which has been the establishment of State Commissions charged with the upkeep

of national treasures of architecture and art. Some of these Commissions have been at work for the best part of a century, while others, as in Holland, have only recently been appointed. They exist in at least a score of European countries. Apart from the maintenance of State Commissions, continental governments have shown their care for monuments by issuing numerous rescripts, royal and ministerial, some of which date back to the seventeenth century. The Prussian and other German Governments have been specially active in this department, and about fifty Prussian rescripts of the kind were promulgated between 1815 and 1881.

The work of Continental Monument Commissions, whether or not this is carried on under a formal Monument Act, is generally based on a list or schedule of national monuments which are worth preservation either on artistic or on historical grounds. This implies a process of inventorisation. Such a survey of the national assets in this department is in progress in almost all European countries, and here again Great Britain is conspicuously behind her sister nations. In our own country there is a precedent for State action of the kind in the Department of Historical Manuscripts, on the cataloguing of which a Royal Commission has been at work since 1869. Nothing of the kind has yet been attempted for works of art and historic buildings. There is, however, a growing demand for some State action of this kind in the British Islands; and it is suggested that the International Congress should strengthen the hands of those who are working in this direction by a memorial in favour of a Government scheme for the survey and inventorisation of the vast treasures in ancient monuments and works of art which this country possesses, and for which there is practically no legal protection. It is generally acknowledged that the British Government owes something in this department to the country, and the appointment of a Royal Commission for the purposes just indicated would be the most practical measure that could be adopted.

By A. BESNARD (France).

It is absolutely important that the Governments should have the power to bring about the obligatory expropriation in every case where a monument which presents an historic, artistic, or archaeological interest shall not be kept in proper repair by its owner.

That never, unless it be absolutely and immediately needed, should administrations be allowed to carry out, or to authorise private persons to carry out, works which may cause the disappearance or the ruin of a monument the historic or monumental interest of which is recognised by all.

That everywhere where the site shall form the natural frame of the monument it shall be prohibited to touch it in any way whatever.

That in the formation of streets and sewers the administrations shall be bound to respect the ancient monuments which happen to stand in the line of the laying-out plan, and that in certain cases these monuments shall be made the basis of such laying-out plans.

That in case it should be found absolutely impossible to preserve a monument, it shall be the duty of the administrations, before any demolition work be started, to take photographs, and make faithful abstracts and casts to be deposited in the local museums, and that the fragments of architecture, sculpture and locksmith's work coming from the demolition of such monuments be distributed among the local or regional museums.

That particular instructions shall be issued as to the mode of proceeding in these demolitions.

That encouragement shall be given to such municipalities to suppress any parasitic structures which hide from view the monuments of the past.

That wherever it is possible the monuments shall be preserved for their original purpose, and that for the others measures of hygiene and salubrity shall be taken which will allow them to be utilised. A considerable number of old houses which are interesting from a monumental point of view could thus be preserved to posterity.

That at no time shall the municipalities be authorised to entrust with such work agents of the local public service, but always architects appointed by the Government.

That in the case of enlarging a town the public authorities shall be obliged to preserve its primitive aspect in the main outlines, and thus make it possible to perpetuate its original character.

That advertising shall be strictly prohibited on and around the monuments.

That archæological inventories made on a uniform plan shall be compiled everywhere, so as to secure the perfect and complete knowledge of all the national art treasures.

That in cases where the credits will not allow the immediate execution of the work of restoration of the monuments, measures of protection shall be imposed (particularly with regard to sculptures); and as a first consequence that in all buildings devoted to religious services the tumular flagstones shall everywhere be taken up and placed against the internal walls of the buildings.

That in the case of restoration, instructions, based on a standard programme, shall be the rule for the architects appointed to carry them out. Among these rules we would mention especially the obligation of preserving to each monument, for all the parts to be restored, records of the previous state. To use (in all cases where this will be possible) the original materials and to respect the dispositions of the ground plan, these dispositions being elements of the characteristic features of the different styles.

That previous to any restoration a very accurate report on a large scale of the actual condition shall be taken, with casts of the sculptures and the most characteristic profiles.

That general rules shall be established for the placing, the maintenance and the restoration of painted glass windows.

By W. R. LETHABY.

While the science of archæology was being built up experts were betrayed by their knowledge and enthusiasm. They did not think of the difference between the mere form of an old monument and the living building itself. Even when they did not make all new, they refused to see how they wounded the old by placing their conjectures by the side of it. Restorers acknowledge that harm was done in the past, and then with professions of sympathy they go and do likewise, taking the new word "repair" in place of the old word "restoration," but with similar result.

Renewal is going forward at quickened rate all over Europe, and the most ancient and beautiful buildings are those which are passed through the mill of restoration and left desolate. St. Front, Périgueux, excited so much interest that it was made over again. The Dom at Aachen is being covered up with fashionable marbles and mosaics; Murano Cathedral looks as if it had been supplied from a factory, and so with many others.

In every country protests have been made—in France lately by Emile Hovelague, in Germany by Strzygowski, in Italy by Boni, in England by Ruskin and Morris—but the custodians of ancient buildings and their architects make a few verbal concessions and go smiling on their way.

The alternative to this method of dealing with old buildings is persistent care and repair, as of national treasure to be guarded. As fragmentary works in a museum seem all the more precious for showing a history of antiquity and loss, so it is with an old building; and if it be cared for in this spirit of proud guardianship, no necessary strengthening and upholding will harm it.

It is usual to object that old buildings are not in museums, and have to be maintained for use; but no proper use is hurtful. The use and stability of our cathedrals have been sacrificed to the caprices of ornamental decoration. If the principle is accepted that our object is the preservation of the integrity and authenticity of a monument, we can hardly go wrong in carrying out needful repairs. Much experience is stored up in the papers issued by the Society for the Protection of Ancient Buildings.

If architects must restore, let them do it on paper only, without impairing the evidence of the building itself, evidence which disappears when they actually build their theories, so that we have not even the satisfaction of being able to prove them wrong.

We can hardly go to any famous building in Europe without finding extensive works in progress, and unless there is soon some great change of policy there will be little left that is truly old to hand on to posterity.

By JOSEPH ARTIGAS Y RAMONEDA (Spain).

From determining the "nature of national monuments," deciding "to whom they belong," and fixing the "advantages of their conservation," it follows logically that the only way of preserving them is incumbent on peoples and Governments, on the latter resting principally the sole responsibility for their loss, for the reason that they alone have the active authority to avoid it, and the charge of the necessary public moneys to preserve them from the natural

decay which the parts must suffer both through the action of time and from the destructive hand of man.

TUSCAN COLLEGE OF ENGINEERS AND ARCHITECTS.

In a memorandum read at the second Congress of Engineers and Architects in Florence in the year 1875, bearing the heading, "On the Preservation of the Monuments of Art and Archæology," at the time when it was proposed that the Government should lose no time in passing a law for such preservation, Professor Poggi set forth his conclusions as follows:—

(a) That it would be necessary to render it obligatory in cases of important restorations of national monuments to obtain the previous decision of the consulting provincial commissions.

(b) That the monuments belonging to private individuals should be submitted to the same law of preservation, adopting the course which shall be deemed most convenient. In any case it should be ruled that the private monuments should form part of the general inventory of the monuments of the nation.

(c) Before the consulting provincial commissions enter upon their duties, the foundation and the principal evidence for the preservation and restoration of the architectural monuments in question, and for the formation of the inventories of those which must be declared to be of national interest, should first be discussed and established by architects and other artists, as well as by archæologists and other competent persons. These inventories should be accompanied by the plans, sections and perspective views considered necessary to give a clear idea of the present state of the monument, and of the necessity of its restoration and preservation.

(d) Appeal should be made to the Government itself, with a view to steps being taken to constitute a fund or a revenue which will furnish the means for carrying out and observing the law in a convenient manner, either by the Treasury making return of such part which it might have unlawfully appropriated and which was to be used for the preservation of works and monuments of art, or by issuing such measures as will be considered most to the point. And there being among these measures that of the entrance fee for visiting the museums, art galleries, antique monuments, &c., it is to be hoped that the receipts therefrom will be entirely destined for the above purpose.

On later occasions Professor Poggi expressed the view that the means at disposal should be put into operation at once for the restoration and the preservation of the large number of architectonic monuments which suffer, and the importance of which becomes known on the occasions when new excavations are opened and when searches are made for remains of Etruscan, Greek and Roman monuments.

"Italy," he wrote, "is already recognised by the whole world as a great country on account of her numerous and varied monuments which have been uncovered. It is not urgent to excavate the buried remains, because in the state of preservation they are in now they will be found unaltered in a couple of centuries, but we cannot say the same of those which are visible objects of admiration and of study, and of which it behoves us to arrest the decay without delay, unless we are to see them pass away from us for ever."

By GASTON TRÉLAT (France).

If the State is a chief synthesis of collective interests the Government is the effective agent of the measures which these interests demand.

Now, monuments are important elements of national beauty. As such they form part of the preoccupations which in our days public art would tend to claim and bring within its compass.

This new institution has already taken a place in parliamentary deliberations with regard to the preservation of sites, and, finally, Governments have no longer the right to be indifferent to it. National monuments are important elements of public beauty. They have, therefore, a conspicuous place, with this inherent and distinctive feature, that they were included in the former classification of the fine arts.

If governments should be indifferent to their preservation and maintenance, it would be going against the great fact which becomes more and more evident and which takes a character of social progression to at least honour our time.

Monuments are a source of public beauty, and their preservation ought to be submitted to the deliberations of

competent persons representing the collectivities interested. Consequently it involves in the highest degree the responsibility of governments.

To facilitate the double operation, as well as to effectively instruct the public as to the results expected, there is reason to desire that, whenever it is shown to be useful, the custom of making temporary models before any definitive execution should be extended.

The following resolution, proposed by M. A. BESNARD and seconded by Mr. W. D. CAROE, was carried:—"That the Governments should be empowered whenever occasion arises to expropriate a monument which is historical, archaeological or artistic." Afterwards Mr. A. GRAHAM proposed, "That this International Congress of Architects recommend that the British Government be approached with a view to appoint a Royal Commission to control and extend the operations of the Ancient Monuments Amendment Act of 1900, and prepare a catalogue of ancient monuments, whether historic or prehistoric, of the British Isles, taking similar action to that of the Department of Ancient Manuscripts and in agreement with the measures adopted in other countries." This was seconded by Professor G. BALDWIN BROWN, and carried.

Reports of further papers in this, and those read in the other sections, will appear in our next number.

STRAND FRONTAGE QUESTION.

THE following is the report of the improvements committee (No. 2) of the London County Council upon the proposed alteration of the northern frontage of the Strand between the two churches:—

The Council will remember that on July 28 and October 20, 1903, we reported fully on suggestions which had been made for altering the northern frontage of the Strand at the part affected by the Holborn to Strand improvement. These suggestions were made by Mr. Hamo Thornycroft, R.A., by an association of private persons known as the Further Strand Improvement committee, and by the Royal Institute of British Architects. The Council's architect, upon our instruction, also prepared a plan. The objects were (a) to bring the church of St. Mary-le-Strand into alignment with the centre of the Strand, (b) to make the direction of the Strand aim at the front of the church of St. Clement Danes and not at one corner of it, and (c) to secure for the future a good view of the Courts of Justice to all approaching that building from the Strand on the west. The cost of adopting these suggestions was estimated by us at 360,000*l.*, 249,400*l.*, 74,000*l.* and 63,000*l.* respectively. The Council on October 20, 1903, decided to make no alteration in the existing line of frontage, on the grounds that not one of the proposals offered sufficient advantage to justify the Council in incurring the great expense which would be involved. This resolution, with a copy of our report, was communicated to Mr. Thornycroft, to the Royal Institute of British Architects, and to the Further Strand Improvement committee.

Since that date we have had before us the under-mentioned memorials, &c., asking that the matter may be reconsidered:—(i.) A memorial signed by Sir Edward J. Poynter, P.R.A., Mr. Hamo Thornycroft, R.A., Mr. T. G. Jackson, R.A., Mr. R. Norman Shaw, R.A., and several other prominent artists and architects; (ii.) a letter from the Royal Institute of British Architects; (iii.) a letter from the Architectural Association; and (iv.) a memorial from the Further Strand Improvement committee, the Royal Academy of Arts, the Institute of Bankers, the Surveyors' Institution and others.

A meeting of persons interested in this last proposal was

held at the Royal Academy in March last, when a resolution was passed to the effect that the memorialists had made out a clear case against the Council's plan. A deputation consisting of Lord Claud Hamilton, Sir Edward Poynter, P.R.A., Mr. R. Blomfield, A.R.A., and others attended before us, when Mr. Blomfield, speaking on its behalf, criticised the frontage line adopted by the Council, contending that it would be most inconvenient for traffic in consequence of the abrupt bend to the north-east, which would be necessary in order to enable the traffic to clear the Gladstone monument, whereas the advantages of a straight run from St. Mary-le-Strand to the monument were obvious; and that the architectural vista in each direction would be lost. Mr. Blomfield pointed out that St. Clement Danes Church, with the new buildings to be erected on the Council's land, would block the view of the Law Courts; that the general axis line of the Council's scheme would not be parallel to the axis line of St. Mary-le-Strand Church, so that the church would be left out of relation to the general scheme; that, as the frontage line left more than half of St. Clement Danes out of account, the two churches would not be brought into touch; that the position of the Gladstone monument would emphasise the absence of any consecutive idea; and that by the southward dip of the alignment, the view down the Strand to the west of St. Mary-le-Strand Church would be intercepted by the church. He suggested that, in general, the Council's proposals appeared not to have grasped the full possibilities of the case; that it limited itself to the ground between Wellington Street and St. Clement Danes, whereas it should have taken into consideration the whole space from Wellington Street to the east end of the Law Courts; that if this were done, a superb architectural vista would be assured; that the Law Courts would be brought into relation with the important new buildings which would occupy the ground to the west; that the churches of St. Mary-le-Strand and St. Clement Danes would fall into their places as architectural monuments of great beauty and interest, standing clear in what might be made one of the finest roads in the world, and that thus, at a relatively small cost, London would gain architecturally the unearned increment of the money spent in the past upon all those excellent buildings.

The scheme advocated by the Further Strand Improvement committee provides for the addition to the public way in the Strand of a small part of the central portion of the crescent site, and of a much larger part of the site at the eastern horn of the crescent site. It is proposed to alter the position of the eastern spur street between the Strand and Aldwych; this will have the effect of curtailing very considerably the area of the site which the Council has agreed to lease to a syndicate at a rent of 55,000*l.* a year. Finally, it is proposed to form in the centre of the Strand immediately to the east of St. Mary-le-Strand Church an island pavement, about 430 feet long, with an average width of about 35 feet. It is suggested that trees might be planted and memorial statues erected on this pavement. Having regard to the heavy cost which this proposal would entail, both in respect of the value of the land given up and the risk of jeopardising the completion of the letting, we felt that we should not be justified in advising the Council to adopt it in its entirety. With a desire, however, of ascertaining whether it would not be possible to meet in some way the wishes of the eminent authorities in matters of art who had approached us, we instructed the architect in conjunction with the other officers to report, with full details of the cost, on any suggestion which they might be able to offer for altering at relatively small cost the line of frontage of the eastern horn of the crescent. This was done, and in order that the matter may be fully understood we give the subjoined table:—

Suggested modified Line of Frontage.	Average width suggested for the Strand.	Value of Land Surrendered to Public Way.	Estimated Cost of Altering Vaults, Paving, &c.	Total Cost of adopting suggested Alteration of Frontage.	Cost of Erecting Buildings on Land given up.	Annual Rateable Value of Land and Buildings.	Loss in Rates per Annum.		
							To other Rating Authorities at 3 <i>s.</i> 8 <i>d.</i> in the <i>l.</i>	To the Council at 3 <i>s.</i> in the <i>l.</i>	Total.
(a) Further Strand Improvement committee's scheme	Feet. 155	£ 239,400	£ 10,000	£ 249,400	£ 82,800	£ 12,690	£ 2,326	£ 1,904	£ 4,230
(b) Plan suggested by Council's architect	114	50,000	8,000	58,000	11,825	2,364	433	355	788

Although the Further Strand Improvement committee in their memorial have not dealt with figures, both the secretary of the committee and Mr. Blomfield have criticised the estimates suggested by the Council's officers of the cost of the committee's scheme. On a careful review of the facts, however, we do not see any reason to reduce these estimates.

We think it right to point out that before the Holborn to Strand improvement, as submitted to Parliament, was approved by the Council, we consulted the Royal Institute of British Architects, with the result that the scheme which was finally adopted by the Council embraced the suggestions made by the Royal Institute after we had slightly modified the Institute's plan in order to make the crescent road (Aldwych), connecting the new main street with the Strand, more symmetrical. By this scheme a minimum width of 100 feet was provided for the Strand, as well as for the streets leading to Holborn, now named Aldwych and Kingsway. The width of the Strand immediately to the east of its junction with Aldwych at Wellington Street was proposed to be 100 feet, and a similar width was provided for the Strand immediately to the west of its junction with Aldwych at St. Clement Danes Church. This width gradually increased to about 160 feet to the east and also to the west of St. Mary-le-Strand Church, in order to provide a minimum width of 50 feet for the traffic on each side of the church. In the large open space between the eastern end of the crescent site and the western side of St. Clement Danes Church, the Council agreed, on March 13, 1900, to allot to the Gladstone Memorial committee a site for the purpose of the monument since erected by the memorial committee. The minimum width of the Strand before the Council executed the widening at Holywell Street was less than 40 feet.

We have arrived at the conclusion that the width already provided by the Council for the widened Strand, namely, a minimum of 100 feet, is in every respect ample for the present and prospective traffic. It must not be forgotten that since the opening of Aldwych and Kingsway some of the traffic passing to and from the new street and the southern, eastern and western parts of London does not use the portion of the Strand between Wellington Street and the Law Courts; this part of the thoroughfare is accordingly used almost entirely by the traffic passing from Fleet Street westwards, and from the western portion of the Strand eastwards to Fleet Street. Fleet Street is being widened by the City Corporation to 60 feet, and the Council is contributing part of the cost. The portion of the Strand opposite the Hotel Cecil has been widened, at the cost of the Council, to 80 feet, and the same width has been adopted for the improvement at the portion of the Strand east of the Hotel Cecil and opposite Beaufort Buildings. It will be apparent, therefore, that while the portion of the Strand between Wellington Street and the Law Courts has been relieved of traffic which formerly passed along it, the Council has provided a width of street far in excess of that which has been adopted for other portions of the same line of thoroughfare. Moreover, the width of 100 feet is considerably in excess of that generally adopted for street improvements in the past.

With these facts before us, it appears that any proposal for increasing the width of 100 feet for the portion of the Strand between Wellington Street and the Law Courts cannot be made merely on the ground of meeting the needs of the traffic, but must partake almost entirely of the nature of an æsthetic proposal, the chief argument in support being to secure better architectural effect by bringing into greater prominence the church of St. Mary-le-Strand and the Law Courts. We are not convinced that by throwing open to view various portions of the Law Courts building and of the church the architectural effect in the Strand would be considerably enhanced, and, indeed, there are objections to the proposal from the architectural point of view. After the most anxious consideration of the matter, and with the greatest desire to give the fullest weight to the views of the distinguished artists who have favoured the Council by their views, we feel that the Council would not be justified in incurring so large an expenditure as would be involved in securing a doubtful enhancement of the architectural view in the Strand. Having regard to the great width already provided (100 feet), it will be possible to secure under the Council's scheme an imposing effect for the buildings to be erected on the northern side of the Strand.

We have caused to be hung in the council chamber a cartoon plan showing, by black lines, the scheme as

executed by the Council; by yellow lines and dotted yellow lines the scheme put forward by the Further Strand Improvement committee; and by green lines the suggestion laid before us by the Council's architect. We recommend:—

(a) That the Council do confirm its decision of October 20, 1903, to the effect that no alteration be made in the present northern line of frontage in the Strand between Wellington Street and the Law Courts, as in the opinion of the Council no suggestion has been made which offers sufficient advantage to justify the Council in incurring the great expense which would be involved in increasing the already adequate width (100 feet) of the portion of the thoroughfare in question.

(b) That a copy of the foregoing report, and of the Council's resolution thereon, be communicated to the Royal Institute of British Architects, to the Architectural Association and to the Further Strand Improvement committee.

GENERAL.

The Death of the late Mr. Bradley Batsford on the 10th inst. removes a man who showed fine taste and appreciation of architecture as a publisher. The important establishment in High Holborn will not be likely to decline, for Mr. Herbert Batsford announces that the business will be continued by him under the familiar style of "B. T. Batsford," with the assistance of his nephew, Mr. Harry Batsford, and Mr. Smith, the head of the staff, both of whom have been engaged in the business for many years past.

Mr. C. Septimus Adye, county surveyor of Wiltshire since 1887, has died at his residence in Bradford-on-Avon.

The Memorial of Fragonard, the French painter, has been entrusted to M. Auguste Maillard by the committee.

A Street in Paris is to be named after Emile Zola, the novelist, as a recognition of his efforts to make justice supreme in the Dreyfus case.

Messrs. Roger Smith & Son, of 130 Temple Chambers, Whitefriars, E.C., have taken into partnership Mr. Harold E. Church, A.R.I.B.A., as from July 1.

Mr. Frederick Collings, architect, of Worthing, died suddenly on Monday in his seventieth year. It was stated at the inquest that he was never ill during his lifetime or required the attendance of a doctor.

Mr. George Tangye has presented to the Birmingham Art Gallery a picture by Frederick Sandys entitled "Autumn." It represents an old soldier in a red coat lying by the side of a river telling stories of his campaigns to a girl and younger child.

Mr. John Morrow has been awarded the degree of Doctor of Engineering from the University of Liverpool, and is the first recipient of the distinction. He holds the appointment of Demonstrator of Engineering in University College, Bristol.

Sir John Puleston, constable of Carnarvon Castle, states that the Office of Works has been instructed to send its architect to Carnarvon to confer with him about a more ample restoration of the castle, in which the first Prince of Wales was born.

Mr. James Shanks, the chief executive officer, has been able to give an encouraging account of the Irish International Exhibition, 1907. The fine art gallery will have a floor area of 30,000 square feet and wall space of 16,300 square feet.

The London, Edinburgh and Glasgow Assurance Company are building new head offices in Euston Road, London, N.W. The architect is Professor Berestord Pite, F.R.I.B.A., and the contractor Mr. Gray Hill, of Coventry.

The Hon. Degree of D.C.L. has been conferred by the University of Durham upon Mr. Arthur Evans, the eminent archaeologist. The degree of D.Litt. has been conferred upon Mr. Owen Seaman, editor of *Punch*.

The Annual Meeting of the Wiltshire Archaeological Society has been held on Tuesday, Wednesday and Thursday under the presidency of Earl Pembroke. The opening ceremony took place in the library of Wilton House.

The Company of Makers of Playing Cards have awarded their prize of 15*l.* 15*s.* for the best design on the subject of "The Visit of the Prince and Princess of Wales to India, or their return to this country," to Mr. Leonard Marler, of Chailey Street, Lower Clapton. The H. D. Phillips Prize of 10*l.* 10*s.* has been won by Madame Renée Finch, Bath Road, Bedford Park.

The Architect.

THE WEEK.

BOROUGH engineers should take warning by the action of the Town Council of Dundee in dealing with Mr. WILLIAM MACKISON, who has held the appointment of burgh engineer during several years. We have already stated that Mr. MACKISON, in addition to his ordinary duties, has acted as Parliamentary engineer. Payment for the extra duties was evaded, and ultimately he was compelled to take proceedings to recover his fees. He also declined to act as Parliamentary engineer in the present session without extra remuneration. To do otherwise would be to raise a prejudice against himself in the law courts. The Town Council thereupon resolved to suspend him from his office of burgh engineer for four months. That period will soon come to an end. The Town Council have taken time by the forelock by moving that Mr. MACKISON should at once be dismissed, three months' salary being paid to him in lieu of notice. The grounds alleged were that the age of Mr. MACKISON prevented him rendering service to the Corporation, and in the interests of their constituents the Corporation were bound to act decisively. Mr. MACKISON, in a letter dated the 18th inst. to the town clerk, says:—"I am not aware of any instance where an official in my position, and after such services, has been treated in such a manner as I have been, and with so little consideration, and I would sincerely hope that the Council may yet think better of what they have done and reconsider their action towards me." It is alleged that during some years past Mr. MACKISON was unable to carry out his duties. Nevertheless, it is remarkable that he was allowed to continue to act as burgh engineer until the time arrived when for his own interests Mr. MACKISON was compelled to make an effort to recover the large sums due to him for special services. Local authorities commonly believe that with their assistants the privilege of serving the public should be its own reward. They are consequently never paid for many of the duties which they undertake. The fate of Mr. MACKISON, who has served Dundee both as architect and surveyor, should be enough to convince burgh surveyors or engineers that when they erect public buildings they stand a very remote chance of being rewarded for dispensing with an architect.

THOSE who imagine that the English shopkeeper will be satisfied by a restriction of his window space may receive some instruction from a recent case in the Southampton County Court. An old-established firm of drapers in that town sought to recover a sum of 111. from Mr. W. B. HILL, who is also long established as an architect in the same town. The amount in dispute was trifling, and should have been settled out of Court. But anything which may be supposed to interfere with a shop window is quite enough to bring dissension between friends. The plaintiffs wished to convert some dwelling-houses into shops, and Mr. HILL prepared the plans for the alterations. During the progress of the works it was found that the girders above the shop windows were placed 18 inches too low. As was to be expected, angry correspondence followed. Mr. HILL at once offered to have the necessary alterations made at his own expense, including the cost of raising the girders and the incidental work. The work was completed, and the architect gave the final certificate to the builder, including the cost of the alterations, the items being especially distinguished. The plaintiffs declined to pay that amount, saying the architect was responsible. The builder properly remarked that he had nothing to do with the dispute, and that he was to be paid the amount of the certificate. The architect said

the builder was to be paid, and the amount for the alterations could be deducted from his own account when he sent it in. The builder issued a writ, and it was on account of it the claim arose, viz. 31. 10s., the builder's costs, and 71. 10s., the plaintiff's costs. His Honour, Judge GYE, considered that Mr. HILL made a mistake in including the 851. cost of alterations, in his final certificate. He should have paid, and he was therefore liable in law for the consequences. The defendants' legal representative repudiated liability for any mistake connected with the girders, and asked for leave to appeal, but the Judge declined on the ground of the expensiveness of further proceedings. Evidently a shop window is as dear to the owner as his honour.

THE name of JOSEPH MARIE VIEN has been recalled to French amateurs because it is intended to demolish his old studio in connection with the works on the Boulevard Raspail. In England his name and works are unknown, yet he was a celebrity in his day. He competed with BOUCHER and FRAGONARD, and he was the master of DAVID. As far back as 1742 he won the Prix de Rome. On his return the Academicians were afraid of him, and it was owing to BOUCHER that he gained a position. One of the first appointments of LOUIS XVI. was that of VIEN as that of the director of the Academy at Rome, and during the ten years he held the office he introduced many reforms. Just before the outbreak of the Revolution he was made first painter to the king and honorary member of the Academy of Architecture. He contrived to keep alive when so many strong men were falling, and although he was eighty, he competed for a prize offered by the Republican Government, and won it. NAPOLEON took care to honour him as the regenerator of French art. The world no longer cares for pseudo-Classical pictures, and although VIEN was buried in the Panthéon, his countrymen have ceased to recognise him as one of their celebrities.

IF trade is to be carried on with people in the Colonies or in India it will be advantageous to have the law of agency more clearly defined than it is at present. It is rarely profitable, unless the business is on a very large scale, to send a representative from England to establish a branch house, although that is unquestionably the safest way of transacting business. The decisions in the Courts might be taken both for and against the principle of responsibility for what is done by agents. The latest decision, which was given on Saturday by Mr. Justice PHILLIMORE, related to work done for a rajah in India. Messrs. COWELL & SON, of Umballa, entered into a contract for erecting a palace. They had as representatives in London Messrs. RIVERS & Co., who gave orders to Messrs. H. H. MARTYN & Co., of Cheltenham, for decorative work. Sometimes the payments were made through the agents and sometimes were direct. On the failure of the agents, Messrs. MARTYN applied to Messrs. COWELL for payment of the balance of the account, amounting to 1091. Messrs. COWELL paid the balance to the trustees for the RIVERS estate on condition that the money was to be returned if the case was decided in their favour. Mr. Justice PHILLIMORE said that an English manufacturer was more likely to trust an English agent, but having regard to the correspondence and the evidence he came to the conclusion that there had been direct communication between Messrs. MARTYN and Messrs. COWELL, and a contract established between them. Judgment was entered for plaintiffs for 1091. with costs, but a stay of execution was granted. The conclusion to be drawn from the decision is that there is an advantage in an English trader momentarily setting aside the existence of an agent and communicating directly with his principal. From the Indian case it is evident that very little is required to prove a direct contract in that way.

THE STRENGTH OF BRICKWORK.

THE old builders were to be envied for their confidence in the strength of materials. Brick has been used from time immemorial, in Asia as in Europe. But we have nothing to suggest to us that builders made any elaborate investigations about the loads which it could safely sustain. There were, no doubt, traditional rules observed which probably were originally derived from failures. But their nature we cannot discover. We read of a Saracen in the ninth century introducing two brick piers instead of 300 columns in a mosque. However, it is now almost impossible to investigate the weight which came upon them. In subsequent times brickwork was employed in a manner that might be described as deceptive, for it was made to sustain pressure which was apparently borne by other materials, and in some cases the brickwork is more massive than appears at first sight. The plaster decoration concealed strength as well as weakness.

In several parts of Europe brick was largely favoured by the Mediæval builders, and the number of structures which have survived in excellent condition is a testimony to the care exercised in the construction. In masonry the dimensions of the stones which are available in a district may often lead to an excess of strength. In brickwork, on the contrary, there is a limit to the dimensions of the elements, and some rules must have been adopted to obtain the desired stability.

The English statesman who said that confidence was a plant of slow growth was expressing a truth which distinguishes modern modes of building from those of the ancients. Everywhere we see illustrations of doubt. Local authorities are sceptical about the knowledge or the honesty of architects and builders, and they fix on a series of dimensions which have to be adopted under a penalty. Not only in Europe, which might be supposed to be in a state of decline and required enactments for security, but in America courage in construction is restrained by rules. The consequence is that on both sides of the Atlantic there is a continued desire for experiments in order to ascertain whether there is the least variation in the strength of bricks and mortar. At first sight it may seem that experiments of the kind are a waste of labour, for the strength of brickwork was determined with sufficient accuracy fifty years ago. Nevertheless, there is a fascination in the inquiry which cannot be resisted although the results may be anticipated.

A few weeks ago when the Institute of Sanitary Engineers met at Manchester care was taken to include a paper on the strength of brickwork. It possessed, moreover, a local interest, for the experiments described by Mr. W. C. POPPLEWELL had been conducted in the testing laboratory of the Manchester School of Technology. The professors and students of that institution are fortunate in possessing a testing machine which is no model on a reduced scale like so many educational apparatus. It is a 900-ton hydraulic press with a 20-inch ram, and is supplemented by MARTENS'S mirror apparatus. When it is said that readings of deviations in size can be observed to $\frac{1}{10000}$ of an inch, and by estimation to $\frac{1}{20000}$ of an inch, it will be evident that the observations may be carried on to a degree surpassing the requirements of ordinary practice.

The bricks were arranged in piers with a square section of 18 inches by 18 inches. The work was done by ordinary bricklayers. Some piers were arranged on the lower platen of the machine, others on stiff squares of timber. The precaution was taken to have the top and bottom surfaces set in neat Portland cement or in plaster of Paris, in order that the load would be uniformly distributed. The variety of bricks comprised common local wire-cut bricks with lime mortar and with Portland cement mortar; Accrington bricks with black mortar; blue Staffordshire with Portland cement mortar; blue brindle Staffordshire with black

lime mortar, Portland cement mortar, lias lime mortar; Accrington bricks with Portland cement 1 to 1, 2 to 1, 3 to 1, 4 to 1, 5 to 1.

We sometimes see bricks which are more or less cracked but which continue to do duty as parts of a wall. They are unsightly, and if they could be easily removed few people would care to retain them. With iron and steel, and to some extent with timber, it is possible to load them heavily without any dangerous result being visible to the naked eye. Some authorities believe that the continued application of a heavy load to steel or iron, although it may not exceed the limits of safety, has a deteriorating effect upon the material. How far does brickwork correspond with metals? Mr. POPPLEWELL tells us that an increase of compression can be indicated by the MARTENS'S apparatus and shows the end of the elastic condition. According to him:—"What is happening in the material after this point is passed is not very clear, but it may be thought probable that the particles, which up to this point have retained nearly the same relative positions, are being pushed further out of their places and a sliding movement is beginning to take place. It is very likely that this movement takes place first in the mortar, and when this begins to move and fail the even distribution of the stress on the bricks themselves must be changed, with the result that these begin to crack, and a general movement begins to take place throughout the brickwork." He believes that the result of excessive applications of the load is very like "what is found to take place in similar experiments upon some of the metals." This would suggest that there is more homogeneity in bricks than is commonly assumed, and that a general law of uniformity, although differing in degree, applies to all varieties of inorganic substances derived from the earth's surface.

The strength of bricks is insufficient to determine the strength of brickwork. We might say that the principal factor is the mortar, which fortunately can be increased in strength with greater ease than the bricks. Mr. POPPLEWELL took particular care to ascertain the effect of mortar in brick piers. Five were erected of similar bricks. It was found that three which were tested were crushed under a load of 388 tons per square foot. With a mortar composed of sand and cement in different proportions the crushing load varied from 116 tons to 159 tons per square foot. The first crack varied under loads from 69 to 97 tons. Mr. POPPLEWELL says the crushing or collapsing load is always found to be uncertain, but the first crack marks the point when internal movement is commencing. There is less uniformity in the results than is commonly found in dealing with iron and steel. It is evident, however, that with bad mortar cracking begins under far less loads than with Portland cement or the black lime which is sometimes used in the North. Blue brindle Staffordshire bricks, when there was a deficiency of lime in the mortar, began to crack under a load of 38 tons and 41 tons. But with black lime there was no cracking until the load reached 100 tons; and with 3 to 1 Portland cement the cracking load was 132 tons and the crushing load 169 tons.

It cannot be expected that architects and builders will remember a whole series of experiments. General results are of greater use. Mr. POPPLEWELL approves of safe loads of 5 tons per square foot with ordinary brick and lime mortar and average workmanship, 8 tons with good workmanship, and 10 tons for best brickwork in cement. "A case," he says, "is quoted of a chimney in Glasgow where the stress is 9 tons per square foot in still weather, and as much as 15 on the lee side in a gale of wind. In the light of the results quoted here it would appear that the loads usually applied to brickwork are amply safe in most cases." The rules generally adopted being satisfactory, there would seem to be no necessity for additional experiments. We may, however, expect that investigations will be continued, although they may not lead to

any novel results. In a sceptical age it is, however, satisfactory to have the fact which is palpable of the endurance of English brickwork confirmed not by reason but by the demonstration of a machine.

STUDENTS' DRAWINGS.

THE School of Architecture of the University of Liverpool has started a good work, both for the students of the school and architects, by issuing a collection of measured drawings. Professor C. H. REILLY describes in his preface the objects aimed at, which runs as follows :—

During the last two years a set of measured drawings of some approved building, together with a thesis on it and similar work, has been required from students proceeding to a bachelor's degree in arts in the Honours School of Architecture. In this way the majority of drawings here reproduced have come into existence. I am convinced that there is no better exercise for the student of architecture than in the dissection and reconstruction of the work of the masters, by careful and complete measurements taken on the spot from the buildings themselves. Only so does every subtlety in the design become apparent as the mind of the original artist gradually unfolds itself to that of the student. The work has generally been undertaken in the long vacation, at the end of the student's second academical year. When it is remembered how small a place drawing takes in the curriculum of an ordinary public school, excuse will be made for any deficiencies in draughtsmanship. I am satisfied, however, from a careful study of the surveys and measurements taken that the drawings, as far as they go, represent a truthful and complete analysis of the work portrayed. I hope therefore they may prove of value not only to the architect, who in these matters must always be a student, but also to the general public as a permanent historical record of notable works of art. This is the sole reason for their publication. It is proposed, if it proves possible, to issue such a volume as this yearly, or at somewhat longer intervals. In time, and especially since the recent enrichment of the School of Architecture with a valuable travelling studentship, a large and comprehensive list of buildings should be included.

There are many opportunities already offered to architectural students for the preparation of measured drawings. But generally the choice of subject is left to each individual. As a rule the majority of collections are of a varied character, as if dictated by chance. With drawings like those from the Liverpool school we expect that a definite programme will be followed, and that all the subjects will bear more or less relationship between them. With the exception of two drawings of the Petit Trianon and the Grand Trianon the subjects are English. There is a Jacobean chimneypiece from the Bolton Museum. But the great proportion of the drawings represent Late Renaissance. The subjects are :—The Town Hall, Liverpool; the Custom House, Dublin; the Orangery, Kensington Palace; the Senate House, Cambridge; the House of Providence, Dingle Lane, Liverpool; and Doorways of St. George's Hall, Liverpool. There are thirty-one plates. Whatever may be the disadvantages of the style selected as compared with Gothic, it has at least the merit of allowing the drawings to be made with bold and definite lines. The general views are shown by means of photographs. The Town Hall, Liverpool, designed by JOHN WOOD, of Bath, was completed in 1754. But the cupola is the work of another architect. The sculptured details are the least satisfactory. The figure of Britannia which surmounts the structure is much admired in Liverpool; it is in terra-cotta and of Italian workmanship. The drawings are by Mr. A. C. FARMER and H. MCG. WOOD. The two Trianons are drawn by MESSRS. LYON. GABRIEL designed one building and J. H. MANSARD the other. The Custom House, Dublin, of which the drawings are by Mr. H. H. HILL, would be worthy of standing on the Grand Canal at Venice instead of on the Liffey. JAMES

GANDON was the architect, and although he was the first gold medallist of the Academy, and appeared to be destined for success in England, he preferred to live in Dublin. In his time sailing vessels were moored in front of the building or passed in front of it. Now the Liffey is spoiled in the vicinity of the Custom House by a pair of commonplace girder bridges. It is strange that the northern façade is never photographed or drawn. WREN's Orangery at Kensington Palace charmed people by its adaptation as the British offices in the St. Louis Exhibition. The simplicity of the treatment contrasted with the grandiose structures near it. It is carefully drawn by Mr. H. THORNTON. The Senate House, Cambridge, is usually ascribed to GIBBS. But it is difficult to ascertain what part an amateur architect has had in the design. Mr. F. THORP is the draughtsman. It is well to revive an interest in DECIMUS BURTON, who in 1824 designed the House of Providence, Liverpool. It is a type of the Classic which was then in vogue. The two plates were measured and drawn by Mr. H. MCG. WOOD. St. George's Hall, Liverpool, should be fascinating to all architectural students, for it was designed by H. L. ELMES, who at the time he won the competition was only twenty-two, and had to compete with eighty-five rivals. The drawings are by Mr. M. RAVENSCROFT and Mr. W. N. ADAMS, and represent details. The drawings of the Jacobean fireplace are made by Mr. D. A. CAMPBELL. The plates can have use for others besides architectural students. The agents for the book are MESSRS. CROSBY LOCKWOOD & SON.

IRON IN IRELAND.

IT is saddening to find an account of the iron trade in Ireland in an archæological journal. Yet no place is, unfortunately, better adapted to contain the information. Iron ores have been exported from the North of Ireland in order to be worked in England or Scotland. But iron in any form is not now produced throughout Ireland, although there are several districts in which the ore abounds.

We need not say how close is the connection between iron and other industries. Few as are the manufactures in Ireland, the use of iron in some or other of them is imperative. But the material has to be imported from other countries, and in that way, as in several others, Ireland seems to be doomed to fill only a dependent position.

The paper to which we refer is contributed to the Journal of the Royal Society of Antiquaries of Ireland by the Rev. JOSEPH MEEHAN, who lives in the Lough Allen, or Arigna district, which is probably the richest in minerals of any part of the island. It is believed to be providential that in some of the iron districts of England the coal for working is found contiguous. It is so in Arigna. At the present time bituminous coal, not unlike that found at Liège in Belgium, is yielded, and about 12,000 tons yearly have been sold. But not a caldron of it is employed in operations with the iron. Yet the formation is so rich that the highest part of the district is known as "Slieve-ou-Ierin," or in plain English, the mountain of iron. When the Arigna ironworks were busiest—and there is no question that excellent pig-iron was made there—timber alone was employed. The neighbouring woods were gradually cut down to supply fuel. But there was no thought of the future, and planting was neglected. We must not be too severe upon the Leitrim ironworkers. When the supply of timber was prohibited in Sussex, the iron industry, which was in a prosperous state, quickly failed.

It was not until the beginning of the seventeenth century, as everyone knows, that Lord DUDLEY employed coal instead of wood fuel. After his death there was a decline until DERBY discovered a process which he used at Coalbrookdale, and it was not until

1750 that coke was substituted for coal, when the production of iron became more easy and profitable.

It suggests the peculiar connection which existed between Ireland and France that the use of coke was derived not from English but from French experience. That would appear to be about 1788. Although the process of smelting was likely to have been imperfect, yet the ore was so excellent that the pig-iron of Drumshambo quickly gained a reputation. The same ore can still be found both at Arigna and at Creevelea.

In connection with the history of iron in the county Leitrim we can see an example of the old jealousy by which trades became mysteries. Mr. MEEHAN relates the following:—

Sir Charles Coote is recorded to have carried on iron mining and smelting both in the Arigna valley and at Creevelea, county Leitrim, the most northern extremity of the Connaught coal-fields, in the beginning of the seventeenth century. At the foundries attached ordnance was cast. Hence, anxious to hide from the Irish the secrets of the process, he employed only English and Dutch. Indeed, he is said to have engaged at one time in his different ironworks throughout Ireland as many as 2,500 or 2,600 of these foreigners. The reason assigned by Boate for this exclusion of the Irish is not the one just adduced, but because, according to him, the natives were then considered the most barbarous natives of the whole earth, and "as having no skill in any of these things." That country is to be pitied whose history is written by an enemy. The Creevelea and Arigna ironworks were burnt down by the insurgents in 1641. They were "broke down and quite demolished," Boate says of them. They were restarted in the eighteenth century.

At the beginning of the nineteenth century it is supposed there were 200 people employed at the ironworks, which were known as bloomeries. The furnaces are now absent not only from Leitrim, but from all the other districts of Ireland. In some cases where works existed their positions cannot be identified. There was a tramway in use at Arigna consisting of two metal rails, which were cast on the spot, on which a lorry with flanged metal wheels used to run.

Fireclay of excellent quality was to be found in the Leitrim coal-field. It was used for the firebricks of which the high furnaces were constructed. About thirty years ago a company was established for the production of firebricks, which were found to be suited for the works of the gas company, the breweries and distilleries of Dublin. But like other enterprises in Ireland the operations suddenly came to an end. The spectacle is consequently presented in Leitrim of a vast quantity of iron ore, fireclay and other materials, and now serving no other purpose except to point a moral and form a subject for an archæological essay.

The essay would, we suppose, have remained unwritten if it were not for a desire to draw attention to a cast-iron panel which was found built into a cottage wall at Arigna. It measures 2 feet 5 inches by 1 foot 10 inches. Within a square frame are represented two dubious animals which are supposed to represent a cat and a lion—the emblems of the family of O'ROURKE. Beneath is the date 1688. According to tradition it was cast on Furnace Hill, near the town of Drumshambo. It is not put forth as a remarkable example either of heraldry or of art. The Sussex moulders of fire-backs would be likely to value the Irish casting at a very low rate. But it raises the question whether it was an unique example of Drumshambo art or whether somewhat similar castings were not in fashion. One or two others relating to another family are known to exist.

The year 1688 marks the close of an era. An ancient family like the O'ROURKES would be proud to have their existence acknowledged. But the flight of JAMES II. was succeeded by grave events. After the surrender of Limerick those alone who were faithful to England could enjoy peace in the country. But as

MACAULAY said of the other party, "the iron had entered into the soul." The memory of past defeats, the habit of daily enduring insult and oppression had cowed the spirit of the unhappy nation." We may then doubt whether such a tablet, unless as a monument, could have been produced even in so remote a district as Leitrim. From the circumstance that the lettering is confined to "O" and "R," it would seem as if the founder did not wish to have the subject of the memorial identified.

EDINBURGH ARCHITECTURAL ASSOCIATION.

THIS Association held on the 7th inst. its annual excursion, when the members visited Tulliallan and Culross. The party, which numbered upwards of fifty, was met and welcomed by Sir Jas. Sivewright at Tulliallan and shown by him over the modern castle and gardens. The party then proceeded to the old castle, where Mr. Harold O. Tarbolton read a short paper. After inspecting the castle the members were entertained to luncheon by Sir Jas. Sivewright in the old banquetting-hall. At the conclusion of the luncheon Sir James gave the toast of the Association, to which Mr. H. O. Tarbolton, president, replied and thanked Sir James for his hospitality. Thereafter the party drove to Culross, where they visited the palace by permission of Miss Luke, and the abbey church and the abbey house by permission of the Rev. David Hampton and Lord Bruce respectively. In the absence of Sir R. Rowand Anderson, Mr. A. F. Balfour Paul, architect, acted as leader at the palace and abbey.

MODEL DWELLINGS.

AT the meeting of the Institute of Sanitary Engineers in Manchester Mr. H. Allan-Scott opened a discussion on the housing of the working classes. He appealed for further consideration of the question of the advantages and disadvantages of block dwellings and cottage tenements, more particularly for towns. The so-called "model dwellings," he said, were most undesirable. Why, he asked, should block dwellings be built when there were hundreds of acres to sell freehold at 500l. an acre within eight miles from the Marble Arch—and if that was so in London, other large centres must be more fortunate)—places served by at least three railways with good train service and very cheap workmen's tickets? The Acts of Parliament allowed the authorities to build outside their own districts, and yet they continued to build "model" block dwellings in the heart of confined and unhealthy districts, providing no gardens, but providing miserable playgrounds 40 feet wide. Upon calculations he had made, Mr. Scott said no financial difficulty need arise in the provision of a housing scheme within the distance from a town he had named. There was no doubt that the present system of block dwellings was most unsatisfactory, both from a physical and mental point of view, whereas the idea of providing small cottages with a plot of garden attached to each was an excellent one which ought to appeal to the mind of everyone. It seemed false economy to erect block dwellings which only served as a breeding-ground for disease to supply the sanatoria which were being built at enormous cost. He urged members of the Association to visit the Blackley estate of the Manchester Corporation. It was, he said, particularly satisfying to observe that the elevations had had consideration. But there appeared to be no proper ventilation to food cupboards. He sincerely hoped that block dwellings were things of the past. They could be conveniently converted into good warehouses, and no money need then be wasted.

The chairman (Sir William Mather) said many efforts had been made by philanthropic societies and municipal bodies to solve the housing question by the erection of solid piles of buildings which looked more like workhouses than dwellings in various parts of the country. He was glad to think that the public mind, as well as the sanitary and the æsthetic mind, was against the idea of block dwellings, and that cottage tenements were becoming the most favoured form in which the housing problem might be solved. The garden city movement also had taken hold of the imagination, and had received the financial support of the English people, and was solving for us some very difficult questions. There could be no doubt that during the next generation we should certainly find our country and our towns far better arranged for purposes of the comfort, health and decency of the masses of our people than they were at present.

INTERNATIONAL CONGRESS OF ARCHITECTS

Thursday, July 19.

Dr. Ing. H. J. Stübgen (Germany) and Sir Aston Webb, R.A., acted as chairmen at the Grafton Galleries on Thursday morning, when papers were read on "The Education of the Public in Architecture." The secretaries were M. A. G. Bzn Salm (Holland) and Mr. W. M. Mitchell (Ireland).

THE EDUCATION OF THE PUBLIC IN ARCHITECTURE.

By JOHN BELCHER, A.R.A.

THE first step, as so often is the case, will be for the public to unlearn much that has been wrongly learnt. The superstitions of antiquity and the "styles" must be exploded. It must be made plain that neither a smattering of archæology nor a superficial study of styles affords a sound basis for a critical judgment in matters of present-day architecture, which must be presented to the eyes and ears of men as a living art, founded upon past achievements, it is true, but instinct with a power and vitality of its own.

Neither is architecture merely a matter of a beautiful exterior; the importance of the "plan" of a building and of sound principles of construction must be pressed home. In other words, architecture is a science as well as an art—a blending of the two in such a way that the practical knowledge of the builder or engineer is interpenetrated by the artistic spirit, and made without prejudice or loss to subserve its ideals.

Instruction of a positive order will range itself under the three heads of principles, qualities and factors. The principles of architecture are two, truth and beauty. Truth requires that a building, both in its entirety and in its several parts, should never seem to be other than what it really is. This excludes all pretence of antiquity where no such claim exists. It requires that a church should look like a church, a town hall like a town hall, and a private residence like a private residence. An external shell of plaster over brick must not present the appearance of blocks of stone, nor a steel structure cased by terra-cotta suggest solid masonry. Good architecture never deceives the eye even for a moment. There must be no false suggestion as to the purpose or construction of the building, nor any hiding under one external feature that which is usually expressed by another. The principle of truth, however, finds its widest scope in the true use of materials. Every material has essential characteristics of its own, and therefore a proper place and purpose in building. There is a time and a use for stone and for each kind of stone, for wood and, for each kind of wood, and so on. To defy, neglect or misuse the natural qualities of materials is not good architecture. These natural qualities will be roughly indicated under the head of "Factors."

Beauty is the second great architectural principle. Its elements do not admit of popular exposition, but the public may be trained to recognise its presence by the appeal that it makes to their imagination and emotions. The fact that beauty can be felt but not (ordinarily) analysed is of importance in the education of the public, as tending to withdraw their attention from mechanical rules to the spirit that animates and pervades like a living thing the highest architecture. An appreciation of beauty of form is less common than susceptibility to colour effects, and needs training and development. The qualities that distinguish good work from bad may be classed as follows:—

Strength.—It is not sufficient that a building be, in fact, strong and secure; it must look so—it must satisfy the eye. The engineer may by exact mathematical calculation know that the conditions of security are amply fulfilled, but the architect has to see to it that the work presents an appearance of strength and solidity. The larger and heavier parts must be below; every arch must have sufficient abutment or even a tie-rod as well; solids when placed over voids must be strongly supported, and so on. Methods of support and resistance must be clear and well defined. Granite in the upper storey of a half-timbered house may, as a matter of fact, be quite safe, but it seems to threaten danger; placed below it satisfies the eye with its impression of solidity.

Vitality.—Evidence of life and growth, most plainly illustrated in Gothic work, where the perpendicular lines rising heavenward and clothed, as it were, with luxuriant

ornament, suggest the life of a tree or plant. It is vitality that gives ever fresh combinations and effects from the same primary elements.

Restraint.—The limitation of means to an end, the suppression of all unnecessary parts or details. Whatever be the nature of the building, there should be purpose, definite purpose, in every feature or ornament. This may be illustrated under the head of "Proportional Divisions" (see "Factors"), but the general principle is one which will be readily grasped by the intelligent layman, to whom it will often suggest a line for thought and inquiry.

Refinement is impossible without restraint, but it includes also purity of form and perfection of material. Everything must not only be the best of its kind, but so suited to its purpose that nature will seem to have expressly designed it for that use and place. The fitness of certain materials and forms for defined purposes and effects is subject-matter for an important chapter in the education of the public.

Repose.—Every really good work is clothed, as it were, in an atmosphere of repose. There is a sense of power, but it is latent power; there is evidence of vitality, but it is restrained vitality. Effects too pronounced hurt the eye; ornament too profuse wearies both the eye and the emotions. There must be no "loud" or vulgar elements.

Grace.—A dignified seriousness of purpose should be observed in the appearance of all public buildings, but an expression of the graceful courtesies of life should not be lacking. In domestic buildings this element of grace takes a more prominent place and assumes a higher and more refined form, corresponding to the tender sentiments of home life. The public interest ought to be readily roused in this direction and a demand created for a better class of small suburban residences.

Breadth.—The treatment of the subject as a whole in a simple grand manner, the proper massing of the several parts, the subordination of detail to the larger forms of the composition and to the bringing of the whole design into unity. An attempt may be made by illustration and comparison to explain this somewhat technical term, that the public generally may be led to understand and appreciate this quality of breadth which is so conspicuous in every great architectural work.

Scale.—The right relation of the several parts to one another and to the whole in point of size. It will be pointed out that there are different scales in architecture as in music, and that the varying effects upon the mind and heart are as powerful and distinct in the one case as in the other. Also that the scale should be appropriate to the character and purpose of the building. A building of a monumental character or of great public importance should be designed and built on a large scale, and each part and every moulding should be of a proportionate size.

Factors.—In dealing with factors—the means which the architect has to his hand, as it were, for the attainment of his ends—it will be necessary to emphasise the fact that most, if not all, of these factors have their origin in utility and answer some practical need in the construction or preservation of the building. To forget this primary purpose and use them as means of artistic embellishment is to sacrifice use and convenience to artistic ideals, and is not true architecture. The public are quick to recognise the importance of this in respect of window and door openings, floor divisions, chimneys, &c., but are apt to think of columns, pilasters, sills, hood-mouldings, cornices and perhaps even buttresses as decorative rather than useful, and to suppose that the architect has a free hand in the disposition of them. Education in this matter will include instruction in the primary use of purpose of the common architectural forms, and will give an insight into the difficulty of making these forms serve the ends of use and beauty at one and the same time. Such an insight—like propounding a problem—will go far to quicken interest. The subject may be dealt with under the four heads of Proportion, Light and Shade, Solids and Voids, Balance and Symmetry:—

Proportion.—Certain proportions are pleasing to the eye, and effects of proportion are obtained by the relative size of different parts. The various ways in which the constructional parts and features of a building may be utilised to obtain proportional divisions, both horizontal and perpendicular, might be described in detail.

Light and Shade.—The advantage that may be taken of effects of light and shade might also be pointed out.

Solids and Voids.—The importance of a right adjustment of solids and voids, both in respect of size and position, would come next. How easily a false scale may be set up and a building made to look insignificant by broad sheets of plate-glass in the windows.

Balance and Symmetry.—These give a very distinctive character to a building and aid in setting forth its special purpose. There is or can be rhythm in architecture as in verse.

Material.—The right use of the various kinds of material furnishes an interesting and useful subject for public instruction. The general principle having been laid down that every kind of material has its special characteristics and should be treated accordingly—in other words, that its very best should be got out of it—a brief account of the natural qualities of the chief building materials (stone, wood, metal, bricks, plaster, &c.) would follow.

The following leading thoughts are appended by way of illustration:—

When stone and brick are used in conjunction the former should be accorded the more honourable parts—*e.g.* quoins, architraves to doors and windows, sills, cornices, &c. Granite, even if it could be carved for mouldings, should be used rather for strength and solidity than for ornamental features. When the beauty of marble or wood is in its figure or colour, it is best exhibited in the form of slabs or panels; if moulded the forms should be large. Stone is granular, wood fibrous: each has its appropriate forms and mouldings suggested by the natural qualities of the material. Wrought metal admits of the finer and more delicate forms, metal cast in moulds naturally assuming a more bulbous shape. Both kinds have their appropriate place and effective use. Well-known examples of wrought-iron and cast-iron gates and railings afford interesting illustrations.

The foregoing summary indicates the main lines along which the education of the public in matters architectural should be developed. Whether in public lectures or in articles published in book form illustrations should be abundant. There are signs of a wave of public interest in architecture which "taken at the flood" may become permanent and lead to great results.

By DR. ING. HERMANN MUTHESIUS (Berlin).

It is an undeniable fact that architecture is unpopular—probably the most unpopular of the arts. This is especially evident by comparison with the enormous interest which the public take in works of painting and graphic arts. But it seems doubtful whether any so-called education of the public in architecture will get at the root of this problem. The present low level of understanding and interest is probably to be considered as a proof of the fact that in our days architecture itself has lost much of its public importance and value.

This becomes obvious if we contrast the architecture of our day with that of the great epochs of the past, the Greek, Roman, Mediæval. Architecture was then the leader of all the arts and crafts. And this was so because it was the universal art, and had to deal with all the constructive and building problems of the time.

In our days the problems of the engineers, whether connected with the perfection of systems of locomotion, of comfort, of labour-saving machinery, or of tools and instruments, play a more important part than the works of architects, who only in laying-out of streets and cities touch the great contemporary problems. The engineer is compelled to look to the future, and in consequence he is generally unfettered by minor considerations. Whereas an architect, hampered by historical tradition, looks backward and makes his works appear rather works of a past age than of the present day.

The history of architecture of the nineteenth century shows a remarkable lapse into archæological fashions of various and often contradictory kinds, so that true architecture almost died out, and as a result the architect's work became a mere application of details of historical styles. Even the architecture of the present day is largely ruled by archæological principles. This is shown (a) by the importance still attached to style (we build Romanesque exhibition halls, Renaissance railway stations, &c.); (b) by the attitude still preserved by a great number of architects towards our old buildings, which are being restored by them in the so-called spirit of a past age; (c) by the endeavour frequently met with to conserve the character of an old street or square by putting imitations of old buildings next door to the originals. Moreover, the fact

that contemporary architecture is enslaved by these archæological tendencies has in several cases aroused the opposition of the well-educated sections of the public against architects. On the other hand, it is to be noticed that architects of marked originality, who create modern rather than archæological works, have found support, and even aroused enthusiasm, amongst the less educated public. Every country furnishes instances. This enthusiasm springs from the same source as the present enthusiasm for the modern tendencies in decorative arts. The reason in both cases is a conviction that such architecture has found the bases of modern feeling, and that the archæological masquerade is over.

The intrusion of archæology into the art of building has been the ruin of architecture during the last few centuries. Archæology, however high it may be as a science, has nothing to do with living art, and ought to be strictly separated from it. Owing to archæology the public has been miseducated, for it aroused that deplorable interest in styles which now proves to be the greatest of all hindrances to instilling the true principles of architecture. Those architects who still work in the styles foster this fatal state of things, and through their connivance with the public render it more and more difficult to lead them away from such errors.

If the public is to be educated in architecture it can only be done through architects' works showing a genuine modern feeling and being impressive through their personal merits, and not by their resemblance to works of past ages. Such works are, unfortunately, exceedingly rare in contemporary architecture. The best way of educating the public is to produce more of these and to leave styles alone. The so-called education of the public requires therefore in the first instance the education of architects. So much on the principles of the subject: the following remarks refer rather to details.

The inclusion of architecture in the annual art exhibitions has not proved a success. The architectural room is generally empty. A better scheme would be to exhibit models instead of drawings, as models can alone give an idea of the stereometric effect of a building. Moreover, they are attractive in themselves. Architectural drawings, even if perspectives, at most arouse interest as graphic works, and are then very often at disadvantage with the works of graphic art shown in the adjoining rooms.

A very powerful means of education is literature, for by reading alone can the major part of the public be influenced. However, there is small hope of properly utilising it if, as at present, good information on architecture is given solely in professional papers. These journals are not in touch with the public, which acquires its knowledge from the daily Press and magazines. Hence it is very essential that trustworthy information should appear in the latter. But, unfortunately, the usual writers for papers and magazines are incapable of imparting such information on architecture, for they are laymen. It is therefore necessary that competent technical writers, who now practically limit themselves to the professional journals, should turn their attention to newspapers and magazines.

In addition to the information in the Press, lectures, if given by competent men, are an excellent means of educating the public. Architectural societies should make it their duty to induce universities and other educational bodies to arrange for lectures on the subject. Nevertheless, all efforts to impart education by word or writing are useless if they are not inspired by a modern spirit, if they are employed by any other but thoroughly competent men, and if they are not reinforced by works of genuine modern character. Though it seems quite safe ground to base art education on works of past ages, it is a universal experience that by the superficiality of such instruction a mere romantic interest is aroused, which is worse than useless. Moreover, there is plenty of opportunity for education in the historic arts. What is wanted is to arouse interest in the architecture of the day. An education such as is necessary for the problems of our time can only be effected by genuine works of our time.

By T. G. JACKSON, R.A.

Archæological study of architecture, moreover, only touches one side of it—the outside features of bygone styles, not their inner reasonableness. All styles in the past have been based on natural and social reasons, and mainly on construction, and their general form and features are such as have been suggested thereby and are expressive

of it. So long as we think the essence of a style consists in its outward features we shall fail to understand the true nature of it. This, however, is the case to-day. Architecture, whether ancient or modern, must be called upon to explain itself and give a reason for its design, and be judged by that, instead of by mere conformity to precedent. One effect of the false view of the subject is to teach that architecture is ornament applied to building. A fatal fallacy. After all, the best means of education is by the production of well-designed buildings, architects the best teachers, and real work more edifying than books or lectures.

By BANISTER F. FLETCHER.

Why is architecture, the petrified history of the past, not generally included in educational schemes?

Its absence is probably due to its technical nature. Its importance as a general subject has not been realised, though it is inseparable from the progressive history of every civilised nation. The subject must be illustrated, for without views and plans it is akin to a play which is read instead of being witnessed on the stage.

The use of photography in conjunction with lantern slides nowadays enables a lecturer to fully illustrate any period of architecture. The technicalities are simpler than in most scientific subjects. It can easily be invested with human interest and made intelligible to the ordinary student.

Architecture, as the work of human hands, is the result of brain power or thought, and is therefore more worthy of inclusion in a general education than a score of subjects which have secured recognition and protection. A study of architecture enables us to interpret the moral, artistic and religious character of humanity, and a knowledge of the profoundest characteristics of a nation may be gleaned from a study of its buildings.

It might be expected that our older universities, such as Oxford and Cambridge, would welcome the study of an art which is so bound up with humanity of all ages, and would provide for a special faculty to advance the general study of architecture, apart from its adoption as a profession.

Its inclusion would be far-reaching, and many benefits would be derived by the public, who would thus be enabled more fully to appreciate the works of art which are to be found in the highways and byways of every land, and which serve as free galleries of art.

Further, the study of architecture is necessary to a complete understanding of history, and gives an added interest to travel.

Bishop Creighton defined architecture as the most democratic of all arts, and pointed out how it is equally for everybody—rich and poor alike. History has been to architecture what steam is to machinery, the grand propelling power; and it may well be described as the printing press of all periods. It calls into action so many branches of mechanical labour which promote national prosperity that it is therefore more entitled to the attention of the general student than any other of the fine arts, a further reason why the general community should acquire a taste for it.

As the art which shelters us from the elements, and with which we come in daily contact—as the art which gives us “home” and enshrines and illuminates the most sacred of our associations—and, lastly, as the mother of all the arts, architecture is certainly worthy to be included in the curriculum of a general education.

ALBERT KELSEY (United States).

Judging by results the education of the public to an appreciation of architecture in the United States is a matter of more than theoretical importance. It is an accomplished fact. The Chicago and Buffalo World's Fairs, and the Dewey arch and its approaches, executed in “staff” also, were real object lessons on a large and lavish scale, which have done more for the public than all the lectures and books written to capture its attention. Architecture as a fine art is only a product of recent years in the United States, but the prodigal public is now patronising architecture on a scale comparable with the great and lavish commissions of the Doges when Venice was at the height of her glory. Nowhere are costly materials and rare marbles used so lavishly as in the United States, and nowhere are the opportunities of the architect so promising.

The T-Square Club delegate to the Brussels International

Congress of Architects said among other things that although they had faultless copies in the United States of the most famous European buildings, the one thing they did not possess was a national, indigenous style typical of the present day. That was nine years ago, and Americans are still impatient. Since then twentieth-century life has created twentieth-century problems. Since then architecture has passed through the experimental stage, and is now recognised as one of the learned professions. This fortunate state of affairs has been brought about primarily by the creation of an educational system which stretches from the Atlantic to the Pacific. It is now possible for any talented and ambitious draughtsman (either college or office trained) to procure the advantages of foreign travel as well as a course at the Ecole des Beaux-Arts without cost to himself. Moreover, a complimentary arrangement has even been made by the French Government whereby the winner of the Paris prize in the final competition of the New York Beaux-Arts Society is admitted to the first class upon his arrival in Paris, thus eliminating an exacting entrance examination and all the work of the lower class required of other architectural students at the French National School of Fine Arts.

It is noteworthy that, of the fifteen scattered ateliers allied to the New York Beaux-Arts Society, the work of the T-Square Club atelier ranked first during the past year. The educational system, however, is not alone responsible for progress and prosperity. American architects have had unusually lavish opportunities to build; and, lastly, their endeavours have been loyally seconded by an architectural Press which has done much to raise standards and to diffuse knowledge.

An indication of American architectural progress may be obtained in the report of the international jury on designs submitted in The Hague Peace Palace competition. Of the design from the United States which received an award it was said that the exterior was greatly to be praised both for simplicity and suitability of character, and the interior was well studied and distinguished from most of the others by a notable economy of space.

“Standing-room only” is a common saying among the architects and real estate men of the narrow island of Manhattan; hence the buildings stand close and high. A stable with 300 stalls and a great bright riding ring on the sixth floor is one of the results. Another is the Hotel Belmont, a twenty-eight storey structure. It has sixteen high-speed elevators and a subterranean mechanical plant filled with engines, boilers, dynamos, electric-lighting machinery, refrigerating, ventilating and cooling devices, enormous filters (beside air filters or washers for the heating system), fire pumps, elevator machinery, a vacuum cleaning device extending to every room (which sucks dust and dirt and refuse back to a crematory where, with the garbage from the kitchens, &c., all is consumed). Then there are three additional underground storeys, one of which is used for a railway station. This is enough to give an idea of the modern problems, and to suggest the organising genius necessary to carry them out. Most of the apartments are above the fly level, the dirt level and the noise level. Nearly every bedroom has its private bath-room. From every room the guest gives his orders by telephone or by teleautograph—a system which transmits orders in his own handwriting.

Another bewildering example, in which the full meaning of “standing-room only” is brought out clearly, will be seen in a terminal station in which batteries of boilers and a monster mechanical plant will be concealed up and back of the main cornice, 100 feet above the street. And yet, notwithstanding these intricate requirements, architecture as a fine art advances with great strides. Americans have been building beautifully, if not always appropriately, and now the domestication or nationalisation of their architecture is the next problem. The florid pretzel and oyster ornament so common on the inferior new buildings of Paris—and its architectural suburb, New York—is a manifestation of ignorance which is being combated, many contending that in a search for indigenous sources of inspiration their traditions lead to England rather than to France.

Thus, in the United States more than anywhere else, architects are entitled, both on account of diverse historical associations and because of the constantly increasing mixed population, to come to a reunion such as the International Congress prepared to learn something from every delegate that may be turned to appropriate and practical use. Naturally their thoughts turn first to the Mother Country, and with gratitude to the Royal Institute of

British Architects for the magnificent entertainments and for the many expressions of cordial goodwill. But there is nothing limited or special in such endeavours. Americans are studying the great architectural on-sweep of the world, endeavouring to assimilate, from here, there and everywhere, anything that will add to the dignity and glory of architecture. But they are not altogether selfish; on the contrary, the delegate of the architectural societies of Philadelphia emphasised this point: they are ready and willing to give as good as they take. They fully recognise how vitally and intimately related their work is to the work of other nations, and recognise the manifold advantages to be derived from an international *entente cordiale*, and in consequence they propose to do all in their power to strengthen, fortify and buttress these fraternal ties.

By FRANCISCO DEL VILLAR Y CARMONA, MANUEL VEGA Y MARCH and EDUARDO MERCADER Y SACANELLA (Spain).

The want of architectonic education among the masses of the public is everywhere a general fact. Owing to local circumstances and to the various shades of the phenomenon it is generally attributed to different causes; there is in reality, however, but one, and this is the most pitiful ignorance of what constitutes and characterises our art.

The reality and importance of the subject are of course evident, as well as the necessity for affording concrete solutions that may modify the actual state of things for the benefit of the public, whose education will increase; of architects, whose status will improve in proportion as their efforts are duly appreciated; of art, by means of which it will insure the respect of everybody, and will henceforward be free from sacrilegious attacks by the ignorant masses.

We recommend the adoption of the following means:—

1. All Governments should order to be placed in every primary school photographs or drawings showing the classical works of all kinds of specimens of architecture, with an indication of its style and epoch.
2. The teaching of æsthetics and of the history and theory of the fine arts should be included in the general curriculum of schools.
3. Schools of every kind should be compelled to teach elementary architecture.
4. All countries should promote permanent exhibitions of architectonic works, conveniently classified, represented by drawings or photographs or models, and illustrated with short descriptive explanations.
5. Governments should encourage all kinds of publications for the divulgation of art, instituting for the purpose rewards and bounties. They should also purchase a considerable number of them for distribution among all public libraries, and their price should be such as to place them within reach of persons of small means.
6. Free chairs should be endowed for the divulgation of the history and theory of architecture.
7. It would also be expedient to arrange cheap excursions to the most renowned buildings of all countries, the parties to be presided over by an architect who would lecture on the monuments visited.
8. Money bounties should be awarded for the best collections of buildings or architectonic works exhibited in cinematographs and theatre sceneries, &c., of which municipalities should afford gratuitous displays.
9. Artistic educational associations should be organised for the propagation everywhere, and with all the means at their disposal, of the teaching of art, more especially of architectonic art.

By OTTO WAGNER (Austria).

If the best model buildings are created by eminent artists the artistic interest of the public is sure to be awakened, or that already existing will be increased. It is, however, to be understood that the main condition always holds good, viz. that these models shall be of a very high artistic order; consequently, that they owe their origin to first-rate artists. Artists of the first class will adapt every work to the purpose for which it is destined, in every particular; they will make use of the most convenient material, and of the proper method of construction, in order to produce the best forms of art. Only in this way the desired characteristic and beauty of the work will be created, and only these will be able to satisfy the spectator. No doubt, then, the recognition will flash upon the spectator that the artist expresses his ideas in a language intelligible to all. But if the spectator is able to understand a work of

art, his aversion to enter into the study of a work will vanish, and will be replaced by the possibility and the will to judge it.

No doubt in order to create model works of architecture the co-operation of the State is necessary, because it is in the first instance the duty of the State to favour art, which is the gauge of civilisation of mankind. This State help, in order that it may be efficient, is only possible by the State, the country or a city—since it does not itself possess the necessary artistic intelligence—making use, for the solution of all questions of art, of an appropriate organisation, a senate which should be exclusively composed of participating artists, who would have to watch that only good work be produced. The architectural education of the public can only be rightly influenced by good work, for nothing is so victorious as good work.

By GASTON TRÉLAT (France).

The contemporary phenomenon of democracy characterises the world in which we are called upon to develop our powers. It tends to establish the equilibrium between classes. From it result comprehensions and feelings which from day to day become more general. So much for the nature of the spirit which characterises the public of our time.

Discoveries, which are due to the great initiators of the time, have lighted new paths in the matter of the salubrity of houses. Hence the anxiety with regard to the public health which we see nowadays. No sphere escapes from this anxiety, which seems to be a mark of our time, and which one may describe as a happy beginning.

In the same way, in consequence of an education perhaps unconscious but very real, the plastic arrangement of material has become a cause of impression in all social spheres. At least one meets everywhere people of unquestionable taste, who are sensible of correctness in form, this being always in accordance with the mode of imperfectly seen realisations.

Architecture is related to many sciences which have a living interest for the public. It is the object of current applications for these sciences, from which results an immanent cause of interest for the growing mass of the intelligent public.

But, again, the number of the admirers of public beauty increases daily; and as architecture is a considerable element of it, one sees there the evidence of a continually increasing education.

By GASTON ANCIAUX (Belgium).

The education of the public in architecture can only be brought about by long, patient and unceasing effort.

The most practical means to educate the public in matters of architecture are of a very numerous and of the most varied order.

Among these the following seem to us to be more particularly proper to give good results.

A. For the future:—

Within the shortest possible time

To establish or to develop at the various stages of teaching special lectures adapted to form the taste for architecture; or better still, above all in the classes of the elementary and secondary schools, to infuse this element into the general matter to be taught without making it the object of a separate course of lessons.

For this purpose, especially to divert to a greater extent the teaching of the history of wars and of politics of the nations towards that of the various stages of civilisation, by characterising them by their stages in architecture, without, however, separating this characteristic element from the most salient features of manners, costumes and social institutions of each of them.

Similarly to alter the direction in the teaching of geography in the same sense. For this purpose to arrange excursions for the pupils in their native town, in their province and their country generally, and even to foreign countries if possible. To illustrate with the same view the classical works with vignettes representing not only typical sites but also views of monuments and interiors (by preference of those still existing). To frame the text with ornamental fragments of an architectural and decorative nature by the best masters of the periods under consideration, and to choose only the most characteristic from among them.

To reform the present collection of pictures in schools in a more artistic sense by having recourse to artists of

value, and by making use of the modern processes of perfect and cheap reproduction, such as phototyping, chromolithography, &c.

To put, however, into the hands of the pupils only elements of the very best kind, and to look to quality rather than to quantity, to the composition rather than to the details.

For the teaching in the most advanced classes, to create professorships specially affected to architectural art and its philosophy.

To have this delicate subject only taught by a particularly able and specially competent *personnel*, as in the adverse case the results can only be disastrous and diametrically opposed to the aim in view.

B. For the present :—

To take action in such a way as to obtain the realisation of the following desiderata :—

(1) The creation of not only central museums of architecture in the capitals, but also provincial ones in the smaller towns of the country.

These museums would either be connected with the museums of painting and sculpture, or rather joined to the museums for the moulding and decorative art of which they would form the head.

These museums would contain, besides the graphic executions, the rough models, the photography and aqua-relles which would be more suggestive and more attractive to the public than the technical drawings.

These museums would also contain complete decorations of furnished interiors, where the properly so-called architectural framing largely treated would be accompanied by the explanatory graphic documents.

(2) The organisation in these museums of numerous public conferences and attractive temporary exhibitions of architectural works of recent creation or of projects of architecture, the latter in the widest sense of the word.

(3) For the public authorities to take care that only structures, be they important or accessory, of a temporary or a permanent nature shall be erected which are proper to form the taste of the public.

By ALBERT MAYEUX (France).

Of all the arts architecture is the one which concerns, or must concern, most mankind, since it is in relation with one of the immediate necessities of life—habitation.

Of all the arts architecture is the one which has in the highest degree exercised the genius of man, by the reasoning which is necessary for the conception of projects of an infinite variety, for their realisation and for the research of an æsthetic sensation in most of these projects.

It is also the only art which, so to speak, was created in all its parts by man. Whilst painting and sculpture only contemplate nature in different ways, taken as a model it is transformed by architecture and new forms are created, and in order to succeed in this even new products are created.

Architecture being of all the arts the one which reflects in the most intimate way the moral state of a period, to such an extent that it has been said that a monument was a book of stone in which history could be read on its indelible pages, it must be understood how much its teaching may be interesting to the public from the point of view of curiosity alone. That is to say that the faces upon which these teachings can be read are numerous and varied, but in order to be able to read it is necessary that they should be brought within the intelligence of the spectators, according to the surroundings and the class of public.

Now the public to whom an architectural education can be given is of two kinds—(1) The youth frequenting the schools and the soldiers. (2) The independent public.

The teaching to the students can naturally be imparted to them in the schools, lyceums and colleges, and that to the soldiers in the barracks, whilst, on the other hand, the instruction of the public may take place in the shape of conferences and collective visits.

A complement of instruction exists more or less for everybody in the books and libraries, but this is a means which it must be known how to administer, and which, in any case, is outside the range of a programme of special studies such as we wish to propose to the Congress.

It is impossible here to draw a positive programme of instruction, the professors and lecturers being of different

temperaments and aptitudes; it is only possible to point out a general line on which to proceed.

Collective visits to monuments and even to towns on the road of excursions at reduced prices, and all the pleasantness connected with similar excursions in company, are also to be enumerated among the best means of teaching architecture, because the sight on the spot conveys more to the mind than the best of photographs, and with a good lecturer *cicerone* the result, which, in short, is to succeed in developing interest and respect for the monuments and the necessity of their preservation, will then be completely obtained.

The question put by the Congress which we have answered in the foregoing seems to be of primordial importance, and we therefore utter the wish that societies similar to ours should study the elaboration of standard manuals for the use of lectures.

By JEAN GILSON (Belgium).

"Art comes from man and is intended for man. It is the flame of a spirit, its radiance; it cannot fail to affect first of all the being from which it emanates, and afterwards, from one to another, some other beings," said M. Sertillanges.

It is the same with architecture, the queen-mother of all the arts; destined, above all, to strike and to captivate the attention of the public. To attain this highly desirable end, which ought to be the object of a noble emulation, always on the alert, it would be necessary, to start with, to try to call forth gradually among the general public the beginnings of the æsthetic sentiment, which in a great number exists in a latent state.

It is therefore necessary that those who are convinced, the enthusiasts who possess the cult, and consequently the enthusiasm for art, shall fight, without respite and without weakness, against the slow and growing invasion of the domain of inspiration by pedantry which pretends to domineer and to reduce to mathematical dryness the creating genius.

Thus it happens that too frequently the mission to initiate into that immaterial thing called "art" is entrusted to pedagogues, to teachers, while the professional practitioners who have made of æsthetics and of their multiple applications the study and the constant practice of their existence are given the cold shoulder.

It would therefore be greatly desirable that only persons initiated into the sublime and imperishable beauties of art, special professors who have shown special capacity and made special studies, should be entrusted with giving to school children as well as to young men a good and healthy education of their visual organ either by the daily environments of the educative centre, or by rational visits to museums, by excursions, by illustrations, books, &c.

Let us likewise avoid the mistakes and exaggerations of the modern at any cost.

Let us carefully avoid trying to be innovators moved by the unwholesome desire to astonish, to stupefy the public.

Let us prove to this public that we endeavour to initiate it into the imposing splendours of the beautiful, to all the importance of arduous work, to the never-ceasing study which our art requires.

Let us make efforts to revive again the corporative spirit from which came to us those admirable and sublime creators: artisans, ignorant of the rules of pedagogy, even almost illiterate, which did not, however, prevent them from producing immortal pieces of workmanship, pure masterpieces of architecture, of tapestry, of ironfoundry, of joiner's work, &c.; privileged practical workers with an immortal genius, to whom we are indebted for our jewels of architecture as well as for our jewels of the decorative art, the one forming the pride of our ancient cities, the others the wealth and the value of our museums.

Being thus animated only by the care for the vital interest, for the future and the dignity of our profession, let us unite our efforts so that we may succeed in the creation of the diploma, which would be granted by a jury composed of master architects of recognised talent and merit.

This essential measure of defence would keep away the ignorant and incompetent who in our day give themselves the name of "architects," abusing this title, and, in fact, creating great prejudice to the prestige and good reputation of the profession.

(Continued on page 67.)

NOTES AND COMMENTS.

THE Labourers (Ireland) Bill, which has passed the House of Commons, will contain a clause of unusual character. Many complaints have been made about the class of men accepted by the local authorities in Ireland as architects. As a consequence of the incapacity of the new architects the labourers' cottages which have been erected at the public expense are not as satisfactory as is desirable. In the course of a few years it is likely that the repairs will be comparatively costly, and meanwhile the occupants will have to suffer much inconvenience. Mr. BRYCE, the Chief Secretary, was compelled, prior to the third reading, to introduce a clause which will make it incumbent on every person employed by a District Council as architect, engineer, surveyor or clerk of works for the purposes of the Labourers Act to satisfy the Local Government Board that he is qualified for such employment. The effect will be to deprive the local authorities in Ireland of a kind of patronage which enabled them to give their friends a lift by suddenly transforming them into architects or engineers. The leader of the Nationalist party declared he did not like the clause, and there is no doubt it will cause much dissatisfaction in board-rooms. But the evil cannot be ignored, and the clause was adopted without even the farce of having a division.

THERE was at one time some doubt as to the losing or preserving a right to ancient lights when a building is altered or reconstructed. A building may be under certain circumstances taken down, and yet the owner of the ground will retain his rights just as if the building continued to exist. It is possible, however, that recent decisions have not been without an effect in cases relating to ancient privileges. Cambridge House in Piccadilly, at the corner of Park Lane, was one of the best-known private buildings in the Metropolis. It might therefore be supposed that any building erected on the site would, as it were, inherit the privileges which so long existed. But from a judgment given by Mr. Justice WARRINGTON last week the rights to light in that building have been extinguished by the reconstruction. The owners of the property, Messrs. SANDONS, LTD., are erecting a large block of flats on the site of the mansion. On the other side of Park Lane Messrs. DUVEEN, the art dealers, are erecting new premises. On the ground that their light would be interfered with, Messrs SANDONS, LTD., applied for an injunction to prevent any diminution of their access of light so far as related to the windows of the ancient portion of their premises. Without calling on the defendants, the Judge said that there was not sufficient proof that the ancient lights had been interfered with in a legal sense. They were not dealing with old houses, but with new, and therefore judgment must be given for the defendants. The case is of interest, and will no doubt be accepted in dealing with other cases hereafter.

It is generally supposed that after the death of Louis XIV. the work of the Gobelins factory declined in importance. The most interesting set of tapestries produced during the reign of Louis XV. were the representations of his own performances as a sportsman, and which are known to amateurs as the *Chasses de Louis XV.* They were designed by J. B. OUDRY, the animal painter. Whether several copies were produced is not certain, but only two sets are known—one in Fontainebleau, the other in Italy. Louis XVI. admired them, and he had them copied, not in tapestry, but on porcelain panels at Sèvres. They were somewhat altered in order that he might appear to be the hero. The panels were supposed to have met the fate of much else connected with royalty in France, for as they disappeared it was supposed they had been destroyed, M. DE NELHAC, the conservator, has had the good

fortune to discover them in some neglected room of the palace. He has also ascertained the positions in which they were placed, and which it has been arranged they are again to occupy.

LOCAL authorities are afraid of encouraging concrete and steel construction. The majority of the codes of by-laws which are in use in provincial towns are silent on the subject. The extent of the responsibility which is incurred by approving of plans for walls which would not be constructed either of brick or stone is uncertain. Credit must, therefore, be given to the Carlisle Town Council for confirming the action of the health committee in approving of plans which did not comply with the by-laws relating to thickness of walls. The surveyor had assured them that the factory when constructed of concrete and steel would have adequate stability. Inquiries were made in towns where concrete had been used, and it was found that no accident had arisen. If a few more towns acted like Carlisle the authorities at Whitehall would no doubt sanction the adoption of a mode of building which has been found advantageous in other countries.

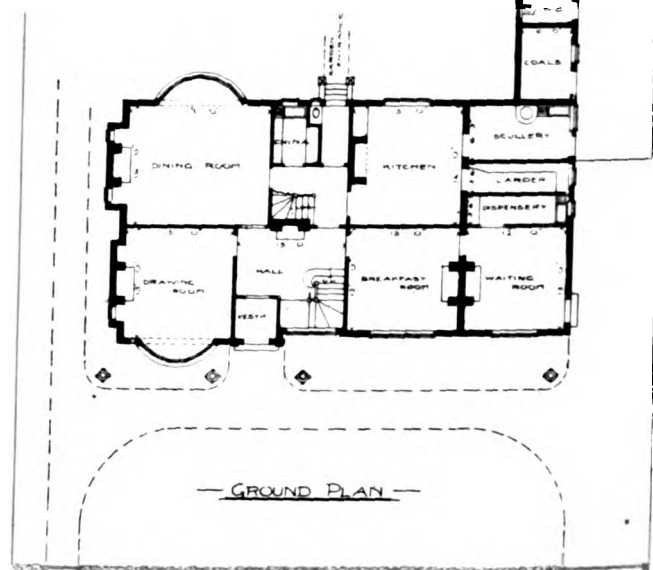
ILLUSTRATIONS.

NORTH-EASTERN RAILWAY OFFICES, WESTMINSTER.

HOUSE AT CHESLYN HAY, WALSHALL.

"HOUSE AT CHESLYN HAY"

"FOR DR. W. MOSEGOOD"

MICKTON FARMER
FERRIS WALSHALL

ST. PETER'S MISSION CHAPEL, PLYMOUTH.

NEW PULPIT, ALL SAINTS, PALMOUTH.

ARGYLL MOTORS, LIMITED: NEW WORKS AT ALEXANDRIA.

WE have lately described the important works which have been carried out in the Vale of Leven from the designs of Mr. CHARLES J. HALLEY and Mr. HAMILTON NEIL. They were opened on June 26, and are said to be the largest of their class in existence. We publish this week a general view of the administrative offices. The contract was carried out by Messrs. P. & W. ANDERSON, of Glasgow. In the interior marble is largely employed, and imparts richness to the hall, staircase and galleries. That part of the work was executed by Messrs. GALBRAITH & WINTON, of Glasgow.

HADDON HALL.

KIRBY HALL.



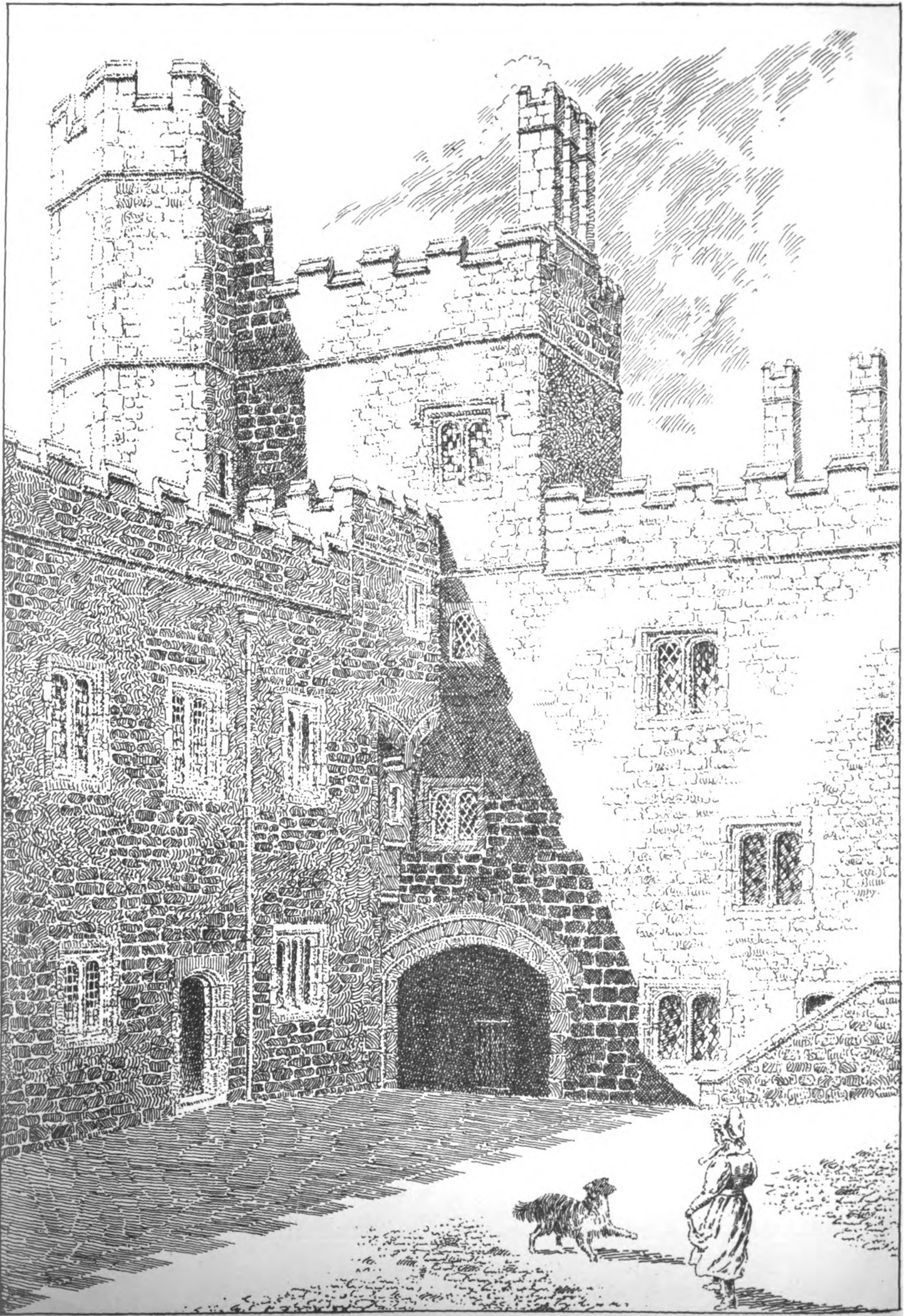


PHOTO LITHO. SPRAGUE & CO. 435 EAST HAWKING STREET, PITTSBURGH, PA.

HADDON HALL.

From a Drawing by W. EATON, A.R.I.B.A.

The Architect, July 27th 1906.

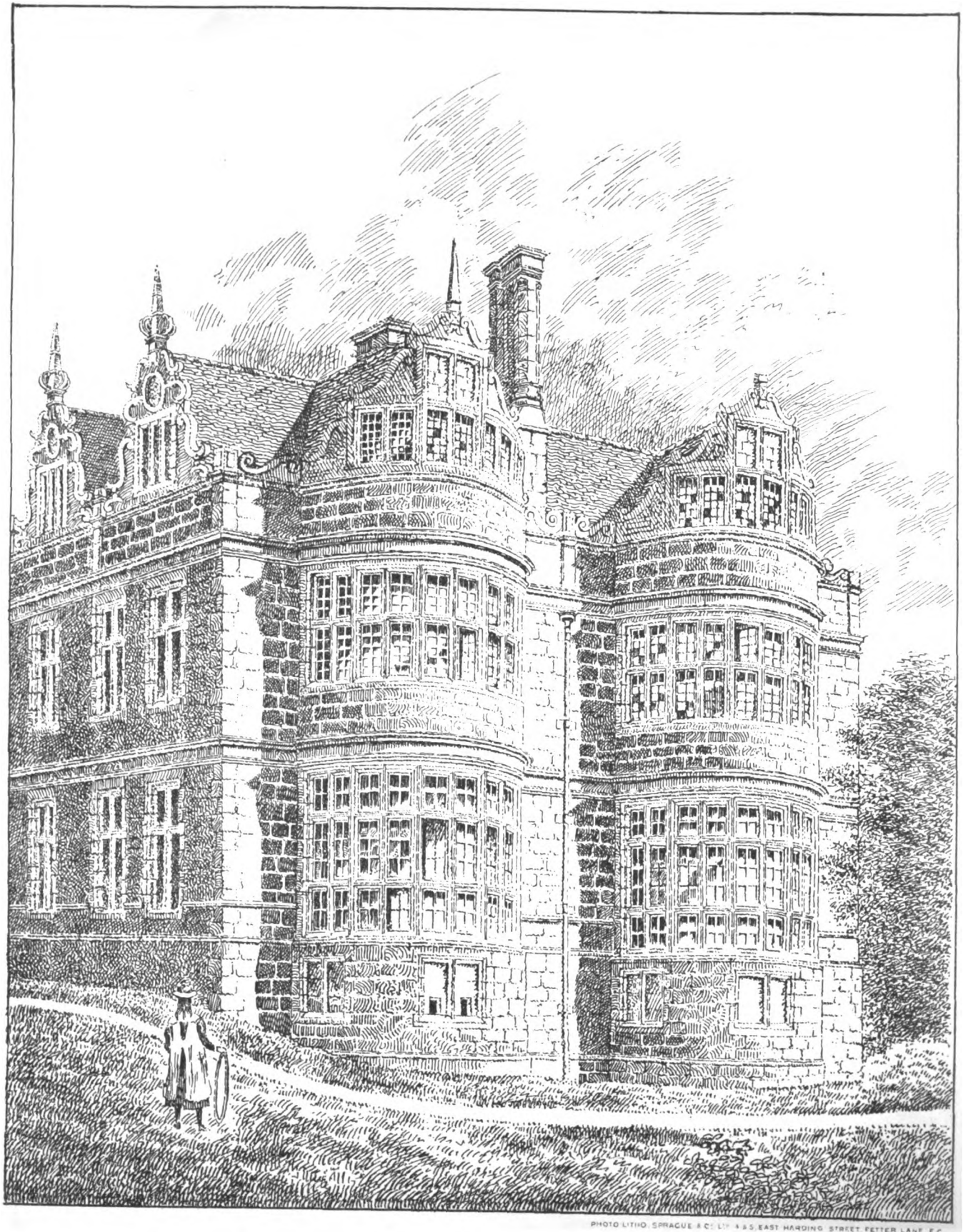


PHOTO LITHO. SPRAGUE & CO. LTD. 4 & 5, EAST HANOVER STREET, FETTER LANE, E.C.

KIRBY HALL.

From a Drawing by W. EATON, A.R.I.B.A.



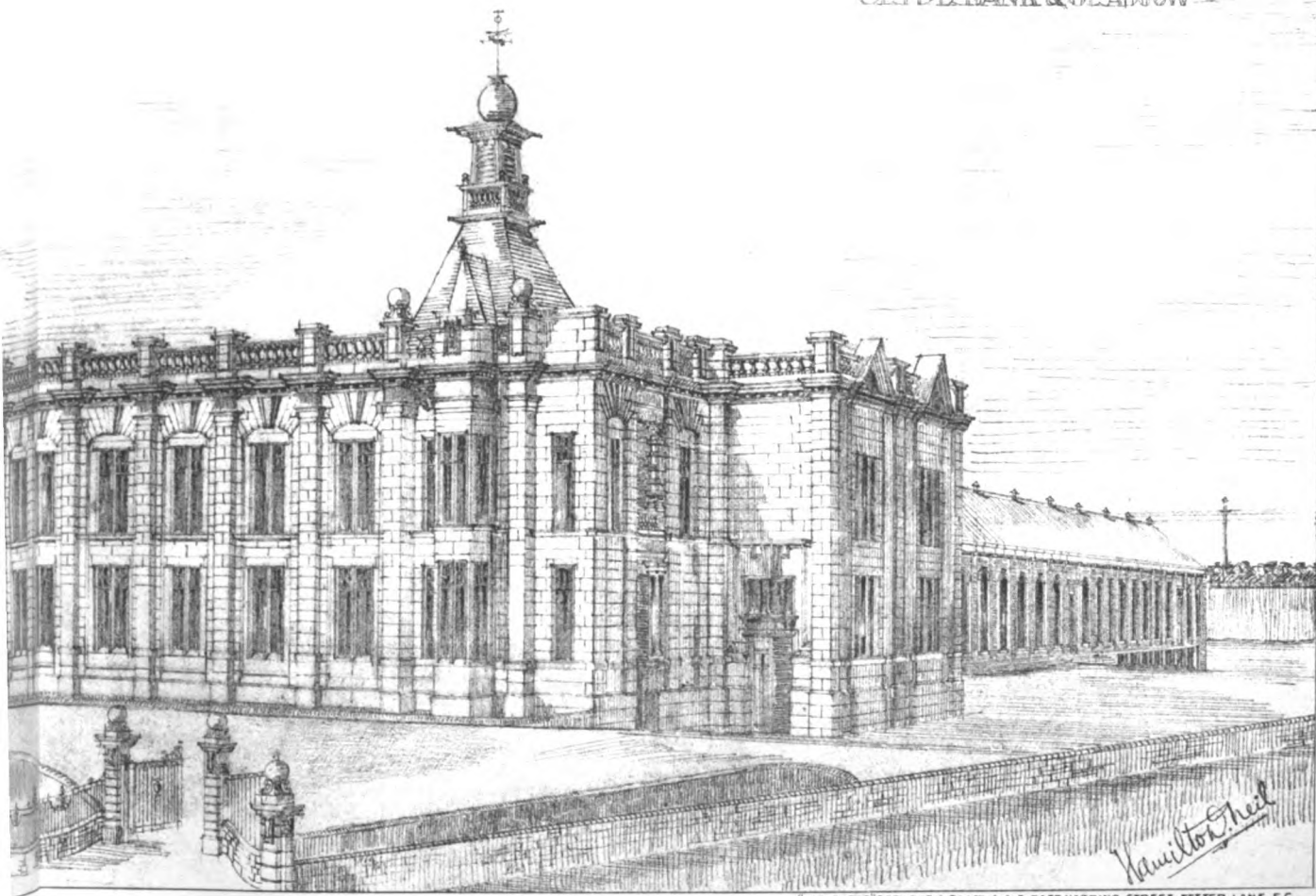




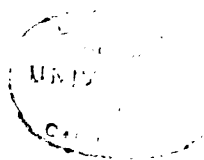
July 27th 1906.

ARCYLL MOTORS LIMITED NEW WORKS AT ALEXANDRIA

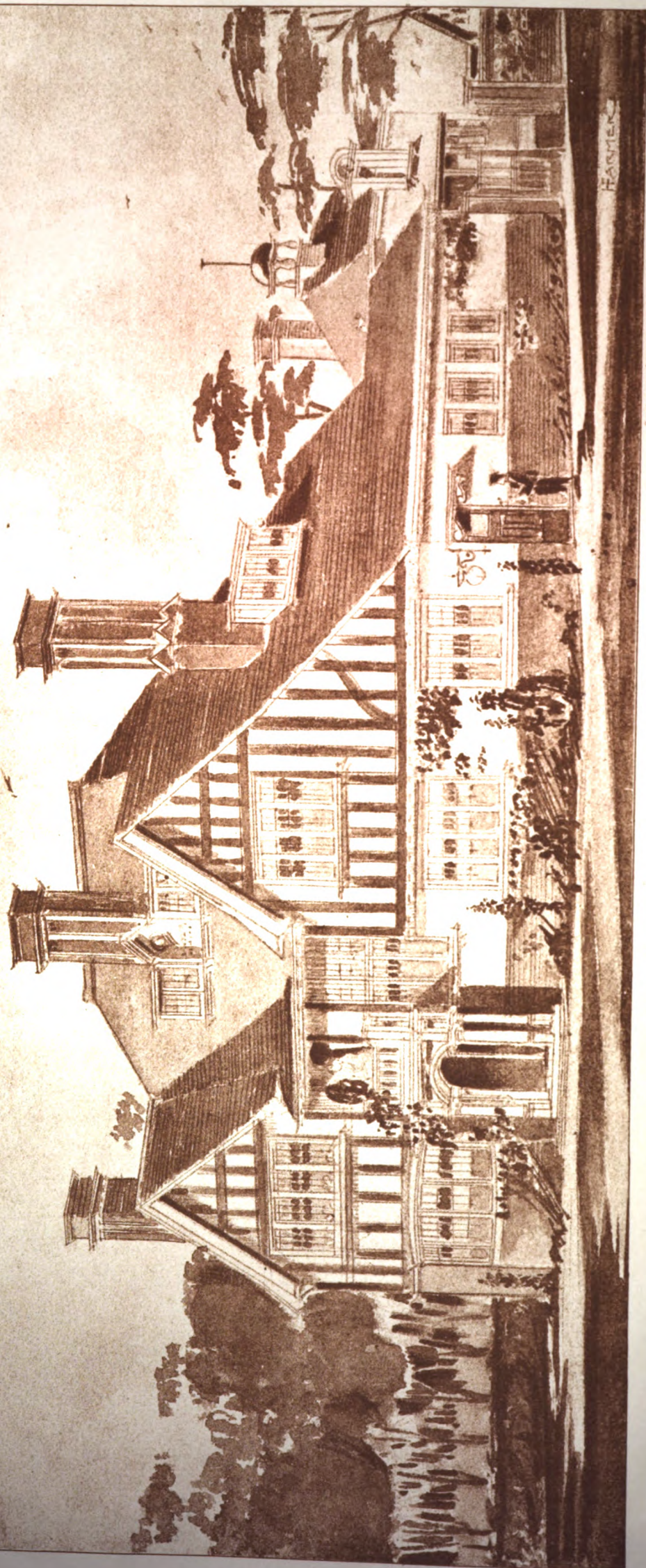
CHARLES J. HALLEY
AND
HAMILTON NEIL
ARCHITECTS
GLASGOW & GLASGOW



INK PHOTO SPRAGUE & CO. LTD. 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

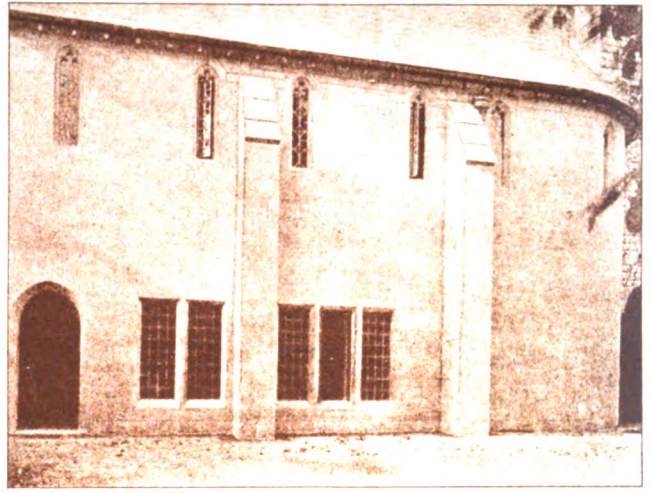
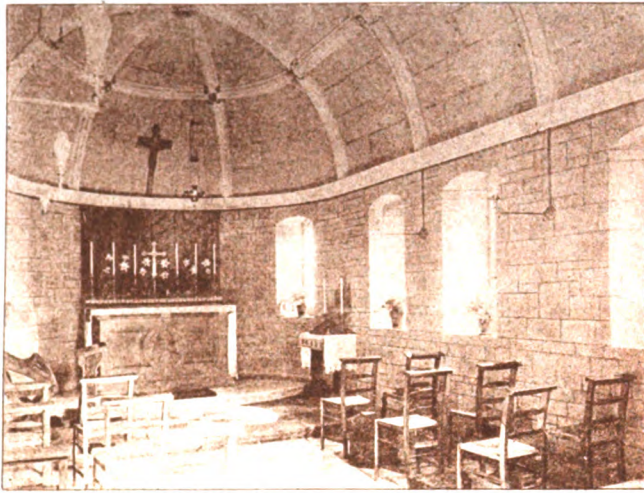




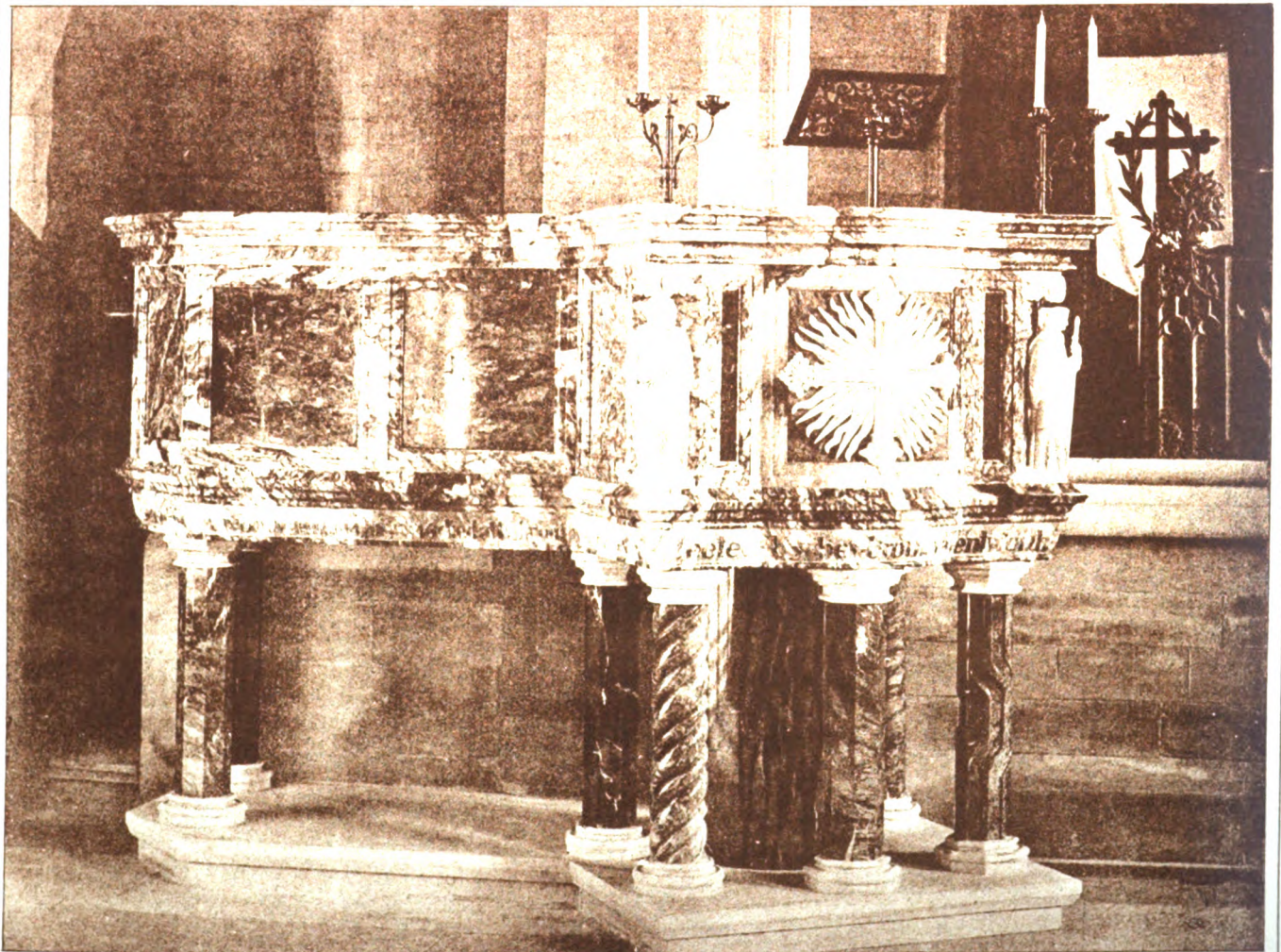


INK PHOTO SPRAGUE & CO. LTD. 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

HOUSE AT CHESLYN HAY, WALSALL.
Messrs. HICKTON & FARMER, F.F.R.I.B.A., Architects.

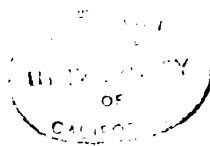


S. PETER'S MISSION CHAPEL, PLYMOUTH.
EDMUND SEDDING, F.R.I.B.A., Architect.

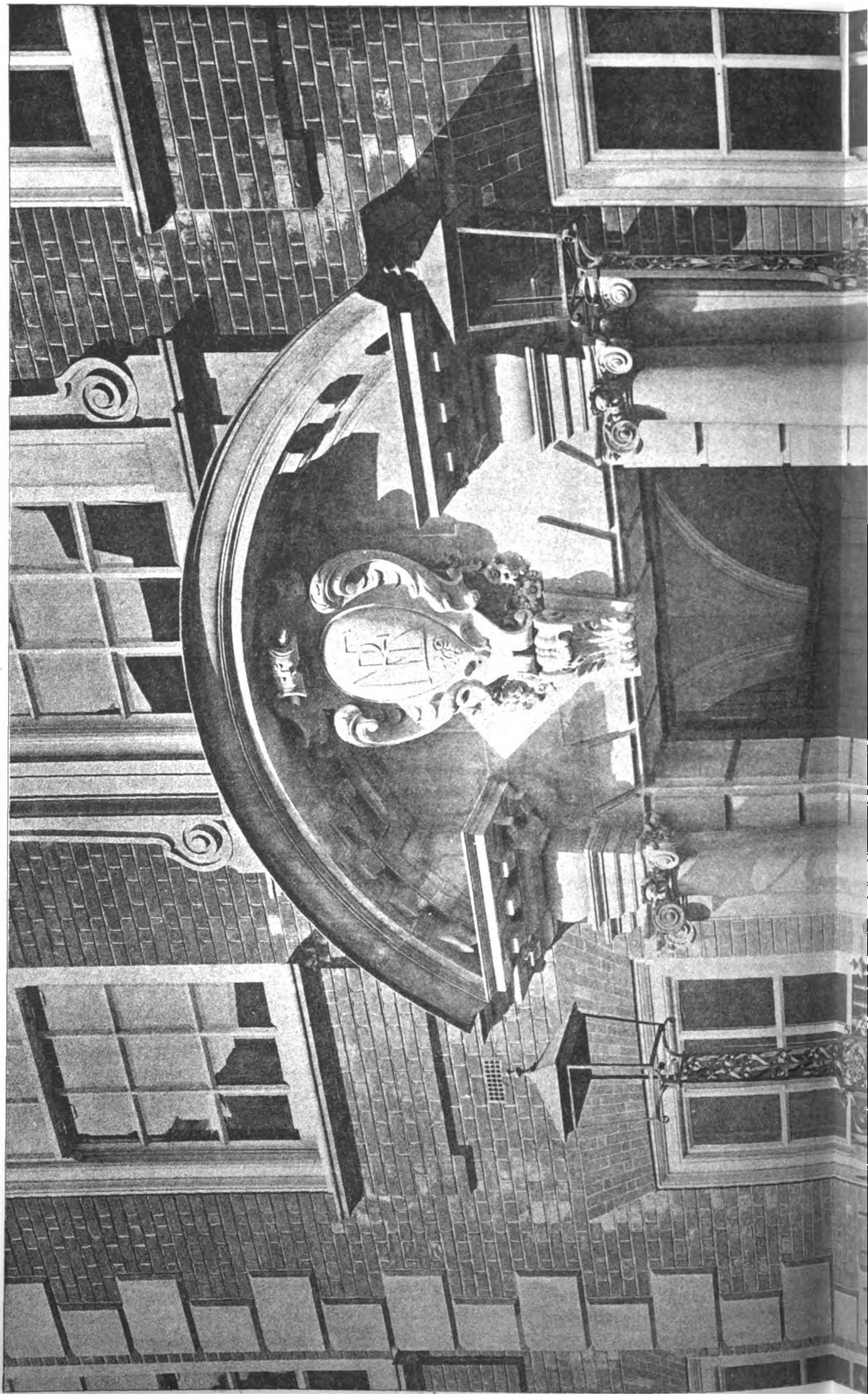


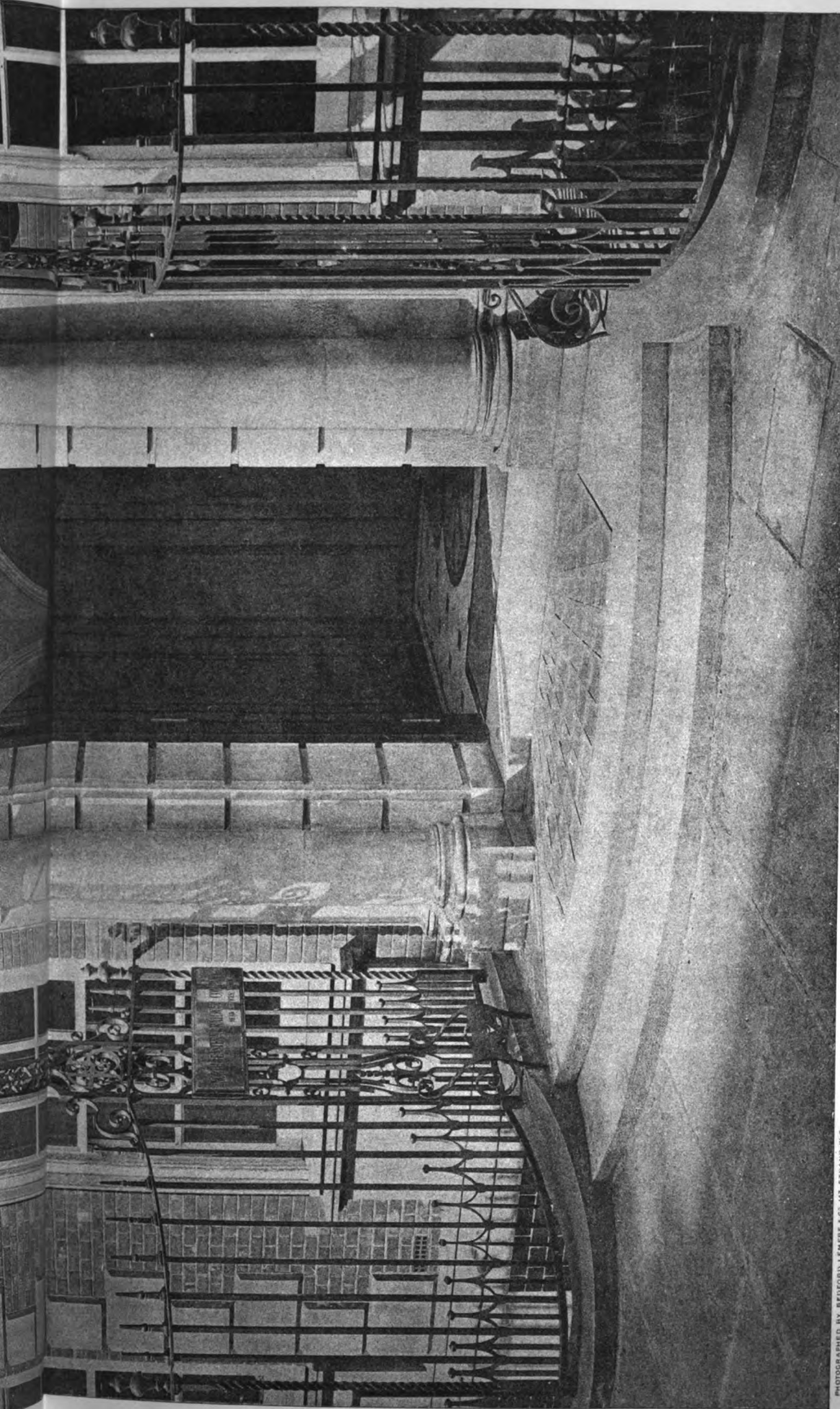
NEW PULPIT, ALL SAINTS, FALMOUTH.
EDMUND SEDDING, F.R.I.B.A., Architect.





Chie Architect. July 27th 1906

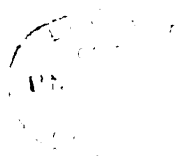




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NORTH-EASTERN RAILWAY OFFICES, WESTMINSTER.
Messrs. HORACE FIELD & SIMMONS, Architects.



(Continued from page 65.)

By ARTHUR HILL, B.E.

For the intelligent appreciation of any art or science some knowledge of that art or science is indispensable. It is not to be expected that the ordinary non-professional observer will take an interest in what he does not understand. To many people a new building represents nothing more than the money it cost, that being the only scale they are capable of applying to the object.

The value of university training for professional purposes does not now need an argument: the principle has been already adopted in some of the modern universities of this country. But why should the teaching be limited to professional students? Why should not the history of architecture, taught by a professional architect, be included as a branch of general history available to students specialising in history for the B.A. degree?

Several universities admit lectures on Classic art and archæology, but the "mother of all the arts" scarcely receives adequate treatment in lectures of this kind. Why limit the subject to the Classic period? Does not architecture, taken as a historical study, reflect the social conditions of a people in one century as well as in another? Taken from its own standpoint as an art, how can an artistic sense be better cultivated or acquired than by a critical review of the best buildings of all time that have survived to the present day?

Lectures on the history of architecture, showing its true basis of evolution, delivered by trained architects and with the prestige of the "university," would exercise an important and beneficial influence on the public appreciation of our art. For, in addition to the students who would take the university course, it may safely be assumed that through the medium of the university extension system, which is bound to follow the example of the parent university, lectures would be given and considerable interest aroused among a number of people in many parts of the country.

There can be no doubt that the criticism of those who have had the necessary training on which to form an opinion would be a valuable aid to the development of good architecture throughout the kingdom and a stimulating influence both to the architect and his client.

This is not the only way, but perhaps one way in which the public may be brought to take more interest in our professional work.

By Professor OTHMAR VON LEIXNER.

The public of the present time generally shows a very lively interest for the art of painting, that for plastic art is very much less universal, and with regard to architecture the public shows almost no interest at all.

The public generally neglects visiting architectural exhibitions, saying, "Oh, we do not understand anything about it; there are nothing but plans." In the rooms set aside for architecture we generally only meet with members of our own profession. It is impossible to speak about an opinion of the public on questions of architecture, for even if it expresses one it will be found that it is never the expression of an individual, but it will nearly always be found that this opinion has been influenced by other persons. In spite of all the uncertainty of the public with regard to styles of architecture, it always tries, however, to make out the style of any particular building, but the forming of an idea embracing the whole edifice is never attempted. Here and there some details attract attention, such as doorways, windows, gables, verandahs, &c. Unless his attention be drawn to them the non-initiated will pass without observation even before the most wonderful masterpieces of architecture. In the case of historical buildings the principal interest is often caused by the antiquity of the monument. Buildings in a state of ruin generally make a deeper impression on the masses than buildings which are well preserved.

The peculiar method of the education at school, especially in the teaching of freehand drawing is responsible for much of the ignorance. Until quite recently it was customary to teach drawing in such a manner that the pupil only learned to know the level surface and the colour; the general rule was to give to the pupil a model drawing to copy and the teaching was limited to two dimensions only. The teaching of drawing objects in perspective was limited to a minimum. By this fact is explained the understanding of the image and the colour, and the uncertainty or incapacity to understand productions of the plastic and architectural arts.

The criticism of to-day, even if it sometimes occupies itself with a question of architecture, is not generally lucid, and as a rule is not understood, because persons without any knowledge of the science of architecture will never be able to thoroughly understand a question of architecture unless the writer, however clever he may be with his pen, happens to possess the necessary technical knowledge. Finally, it is necessary to mention the opinions so diametrically opposed which exist among the body of architects themselves. By what means could the non-initiated form a somewhat clear judgment if the architects themselves are nearly always at war among themselves about the principles of their art? Neither must we forget to mention the frequently astonishing negligence of Governments in giving the orders for a public building to be constructed. The modern State buildings, which if they were models of good architecture would contribute to educate the taste of the public, are often built by persons who have a very poor knowledge of art.

To bring about an improvement in this state of things Governments and the societies of architects must unite in their endeavours. 1. The instruction in freehand drawing must from the beginning be given, not by model drawings of level surface, but from the actual bodies. 2. It should be the duty of the State to have public buildings of a certain importance constructed, not by officials, but by artists. 3. The societies of architects must carry out the following programme:—To arrange exhibitions of modern as well as of historic architecture, to give popular lectures on the subject, to take an active part in the literature on architecture, especially on questions of actuality, to gather together all the artistic elements, and to settle vital artistic disputes among the members themselves; to publicly exclude all those elements which in our days so frequently put architects of real artistic merit in the shade and which contribute to corrupt the taste of the public; to give the most efficient assistance possible to writers possessing a technical education who contribute to render architecture popular by summary as well as by more voluminous publications; and, finally, to bestow particular attention on the cultivation of national art among the local associations, with a view to the preservation of the monuments of the country.

At the premises of the Institute on Thursday the discussion on "Architectural Copyright and Ownership of Drawings" was brought to a close. Papers were then read on Subject 8: "To what Extent and in what Sense should the Architect have Control over other Artists or Craftsmen in the Completion of National or Public Buildings." The chairman was M. H. P. Nenot (France), supported by Mr. W. S. Eames (America). The secretaries were Signor Urioste y Velada (Spain) and Mr. Walton.

THE ARCHITECT'S CONTROL.

By Sir WILLIAM RICHMOND, K.C.B., R.A.

A SIMPLE question is asked upon a very complicated subject, complicated because we live in times when artists come much more rarely into touch than formerly. Cities are bigger, life is less simple, distractions of various kinds are ever hindering any artistic intercourse. Above all the State does not take much account of art. Education is in all hands, superficially. Hundreds of clever young fellows are taught the rudiments. How few of these gain permanent employment, or even make a living. Yet notwithstanding, the Institute is always broadening its ground; the Royal Academy seeks to be more comprehensive; the Art Workers' Guild has accomplished much, and the "Arts and Crafts" have succeeded in gaining the interest of a section of the public. Against the cold attitude of the Government towards art may be set a growingly democratic bearing of artists to artists. Architecture, sculpture and painting are getting only too slowly more closely into touch, and the professor of each separate art is gaining knowledge from the specialist. And yet there are great difficulties. The great mother of art, Architecture, is still shy of her children. For this there must be a reason. May it not be that though increased liberation from "Styles" finds a less pedantic outlook, still a really modern expression in architecture has not entirely overcome them?

The divorce of the three arts has been destructive to the highest art, which contains them all three. It is impossible to deny that the Royal Academy is *per se* an academy of painting; it has fallen to be so. The architectural room there enlists but little of the public attention. Why? The

average public is neither interested in nor does it know anything about that noble art which is beyond its power of comprehension, because it appeals to the most abstract of our senses, beauty of line and of proportion. Architecture is an art which appeals last, not first, to the average individual. Painting appeals first, first as portraiture, second as anecdote; that painting which is the highest, which is abstract, and hence in allegiance with architecture, appeals scarcely at all. The same may be said of sculpture, though in a less degree than of painting. Regard for the abstract beauty of form is very rare in England; thus architecture, sculpture and the higher forms of decorative painting have no market; they are not either of them, as it were, dealers' wares; their value is intrinsic, not fluctuating, and it cannot be grouped in the sale-room; therefore neither architecture, sculpture nor decorative painting is within the market. So much the better. Doubtless a combination of serious architects, sculptors and painters would be quite invaluable, a society, say, comprising a small number of each section of the arts, perhaps six architects, six sculptors and six painters.

The Institute is the very body to create this new departure from specialism and all its narrowing effects.

In my opinion no amount of "Papers," either for discussion at a Congress or for stimulating a pleasant chat at one of the evenings at the Institute, will ever lead further than that evening's passing instruction and pleasant pastime. There are many men capable of writing able articles, convincing also for the time being, but which very soon are found in that limbo called forgetfulness. We must get practically into touch; there must be no priority. Our several professions are full of difficulties which would be appreciated as soon as we could get to work together. The architect can learn much from the painter and sculptor and *vice versa*. It is "touch" that is needed, not "shyness," and real "touch" can only occur when practice follows precept in the initial stages of a great work. It is of little use for an architect to tell the sculptor or the painter, Here I want a statue, there a relief, here a wall-painting, &c. At the very initial the three should work together. There is nothing harder than the experience of an artist who is called to decorate a building with painting or sculpture which is in a sense complete without either. Surely the structure must be designed to receive. A niche is nothing without its statue, a sentry box is a silly thing without its sentry, just as a framed panel seems to ask for what it is framing, for something precious—marble, mosaic or colour. Incomplete is the monument to the Duke of Wellington in St. Paul's; it looks like a pedestal without a reason; it fails because it has no culmination. There are plenty of arches, plinths, pedestals scattered all over London which present the same absence in appearance of any utility. If there is no money forthcoming to complete a scheme, why ask us to imagine what all these pedestals, plinths and arches mean? They mean nothing; they are inadequate and senseless. Surely we can imagine a style of architecture the growth of necessity which shall ask for no adornment save that of beauty of line and dignity of proportion. That would be one thing, perfectly complete and quite comprehensive and entirely satisfactory as far as it went. But when we see forms which are not structural placed for purposes which they do not fulfil, are we not puzzled and dissatisfied? We are presented with shams. Now, if the architect, starting his design, says, I am going to design for sculpture and painting, and calls in the best sculptor and painter to consult with him, his hands will be strengthened; knowing how much money he has to spend, he will be able to portion out the various costs of the various parts of his scheme.

My main contention is that, with a view to closer touch between the architect, sculptor and painter, a committee, such as I have indicated, should be appointed by the Institute. That committee might in time become an advisory body to the Government and the London County Council, which both need assistance not only in common sense, but good taste also in all that applies to art.

By H. P. NÉNOT (France).

In all the bygone periods of art the same idea has united all artists. Painters, architects and sculptors had the same ideal, and the master of the work was sure to find in his collaborators a decorative interpretation in perfect harmony of feeling with his own composition.

How easy and simple were the professional relations between the architect and his collaborators, the painters and sculptors. They always spoke the same language, and

this common thought gave to their movements that beautiful union which is so difficult to obtain in our days.

The earthly paradise of the happy utilitarian periods is closed to us. We all wanted to eat the fruit of the tree of science. Critics and archæologists have taught us the history of art and of the different styles, and each of us, according to his predilections, has placed in them his apogee or his decadence.

In this confusion some beautiful individualities asserted themselves, but all these schools rendered the task of the architect very difficult when it was the question of decorating a monument.

At the time when the Sorbonne was in course of erection a fresco of 26 metres had been decided upon for the great amphitheatre, to decorate the part at the bottom which supports the cupola.

The success depended on the tone of this fresco. Puvis de Chavannes seemed to be the right man. With him the white stone wall, almost entirely covered over, would continue to bear its cupola. But my friend Benjamin Constant, appointed for another decoration in the same monument, wished to be appointed to carry out this fresco, and the President of the Republic, M. Grévy, informed the Director of the Fine Arts, M. Kempfen, that he wished very much that he should be given the work.

The position of the architect was painful. To resist the head of the State was a difficult matter, but, on the other hand, with the powerful pallet of Benjamin Constant the semi cupola would no longer be supported, and the general harmony would be destroyed.

I declared that if I was forced to accept Benjamin Constant I should give up the fresco and substitute an architectural motif for it. Then I was allowed to have Puvis de Chavannes.

This should always be the case. Instead of an architect having a certain artist forced on him he should be given a great freedom in the choice of his collaborators, and he himself must point out the artists and follow their work, without any other preoccupation than the general harmony of his work; and he should leave to the painters and sculptors, who are responsible for their work, every liberty of form or of colours, provided they do not prejudice that general harmony without which no architectural work can really exist.

By L. B. MÜLLER (Germany).

The author takes it for granted that in giving the commission to the architect in question the decision is based upon his evident capacity. Whether through success in a competition or structures specially remarkable for their qualities previously designed by him or carried out after his plans.

Architects thus discovered will and must possess so much common sense that they are able to give the necessary instructions to all co-operating artists.

If it is proposed that a public or national building, or also some monument, devised by an architect, shall be adorned with statues or pictures, the architect shall be the designer of the whole work. It is he who shapes the frame of the picture and gives the subject for it. The other artists are the co-operators. They have to subordinate themselves to his intentions in the dimensions, in the tone and harmony of colours, in order to obtain a desired effect; if they will not they must not assume the task.

If it is the question of a monument in which either the sculptor or the painter (interior monument) gives the tone or expression, the architect must subordinate himself to the intentions of the relative artist, and must continue making sketches until he has produced the impression desired by the artist, and if he cannot find it he must withdraw from the task.

If in the erection of public or national buildings a co-operative artist is forced upon the architect, or if, *vice versa*, in the execution of monuments an architect is imposed upon another artist, it is more than likely that their ideas will be diametrically opposed.

The stronger mind will prevail, and the work will be a failure.

The watchword in every case must be: The designer of the work shall have the choice and supervision of his co-operators.

But the designer ought not to be possessed of a false sentiment of honour. He ought not to reject an improvement on his design simply because it was not he who hit on the idea.

He should leave to his co-operators, so long as they work with ability on the lines of his design, not only a certain

liberty, but also a rightful share in the honour, e.g. a mention of their name, and credit for any improvement.

By so doing he honours himself. Now, if in what precedes it has been asked and reasons given for the subordination of the co-operating artist, then much more shall the mere artisan subordinate himself to the designer.

But, of course, the architect must in these spheres be sufficiently an adept so as to be able to give the proper decision in the various questions which may turn up to be decided upon.

He shall encourage the artisan to express his opinion about things he believes will contribute to the improvement of the work.

He shall without fear or favour refuse to accept any work done badly or slovenly, and in the conditions of tender he shall leave no doubt about this.

The architect must direct his fullest attention that everything necessary be carried out in the most beautiful (or most perfect) form.

In this nature must be his model, in which everything necessary is given in the most perfect form.

By GASTON TRÉLAT (Paris).

I do not hesitate to declare that the architect ought to have control—with no other limit than his aptitude and possibilities—over all the other artists and all the artisans.

This control cannot be too effective, both as to the construction and the arrangement. It is, thanks to this control, that the departments will be able to respond to the mind that the originator has placed at the service of the project, together with the social need which it enters into his speciality to supply.

Finally, with regard to the character which the plastic motive is to assume, the architect as composer is alone capable of ripening the idea which he has conceived and rendered practicable. It is only necessary to be provided with the multitude of forms which he has realised exactly by his sketches. The latter contain a complete order of ideas which the pencil permits us to understand and to hint at. And from it results a *maîtrise*—the word is not too strong—which belongs to the composer-architect, and which attaches him more and more to the elaboration of the work he has conceived.

Consequently it is to the architect that appertains the control of all the artists as well as all the artisans having to collaborate in the erection of monuments destined for the State or the public service.

And this until the absolute completion of the *ensemble* in question.

By OTTO WAGNER (Austria).

The quality and quantity of the architect's knowledge and certainly in the majority of cases his practical capacity, certainly surpass, as has been shown, the same qualities of his co-operators; they therefore actually force the leading part in the execution of any work upon the architect. This leading rôle, if it is to be crowned with success, must be provided with absolute power over all the contributing hands, because a correct artistic and technical harmony of the various parts depends on it, and only the creator of the work—that is to say, the architect—is in a position to make the necessary dispositions.

To this has still to be added that many works and modes of use of the material are invented by the architect himself, and that he must for this reason be the master to decide about every measure in carrying out tests, trials, in making samples, &c. No doubt that about matters which deviate from the broad way of the ordinary methods he will deliberate with the contractors and surveyors, and come to an understanding with them, but the final decision in the matter can only rest with him, because he alone remains responsible to the public for the success or failure of the enterprise.

If the architect has a certain security for the success of his work in the proper selection made by him of the persons to whom the carrying-out of the various parts of the work is to be entrusted, the importance of such a choice shows itself in a much higher degree when it is the question of a co-operating artist, because in this case a new factor, viz the individuality of the collaborator, is of the most vital importance. Every artistic conception of the co-operators must adapt itself completely to the intentions which the architect wants to realise, so that the work to be created appears as of one cast. Considering that the creator of the work alone can form a correct judgment about this, no doubt he alone is entitled to make the choice of his collaborators. The answer can therefore only be:—The architect, in the

construction of a building, is to be given absolute power over the co-operating craftsmen, but in a special manner over the co-operating artists.

By JOSÉ AMARGÓS, SALVADOR OLLER Y PADROL, P. DE MIQUELERENA, and SALVADOR VALERI (Spain).

It is a matter of practice in Spain that the authority of the architect must be supreme over all the artists and over the workmen until the complete termination of the monuments destined for the State or for the public service.

The architect must have the authority indicated in the question for the following reasons:—

First: Because the architect-surveyor must transfer his thought by the proper means, either graphic, written or verbal, as the case may be, to all the artists and workmen taking part in the execution of the monument, by explaining to them the reasons which determine him to take such and such a resolution; otherwise the monument would be devoid of that harmonious variety in uniformity which every architectonic work must possess.

In the second place: Because for every edifice is necessary and indispensable an architect to direct the work in order that the building shall be carried out in the proper order and without interruptions; otherwise it would be prejudicial to the monument and to the artists and workmen who contribute to its execution.

In the third place: Because without this authority the architect could not present the necessary estimates of cost and the technical management of the works would be difficult. In fact there would be created certain obstacles, dualisms and suspicions, which, besides causing prejudice to the professional moral standard, would be damaging to the realisation of the work itself, because the various parts would not be in harmony with a uniform judgment and study, and because the architect would not be in a position to insist upon the fulfilment of all the contracts of the different trades or arts which necessarily enter into the production of every public or State monument.

In the fourth place: Because it would be subversive of the dignity of the architect, who might be suspected to be lacking in the knowledge he is obliged to possess by his title and by the practical experience he has acquired in his profession, if the interference of another artistic authority were tolerated which would deprive him of the means to act, and would put him into antagonism with the conditions which must be united in an architect, and which are the outcome of the fusion of science and art.

In the fifth place: Because without this absolute authority the architect would remain by this very fact exempt from the responsibility which he enters upon towards the State or the Administration, because of being deprived of the means which such authority gives over those who are placed under him, as the artists and artisans must be—not that this subordination is to be considered as humiliating; rather, on the contrary, it is honourable for the man who is able to fill his place in the various walks of life.

In the sixth place: Because the profession of an architect is certainly the most complex of all the artistic careers and the one which requires the greatest amount of knowledge, which fact by itself alone gives him a superiority over all the other artists and workmen who take part in the works.

One case only can present itself in which the supreme authority of the architect may be doubted upon some points, viz. in the erection of monuments which at first sight appear to be almost totally sculptural, in which exceptional case the architect gives to the sculptor the necessary freedom of action, so that the latter in development of his idea shall not be hampered by the architectural art.

The following resolution on the subject of "To what Extent and in what Sense should the Architect have Control over other Artists or Craftsmen in the Completion of National or Public Buildings?" was adopted:—

"That the architect in the construction of a building should be given absolute power over the co-operating craftsmen, but in a special manner over the co-operating artists."

Friday, July 20.

A section of the Congress met on Friday evening last at the Grafton Galleries. Herr A. Wielemans (Austria) and Mr. R. Phené Spiers presided; M. Alcide Chausse (Canada) and Mr. H. Blanc (Edinburgh) acted as hon. secretaries.

THE TOMB OF AGAMEMNON.

IN his paper Mr. Cecil Smith described how, through the generosity of the Marquis of Sligo, the British Museum became possessed of three portions of shafts

of the columns which decorated the doorway of the Treasury of Atreus at Mycenæ. Aided by casts of portions existing elsewhere, and with the addition of some fragments already in their possession, the British Museum had restored the entrance of the monument in the form in which it stood at least 1,000 years B.C. It would be understood, the author said, that the rediscovery of the shafts did not actually afford any new data for the restoration, but the true dimensions could be determined beyond all doubt. The history of Classical architecture, however, received important details of the misty background which enveloped its origin. The excavations of Dr. Evans at Knossos and of Professor Halbherr at Phæstos had shown them that it was there they must look for the origin of all Hellenic culture. At present the centre of interest both at Knossos and Phæstos related to a period far remote from the Classical age of Greece, before the first temple of Classic order arose on Greek soil. But though the excavations on those sites had revealed a marvellous picture of the domestic life and thought of the Mycenaean world, of their architecture it had laid bare but little beyond the ground plans. There was, however, one class of remains of which the conditions of construction had favoured a more complete preservation. The so-called treasuries or tombs were intended to be covered in earth, and the kindly soil had preserved them more or less entire. Such buildings had been discovered at Orchomenos in Bœotia, at Menidi and Sparta in Attica, and, above all, at Mycenæ, where there was the most famous of all, the Treasury of Atreus, or Tomb of Agamemnon. Before the nineteenth century travellers regarded the building as the Tomb of Agamemnon, and Chateaubriand in his itinerary so described it. Pausanias, however, mentions the "subterranean buildings belonging to Atreus and his children, where their treasures were kept." Comparison with similar structures revealed by later excavations had shown that Chateaubriand was right and Pausanias wrong—the buildings were tombs. Moreover, they were not, properly speaking, subterranean. The mode of construction was as follows:—Into the side of a hill a broad passage-way (dromos) was driven, open to the sky and lined on each side with masonry leading up to the doorway of the chamber itself. The chamber was hollowed out of the earth (sometimes partly built up and covered with heavy rocks and earth) in dome or beehive shape, and lined with regular concentric cornices of squared masonry, narrowing gradually to a capstone at the summit. An example of such a tomb, the author said, occurred on an Attic vase in the British Museum representing the beautiful myth of Glaukos and Polyëidos. The tombs were not merely intended for the reception of the dead. The Greeks from very early times were devoted to ancestor worship; by death they thought the mortal put on immortality, and the tomb was not only his resting-place but a shrine at which his kinsfolk would at recurring intervals pay him semi-divine honours. In two instances (the Treasury of Atreus and the similar tomb at Orchomenos) a smaller side chamber was added at right angles to the axis of the tomb, and entered by a doorway in the centre of the right-hand side. Probably the side chamber was intended to receive the remains of the less important members of the family or the more precious offerings. In some of the later tombs the main receptacle was provided with a niche or pocket on one side to hold the offerings, a detail possibly reminiscent of the earlier custom. As the tomb chamber served the purpose of a shrine it was necessary that it should have a worthy passage and doorway, but the Treasury of Atreus was the only example in which the architectural features were so imposing and the wealth of decoration so elaborate. Before the beginning of the last century the tomb was already rifled and the upper part of the entrance laid bare, fragments of the richly sculptured façade still lying *in situ*. In the year 1811-2 the second Marquis of Sligo visited Greece, and during his stay interested himself, as so many travellers at that time did, in acquiring a small collection of antiquities. Last year the Earl of Altamont, in the course of studying the ancient monuments at Westport, came to the conclusion that certain columns in the collection were of unusual importance. He made careful drawings and photographs of them, which were brought to the British Museum, and the probability that the objects were the missing decorations of the Treasury of Atreus was at once evident. In the working of the columns there was an absence of precision which amounted almost to carelessness, exemplified both in the shafts and in the capitals. The pattern was not worked out to the edges, and in the shafts

especially the edges where they met the wall were left altogether unworked. This might have been partly due to the desire to strengthen a fragile post, but it would not account for the neglect of the pattern, which sometimes extended 4 inches from the edge. The fact seemed to indicate that the columns had been sculptured with decoration after they were fixed in position. The shaft was 18 feet 3½ inches in height, 1 foot 10 inches in diameter at the lower extremity and 2 feet at the upper, and showed a taper downwards of 2 inches. The peculiarity was also found in the pillar of the Lion Gate at Mycenæ, and was met with in the Minoan period in Crete, although the form was by no means universal. In the temple fresco at Knossos three such columns slightly varying were shown. Those columns might for various reasons be inferred to be of wood, hence their rather squat character. The Atreus columns were far more attenuated. This was what one might expect, the author said, in the translation from wood into stone, and for the same reason they might be prepared for the minute base at Mycenæ. What was the reason, he asked, for the tapering form? Various theories had been suggested. M. Perrot supposed that it came about through the necessity of pointing the end of the wooden post in order to fix it in the ground, but he seemed to stultify his argument by an attempt to explain the base. The author suggested they might find a satisfactory solution in the Egyptian column, originating from the bundle of reeds which tapered towards the base. Whatever the origin there was no doubt, he said, that the downward taper answered a special purpose at Mycenæ, where it served to correct to the eye the outward slope of the two sides of the doorway. The question of the decoration of the façade above the doorway was one of considerable difficulty. They might conclude there was a treatment of sculptured slabs, but though several suitable fragments existed it was only an assumption that they belonged to the façade, for not one scrap remained in its original place.

Sir HENRY HOWORTH remarked that the decoration was of a kind which, while increasing the dignity and beauty of the columns, did not diminish their appearance of solidity, and he wondered why modern architects had not adopted that method of treating pillars. The pattern was of an Egyptian type, and was probably attributable to the intercourse between the Cretans and the Egyptians. One of the most remarkable characteristics of the columns was that they tapered downwards. In former suggestions for the restoration of the Mycenaean columns the thin ends had been placed uppermost, but it had been now definitely established that the reverse position was correct.

Mr. R. PHENÉ SPIERS said it would seem that the Cretans were sufficiently acquainted with the qualities of timber to know that the trunk of a tree would support an equal weight whether in a natural position or turned upside down, and that when exposing a broad surface it would last twice as long as it would in another position.

Prof. BALDWIN BROWN asked whether the author had formed any idea of the origin of the ornamentation of the columns.

Mr. J. D. CRACE desired to know whether the many excavations had revealed any trace of the bronze plates which formed the cover of the interior of the buildings.

Mr. H. H. STATHAM proposed a hearty vote of thanks to the author of the paper. Mr. F. T. BAGGALLAY seconded the motion, which was passed by acclamation.

Mr. SMITH in his reply said that with the exception of a few nails no metal had been found in the excavations.

Saturday, July 21.

The final official meeting at the Grafton Galleries took place on Saturday. Mr. E. T. Hall said that he had been asked by Professor I. G. Clason (Sweden), the chairman, to conduct the proceedings. The secretaries were Mr. S. Chujo (Japan) and Mr. J. T. Cackett (The Northern Architectural Association).

The first paper, dealing with "A Statutory Qualification for Architects," was read by Mr. G. A. T. Middleton for Mr. R. Walker, by whom it had been prepared. After papers by Mr. John Archibald and M. L. Bonnier had been read, Mr. Hall announced that the paper prepared by the Society of Austrian Architects would be taken as read, as no representative was present. M. Gaston Trélat followed with his paper.

STATUTORY QUALIFICATION FOR ARCHITECTS.

By ROBERT WALKER.

THE word "architect" is derived from two Greek words, "archos" and "tekton," and signifies "chief constructor," which would appear to involve complete control and guidance from the inception of the design to its final completion in fitness, strength and beauty.

The word "qualification" signifies that the architect (or the chief constructor) should be duly qualified to undertake those responsible duties by the acquisition of an irreducible minimum of general and expert knowledge and technical education and equipment, in accordance with a curriculum laid down by the General Council, when appointed by Parliament under the stipulations of a Bill which when it passes becomes law, making compulsory "statutory qualification for architects" by placing the Bill on the statute book as the "Architects' Education and Registration Act."

The necessity for such an Act appears to be conceded generally owing to the consideration that has been given to the subject during the past twenty years.

The members of recognised architectural bodies should be registered on their proving their membership, or on verified lists being sent to the registrar by the secretaries of those bodies.

The stumbling-block which has chiefly and ostensibly retarded the progress of such a measure for all those years, coupled with apathy, indifference and jealousies, is precisely the same as that which blocked the Medical Act for thirty years, from 1828 to 1858, namely, that Parliament declined to pass a measure which made no provision for the vested interests of the unqualified men who assumed the functions of medical practitioners, and were accepted by the public in ignorance of their want of expert and technical equipment. It may be possible to come to some arrangement on this matter by way of compromise with the select parliamentary committee.

A time limit of, say, five years may be agreed upon, during which practitioners could prove that they were in practice prior to the passing of the measure.

There appears to be no doubt but that the trend of opinion is in the direction of obtaining statutory qualification for architects, which will protect the members of the profession and the public, in the prescribed parliamentary form of an Education and Registration Act having the short title "Architects Act."

The sooner such a measure is placed on the Statute Book the sooner will the evil complained of disappear. It will not impair the status and privileges, or invade the membership of existing architectural bodies.

By J. S. ARCHIBALD (Canada).

The subject is a delicate one for the profession to discuss, as motives can be so misrepresented; but for want of advocates outside the profession all the necessary agitation must come from within. The charge has been made that it is only another species of trades unionism, but on consideration it will be found that the principles underlying the formation of trades unions are wholly different from those which actuate us. The former is purely a movement to regulate the compensation and earning powers of the individual, whilst the latter is a movement to raise the standard of professional practice and to safeguard public interests.

Generally speaking, there are two sides to architecture, viz. the æsthetic and the utilitarian. As regards the latter, especially in its constructional aspect, there can be no difference of opinion as to the necessity for the most careful examination before being permitted to design and erect buildings. The object of an architect's labour is to prepare, generally speaking, for habitation by humanity. Human life has always been looked upon as valuable beyond price and compensation. It is recognised in the practice of medicine and law; why should it not be recognised in the practice of architecture, where requirements are demanded combining science, chemistry and law?

We are hedged about by legislative enactments which at their root must have emanated from the conviction that the practice of architecture was a responsible one, calling for particular training and study. Architects are compelled to erect buildings under the direct superintendence and dictates of the law. The only inference to draw is that the practice of the profession is of such a nature that

the individual cannot throw off all responsibility the moment the contract is complete. The logical sequence would also be that the law would make provision that all who enter into the practice of the profession would be found fully competent to carry out the spirit and dictates of such enactments.

It is obvious that such competence can only be established by a series of examinations. This is not always the most satisfactory method, but for want of a better we needs must adopt it. Such examinations must be all-embracing and wielded by powers beyond the faintest tinge of suspicion, and removed in the public eye from all question of self-interest.

With respect to the æsthetic side of the professional practice the standard of qualification is more difficult to set; but there is a basis which no one should be permitted to evade. We are all influenced to a greater or less extent by our environment. If in such an environment beauty is absent and ugliness predominant, depravity and a low moral condition will usually be found amongst the people. On the other hand, beauty is usually accompanied by refinement, a higher state of civilisation, and, as a rule, a higher moral condition amongst the people. It is therefore incumbent upon our legislators to recognise such influences. Such influences have been recognised from time immemorial. Plato has discussed the question fully in his "Republic," and even in those days he argued that State superintendence should be extended over sculpture and building, "so that they may be prohibited from exhibiting all forms of vice, intemperance and meanness."

A sense or perception of the beautiful is to be found within the soul of every human being. It should be our pleasure to encourage it at all times, to influence our community with its leaven of goodness, and it should be the duty of the State to recognise such influences and to grant a statutory qualification to prevent influences other than that of the good to be over her people.

The Province of Quebec Association of Architects is the pioneer (on the western side of the Atlantic at any rate) of statutory qualification for architects. This law was founded in 1898 as an amendment to the charter of incorporation. It was granted as it was deemed expedient for the better protection of public interests, and in order to enable the public to distinguish between qualified and unqualified architects, and to insure a standard of efficiency in the persons practising the profession and for the advancement of the art of architecture. This law reads:—"No person can take or make use of the name or title 'architect' unless he is recognised under this Act and as a member of the Association." The machinery is provided for the carrying out of a system of examinations and for the enforcing of the law.

By LOUIS BONNIER (France).

In architecture, which is at the same time the outcome of art and of science, more than in any other art, teaching is a necessity. Technical teaching, a deep study of the requirements, a reasoned knowledge of the materials, judicious application of the processes and artistic teaching, grouping of masses, harmony of lines, taste in details.

These two teachings which form a whole can, it is clearly understood, be theoretical only. They cannot be separated without giving incomplete results—either draughtsmen or builders, but not architects. Not architects, that is to say, not artists, whose mind, formed of logical ideas and of decorative feelings, is ready to undertake any studies, any adaptations, any kind of progress, able to choose from among several solutions proper to satisfy the engineer, the best, that is to say the most harmonious, the most beautiful. If the teaching is necessary for the transmission of the acquired results, it cannot be really efficient and useful unless it be accompanied by a sanction pointing out clearly the person to whom, amongst all others, may be entrusted with perfect safety the fortune of private persons and the budget of the State, the health of the individuals and the hygiene of the population, the preservation of the art treasures of a country, the improvement of the comfort of family and social life.

This sanction is the diploma.

The diploma which is the consecration of long scholastic studies, preparing the architect for all eventualities, cannot and must not be obligatory in a free country; it is only an indication and, as it has been rightly called, a powerful presumption of artistic and professional capacity. It naturally corresponds with a want which, for a great number of years, has been puzzling the mind of architects, and which forms part of the programme of every Congress. This want

has received full and complete satisfaction in France. The facts are there to prove it—they are evident.

The campaign was started as far back as 1840.

Since that remote period the Central Society of French Architects took the initiative, and during more than twenty years, by means of controversies, reports and resolutions it fought the good fight until the day when, in 1863, M. Eugène Guillaume obtained from the Government the decree instituting the diploma.

After a period of modesty and obscurity, during which the first possessors of the diploma, without a bond, without influence, without protection, and treated as intruders, were the objects of attacks as furious as they were stupid on the part of short-sighted architects, the architects with a diploma formed an association in 1877.

During a great number of years they struggled only to live, to hold on. Little by little their numbers increased. When they had become 200 the hostilities grew less; when they numbered 500, they were at last recognised.

There are to-day 750 distributed all over France, at the Institute, in all the great State administrations, in those of the provinces and of the large towns. They constitute special groups in the colonies and in foreign countries, in Switzerland, in the United States, adjudicators of the public competitions, propagating, to the best of their endeavours in the general interest and in conformity with their programme, the cult of the high studies of architecture. In 1912 they will be 1,000.

This striking development and this uncontested prosperity of the diploma in France show what an imperious want was answered by its creation. We are of opinion that, in the interest of all concerned, it is necessary to surround the title of architect with guarantees and to sanction it by means of the diploma.

By OTTO WAGNER (Austria).

On all sides the endeavour of artists to favour the progress of art is strongly prominent. Nay, they are, in fact, the only promoters of art, since the public, entirely absorbed as it is in the acquirement of riches and in politics, has lost almost every sentiment for art. It can, therefore, be understood that the desire makes itself manifest to protect art, and it is thought that this end will be obtained by giving the title of architect a legal recognition.

If the architect is given a legal authorisation, there cannot be any question of the artistic capacity of the architect, and an official control can only be admitted with regard to his professional quality. But this control is very easy, since all authorities have their well-organised boards of works which can exercise control when giving their consent for the construction.

The legal process must therefore consist in that the architect by his signature accepts the responsibility for the plans made by him, and that he covers himself by the contractors of the various parts of the work, who have in their turn to produce the calculations made and revised by them.

The architect has the right to construct any building by the plans made and revised by him if these have been passed by the artistic and technical control.

By GASTON TRÉLAT (France).

Diplomas are a good thing in proportion as the studies which they represent magnify and elevate the title of architect to the height which society prescribes in order to understand its aspirations. But they might easily become a cause of deterioration or, what is equivalent, of incapacity to understand anything but the knowledge and applications belonging to a special education. Then a diploma, taken as the criterion of every application of art or of useful knowledge, would be the height of human inanity.

When they are confined to being stimulations to work for young people, diplomas are an excellent thing. But they would become detestable if they were to trammel the free activity of the technician in later life.

The field of action is never opened wide enough to the aptitudes that society comprises. The advanced civilisations of Europe are often a cause of weakness in individual production. To understand this, one has only to cast one's eyes on younger peoples where the social organisation encourages individual worth, which might serve as examples to us. To sum up in a few words: though the diploma is for the student a restraint on his efforts, it becomes eventually an incident without influence on the career of a man of worth. One must go forward without ever looking behind.

M. AUGUSTIN REY (Paris) opened the discussion, and said that Society accuses architects of injuring the public health by their faulty dwellings. The contrary is the case. Society is killing architects by allowing the profession to be open to anybody who cares to claim connection with it. This was shown in the papers just read, and they prove that such legislation is essential as would, in the first place, protect the public, and secondly, the members of the profession. It was shown likewise that an examination should be arranged demanding a minimum of knowledge, so that the public would realise that anyone with the title of architect had won it only after that test had been passed, and thereby afforded some guarantee. After this point has been reached the interest of the public will be awakened. But before anything is achieved architects must fall into line in their ideas on the subject of statutory qualification. It would be well if in the next Congress this all-important subject were thrashed out, not after an hour or two of discussion, but after several meetings, so that there should be a combination of all architectural societies in respect to it. Already the most important step forward has been taken towards saving the architectural profession from the slough of indifference in which Society has left it.

Professor VIRGIL NAGY (Budapest) gave an account of the attitude of Hungary on the subject. At the last national congress of Hungarian architects and engineers it was resolved to promulgate a scheme having for object the legal definition of the titles and practice of architects, engineers and mechanical engineers. The Association of Hungarian Architects and Engineers were deputed to prepare a Bill providing for compulsory qualification and registration in the various technical branches of architecture. This Bill has been accepted by a majority of the Congress members and formally submitted to the Government. It will probably be soon brought before Parliament. If it is passed it will entail that the right to practise as an architect, engineer or mechanical engineer, and to assume such titles, will be conditional on some guarantee (yet to be decided on) as to the possession of necessary qualifications. All such qualified practitioners would be allowed to act as official advisers or as designers of any buildings, however important.

Mr. GEORGE HUBBARD, F.S.A., considered that the subject of the registration of architects had become of the foremost importance in Great Britain. The entire profession were anxious to do everything in their power which could elevate its status, the only difference of opinion being as to the best means of achieving that goal. The education of the public was a well-worn theme to them. But an even more urgent question was the necessity for improving their own education and of seeing that all who claim to belong to the profession should themselves possess education. At present this cannot be done, for its doors are wide open and all who wish may enter. In his opinion the mortal foes of architects and architecture are the ever-increasing limited liability companies. They adopt principles which are radically different and opposed to those of an architect worthy of the name. The boast of such a company, indeed its very *raison d'être*, is to supply the public with whatever they want, whether it be good, bad or indifferent. When this practice is extended to art its perniciousness becomes apparent, and most of all when it is concerned with architecture. A true architect should lead and not follow the tastes of the public. Of course, a large section of the public like to be their own arbiters of taste, and in consequence limited liability companies will continue to masquerade as purveyors of architecture until determined efforts are made to check them. The accomplishment of such a task as the enforcement of statutory qualification demands the co-operation of all.

Mr. R. WALKER (Cork) said that, previous to the Congress, he had often been troubled as to what would be its result. Congresses are one of the biggest factors in uniting all parts of the earth; they are attended by people who bring an open mind and a readiness to share and interchange their knowledge. Knowing this, he asked what had the present Congress achieved in the interests of architecture? He regretted that a subject of such vital importance was relegated to the very last meeting, and even then allotted so short a time. It was ridiculous to think that the matter could be fully dealt with in two or three hours. His own mind had been engrossed during the past fortnight with the thought of how the statutory qualification of architects might best be brought about.

Mr. A. NORTH (Tasmania) announced that, as delegate of the Tasmanian Association of Architects, he was under instructions to support any motion that would bring about

compulsory qualification. During the past fourteen years registration had been made compulsory in their part of the world in many professions. The architects have hitherto failed, and it will be necessary for them to renew their efforts. The demand for registration may be said to be shared by all, whether members of architectural societies or not. The progress in public recognition is suggested by the fact that last year a chair of architecture was established in Melbourne University. Such an event must be hailed with pleasure as being an official recognition on the part of the Government. In Tasmania the Institute was absolutely in favour of registration.

Mr. ELLIS MARSLAND wished to support the protest that had been raised against the arrangement by which a subject of the importance of statutory qualification had been dismissed to the last day, and, moreover, to a morning when a great counter attraction (visit to Bridgewater House) had been provided. He considered the subject under discussion to be of much greater moment than that dealt with on Thursday, namely, the education of the public. The reason for this is that until the architectural profession has itself been educated, it will be impossible for them to educate the public, for they would be the blind leading the blind. One of the great objects for which they must strive is the winning of public confidence, which at present is not theirs. Many men boast that they can dispense with the services of architects, for they are capable of doing everything for themselves. Others declare that they cannot afford the expense of an architect. The public do not know what an architect is and they not want to. The only means at their disposal for counteracting this feeling is to bring about that every person claiming the title of architect should be qualified. He therefore moved that the following resolution be passed:—"That it is desirable in the public and the profession of architecture that all practitioners should have a statutory qualification." This was seconded by Mr. W. W. THOMAS.

Mr. CHRIS. A. COWPER (Melbourne) stated he had been instructed by the Royal Victorian Institute of Architects to support any resolution such as had just been moved. A small Bill is shortly to be introduced into their legislative assembly with a view to bring about compulsory registration. The Victorian Institute would be very glad to hear if that resolution were adopted, for it would greatly strengthen their hands and assist them in attaining their object. Registration would, in his opinion, be a benefit both to the profession and the public.

Mr. G. A. T. MIDDLETON expressed great pleasure in hearing the unanimous agreement among all the speakers that there should be a statutory qualification of architects. In all the remarks made the principle was the same, though the form might be somewhat different. He hoped that the profession would obtain their wishes.

Mr. DAVID MORGAN (Wales) thought that a recent experience of his would show the necessity for action. He had had to enter into competition against a man who had been giving up his business as an outfitter in order to take up the practice of architecture. This man got his full percentage for all work done.

Mr. F. G. GREEN (Cape Colony) said he heartily supported the resolution moved by Mr. Ellis Marsland. He pointed out that all the bad architecture that was to be seen was not necessarily due to the present method of allowing anybody, whether qualified or unqualified, to call themselves architects. For instance, his experience in South Africa had shown him that gentlemen when desirous of erecting a house usually allowed their wives to make all preliminary arrangements. The lady makes excursions in order to get ideas of what would suit her. When she comes to a house that pleases her and suggests itself as a model, she makes inquiries not for the architect but for the builder. When he has been found, she tells him what improvements she would like on that model. The result of this combination could scarcely fail to be displeasing.

Mr. E. T. HALL, in closing the discussion, suggested that the subject should be adjourned. It was hardly fair to put the resolution to the vote because its opponents had all left the room, having other engagements. He found fault with many of the speakers and with the papers because they seemed to have this country only in their mind's eye. But the Congress was international, and therefore any decision arrived at should be of general applicability. He would like to amend the resolution in conformity with that idea. It should be understood that the diploma of architecture as known to Frenchmen is not a diploma which bars people from practising as architects. It is rather one of the greatest

honours they could obtain. The whole question had been very elaborately gone into by a committee in London, who made a most thorough investigation, and they arrived at the conclusion that compulsory qualification was not to be recommended at present. If statutory qualification was found to be desirable ten years hence nothing would prevent it. The following amended resolution was put to the meeting by Mr. Hall, and carried:—"That it is desirable, in the interests of the public of all nations and of the profession of architecture, that all practitioners should have a statutory qualification."

On the motion of Mr. E. W. FRITCHLEY (Bombay), and on the seconding of Mr. S. CHUJO (Japan), the following resolution was passed in silence:—"Resolved, that the Secretary be requested to convey to Lord Curzon the sympathy of this International Congress of Architects at the sad bereavement he has had in the death of Lady Curzon. This Congress feels it owes a debt of gratitude to Lord and Lady Curzon for their efforts in the preservation of ancient architectural monuments and in the encouragement of Indian arts and manufactures appertaining to our profession."

VISITS AND EXCURSIONS.

ON Tuesday afternoon the 17th inst. there were simultaneous excursions to (a) Hatfield House and (b) Hampton Court Palace. A very large party, numbering about 500, travelled to Hatfield by special train. On arrival at the main entrance of the house some remarks were made by Colonel Eustace Balfour concerning the history of the building. He then led the party through to the other front, where he showed the structural peculiarities. The party was then divided into parties of fifty, and went from room to room. The special train returned to King's Cross at 6.33. The journey by train to Hampton Court Palace was under the charge of Mr. H. P. G. Maule. In both cases the train provided by the railway companies was insufficient.

On Wednesday afternoon the members of the Congress availed themselves in very large numbers of the consent of His Majesty King Edward VII. to visit the extensive gardens attached to Buckingham Palace. After an hour spent in their inspection, a dozen motor omnibuses conveyed the party to Westminster Abbey. The Dean gave a short address of welcome and cordially invited everyone to make a thorough examination of the building, especially the Royal chapels (which were thrown open), the King Henry VII. chapel and the cloisters and chapter-house. The party then divided into two sections, one going to Messrs. Holloway's works, the other to Messrs. Doulton's works. Messrs. Holloway had provided tea for the visitors preparatory to going over the extensive shops near Westminster Bridge, and seeing the intricate machinery in operation. Visitors to the Doulton works were allowed to see the various steps necessary for the production of the famous ware. Each visitor received, in addition to refreshments, a glazed vase as a memento of the visit. On Thursday the visits were to Windsor Castle and a circular tour through London, including St. Paul's Cathedral, the Temple, St. Bartholomew's, the Institute of Chartered Accountants, Kensington Palace and Dorchester House.

Two alternative all-day visits were organised on Friday, the 20th inst., viz. to Oxford and Cambridge. The visitors who did not go to either place were able to see the town of London in the morning, followed by an inspection of the mechanism of Tower Bridge. In the afternoon they had a rendezvous at the central entrance of the Royal College of Science, South Kensington. Later they adjourned to the Victoria and Albert Museum.

On Saturday morning the attractions of Bridgewater House were opposed to those of a paper on "A Statutory Qualification for Architects." In the afternoon choice had to be made between a trip on the river to Greenwich Hospital, an inspection of the Houses of Parliament, or Westminster Cathedral.

A most successful evening garden party was held at the Royal Botanic Society's Gardens, Regent's Park, in which about 3,000 people participated. The guests were received for the first hour by Mr. and Mrs. Belcher and the members of the Council at the entrance to the conservatory. Inside, the Ladies' Salon Quintet were playing. "A Midsummer Night's Dream" was performed under the trees by Mr. P. Kirwan's Idyllic Players. Near the band of the Royal Horse Guards (Blue) was a rendezvous for all strolling about the delightfully illuminated grounds. Refreshments were supplied in a great marquee a short distance from the band.

THE SOCIETY OF ARCHITECTS.

THE twenty-second annual dinner of the Society of Architects was held on Thursday evening, July 19, at De Keyser's Royal Hotel. Mr. A. E. Pridmore, president, occupied the chair.

The attendance was greater even than that of recent years, the increase being accounted for by the number of foreign and colonial members who were present in London for the International Congress. Among the guests were Lord Monkswell, Sheriff Sir T. Vansittart Bowater, Mr. Paul Ogden, the Mayor of Holborn, Canon Vere, Mr. Alexander Ritchie, Mr. H. T. Smith, Mr. H. G. Montgomery, M.P., Mr. J. B. Wild, Professor G. Baldwin Brown, the Mayor of Finsbury, Mr. A. C. Scovell, Mr. Thomas Cooper, Mr. A. A. Hudson, Lord Stanley of Alderley, the Rt. Hon. James Bryce, M.P., Judge Rentoul, K.C., the Archdeacon of London, Alderman Sir Horatio D. Davies, Mr. James Bell, Mr. J. S. Fletcher, M.P., Capt. G. R. D. Drummond, Mr. D. Maclean, M.P., the Mayor of Fulham, Messrs. J. K. Brough, W. E. Riley, H. Montagu Bates, E. R. Woodward, W. J. Wetenhall, A. A. Millward, E. V. Huxtable, E. P. Huggett, R. G. Wilson, J. Sumner, R. F. Vallance, S. Perks, A. C. Freeman, Charles Welch, F.S.A., H. O. Tarbolton, F. L. Dove, E. Holmes, A. P. Poley, E. D. Drury, W. Scott-Deakin, E. M. Leest, H. Matthews, T. T. Cotterell, R. D. Batchelor, W. D. Driver, C. Day, J. C. Leavy, G. E. Bond, the Mayor of Chatham, J. R. Featherby, G. R. Viney, C. E. Skinner, A. R. Finch, J. R. Finch, W. J. Renshaw, R. G. Bare, H. J. Carter, R. Simpson, H. Byrne Jones, F. Tarring, G. W. Pridmore, C. Peek, R. Giles, Harry Bird, W. Atkinson, A. Newton, Deputy Wallace, T. A. Bullock, R. H. Barton, Sheriff-Elect Dunn, W. Bates, E. T. Agius, H. Weber Brown, H. Theobald, R. B. Martin, A. H. Campbell, C. Palmer, T. R. Croger, A. W. Fritchley, C. L. Gibbs, G. N. Paine, J. Bartlett, C. F. Dolan, M.P., A. Scott, R. M. Butler, Owen Owen, W. Lees McClure, W. W. Thomas, J.P., W. Woodward, Ellis Marsland (hon. secretary), W. C. Williams, D. Morgan, Chilton James, T. J. Jones, D. Rees, C. H. Mead, A. E. Carter, A. F. Wallis, A. G. Ware, T. R. Richards, J. B. Corby, C. Watkins, P. H. Ashby Bailey, F. W. Kinnear Tarte, Colonel F. S. Leslie, R. Walker, B. R. Tucker, J. H. Champness, E. Beal, G. Stainton, W. H. Robinson, G. Everard Davies, F. J. Sheffield, D. A. Langdon, P. Condy, A. Y. Mayell, H. Possenbacher, A. Chaussé, E. O. Sachs, L. Bonnier, G. A. T. Middleton, J. R. Manning, the Rev. A. Mercer, W. C. Lorden, J. M. Monro, S. Chujo, G. L. Gomme, J. G. Laing, the Mayor of Stoke Newington and C. McArthur Butler (secretary).

Mr. ALEXANDER RITCHIE, after the loyal toasts, proposed "The Houses of Parliament," and said he was sanguine that the bristling Bill for the Registration of Architects would receive the attention which it deserved when it came before Parliament.

Lord STANLEY OF ALDERLEY, responding for the House of Lords, said his words of thanks must not be taken as an intimation of favours to come. When the Registration Bill came before them it would be fully considered. Those who followed the trend of political opinion would agree that the House of Lords was beginning more and more to recognise what was a fact of the Constitution, that its place in the Legislation was secondary, and that it could not stand in the way of clearly expressed public opinion.

Mr. JAMES BRYCE, M.P., replying for the House of Commons, agreed that the State should show more encouragement to architects. Their art was the freest of all the arts, because it had the least to do with imitation, but it was more subject to external conditions, and to those conditions which might be imposed by the authorities of different districts. It was therefore especially interesting to inquire who were the authorities, and whether the Government was doing all that ought to be done to promote architecture and give it scope for development. There never was a time in English history when there was so much building, and when the needs of good building were so great as in the present day. There had been, in fact, extraordinary opportunities for architects during the last sixty or seventy years, but it was the fault of the State and the public authorities that the profession had not taken advantage of them. The authorities in the City had been to blame, for they had allowed opportunities to pass, and in the architecture and grouping of the buildings too much had been left to chance. Their buildings suffered from a lack of feeling, and there was not sufficient space in proportion to height and size allowed around them. In some instances the whole aspect of a

street had been spoilt for reasons which could have been avoided if the building operations had been controlled by a competent body. It ought to be possible to create advisory bodies possessed of artistic knowledge and skill who would be able to help both the Government and local bodies in such matters of national concern. In conclusion, he said there was a growing desire on the part of the present Parliament to endeavour to secure that the nation should live amid beautiful surroundings, and that the resources of the State were spent in ways that would give people pleasure.

Mr. R. F. VALLANCE (vice-president) submitted "The London Local Authorities." He congratulated the Corporation of London on the acquisition of so fine a building as the new Sessions House and referred to the good work done by the London County Council.

Deputy M. WALLACE, responding for the City, said the Corporation had endeavoured for years to municipalise its education and to bring harmony into the homes of the citizens through the agency of the School of Music. By the exhibitions at the Guildhall they sought to popularise the works of great masters both at home and abroad and extend the love of the beautiful in art. The money they were about to expend on the Blackfriars Bridge exemplified the zeal of the Corporation, and he thought the services of gentlemen present might be asked to guide them in that undertaking.

Professor R. SMITH (Mayor of Holborn) also briefly replied.

Lord MONKSWELL proposed "The Society of Architects," and in alluding to the president, said Mr. Pridmore's ability as an architect was well known. He held a number of important offices in the City, not least among them being that of consulting architect to the City Guardians, an appointment which required many qualifications.

The PRESIDENT, in reply, said the history of the Society, which had existed for twenty-two years, was the history of the movement in favour of the statutory registration of architects. At the present time, unlike other professions, the law would allow that anyone might practise as an architect; that was damaging to gentlemen practising a noble and honourable profession, and was, in addition, considered unsatisfactory to building owners and the whole of the community. As a Society, they were pledged to a definite course of action in the matter. They had given consistent support to the movement for registration, and had persistently striven to get Government recognition of the status of architects. In the first place, the Society supported the Architects' Registration Bill committee, a body of architects distinct from any society, who were attempting to obtain that much desired reform. Many architects of different societies were now in favour of registration, and he hoped the time was not far distant when the whole of the profession would be agreeable to promote a Bill on the lines the Society had advocated. In any case, their energies would be directed to that end, and they were prepared to spend their resources to bring about the realisation of the object they had in view. They had support from many outside their own body, and they were determined to see the measure through. It was gratifying to be able to state that they had with them that evening many who were instrumental in forming the Society, and some who, after twenty years, were still holding office. The Society had made steady progress, and now had a membership of over 800, and had members in all parts of the world. Early in the year a travelling studentship was instituted, which attracted a large number of entries and resulted in many excellent designs being submitted. During the year the Council had instituted a distributing library. This was most valuable for provincial members, who could have the books sent them by post. They were also grateful to the Corporation of the City of London for their gift of over thirty commemoration medals, which would find a place in the reference library. The membership was not limited to the United Kingdom, and recently branches had been established in India and in Africa. At that period of the year it was their custom to have an excursion of a few days to places of architectural interest. In view, however, of the fact that that was the International Congress week, it was thought desirable to abandon it in order that members might attend the Congress, where, he was pleased to say, three of the members were reading papers on matters of interest, and one of their past presidents (Mr. Robt. Walker, of Cork), one of the pioneers of the movement, was reading a paper on "Registration." On behalf of the Society he desired to thank the noble and distinguished company who

had encouraged and honoured them by their esteemed presence that night. They were all kin in the world-wide domain of architecture; their rivals were their best friends and the heroes of them all.

Mr. G. A. T. MIDDLETON proposed "The Visitors."

His Honour Judge RENTOUL and Mr. T. COOPER (president of the Birmingham Architectural Association) replied.

THE LONDON COUNTY HALL.

THE following important report has been prepared by the establishment committee of the London County Council:—

Now that the London County Buildings Bill, 1906, has passed through both Houses of Parliament, and is expected to receive the Royal Assent on July 20, we desire to submit our suggestions with regard to obtaining designs for the new county hall.

The Council will remember that the site has an area of 5.6 acres, and is bounded on the west by the river Thames, on the south by the approach to Westminster Bridge, on the east by Belvedere Road and on the north by the premises occupied by the works department, and that the site, together with the land occupied by the works department, has an area of about 7.5 acres.

With reference to the course to be taken by the Council for obtaining designs for the new offices, it may be mentioned that at the outset of the consideration of the matter a communication was received from the Royal Institute of British Architects, expressing a hope that it might have the privilege of advising the Council in the matter of securing designs of this important building, in which "an exceptional opportunity will occur of realising the educational value of the art of architecture and of fostering the arts and crafts of the day." We expressed our willingness to receive and consider any suggestions which the Royal Institute might desire to make as to the best means of securing the erection of a "dignified building" suitable for the administrative needs of the Council, and subsequently the Royal Institute expressed the opinion that the only way of securing such a result as the Council naturally desired was to obtain, "by some means or other, a strongly individualised personality to deal with the problem under properly defined conditions," and the Institute suggested that the method most likely to achieve that result would be to institute a competition. In support of this view the Institute called attention to the fact that the designs for the undermentioned buildings were all so selected:—

The Houses of Parliament and the Foreign Office in London.

The Hôtel de Ville, the Opera House and the Palaces of Art in Paris.

The Houses of Parliament in Berlin.

The Central Library, New York.

The Institute pointed out that in the case of some of the buildings referred to there was a preliminary and a final competition, and expressed the opinion that this is the method best suited to the requirements of the Council. It was further suggested that, with the view of securing that some of the leading architects should take part in the competition, several should be invited to compete in the final stage. At the same time the Institute forwarded the heads of a scheme for giving effect to the suggested competition.

Careful consideration has been given to the suggestion of the Royal Institute of British Architects, and also to the report from the architect of the Council on the courses which could be followed, viz. unlimited competitions, limited competitions, appointment of a nominated architect, appointment of an official architect, and appointment of an official architect in collaboration with a nominated architect of eminence.

After full consideration of the various suggestions, we are strongly of opinion that the Council should have a competition, and that the scheme should be on the following lines:—

That the competition be divided into two stages: (a) the preliminary, (b) the final; the preliminary stage to be open to architects of any nationality, and that not less than ten and not more than fifteen of the best designs shall be selected in private by assessors; the final stage to be open to (1) the authors of the designs selected by the assessors in the preliminary stage, and (2) not exceeding eight leading architects to be invited by the Council to send in designs before the expiry of the period within which designs must be sent in for the preliminary competition.

We think that there should be two assessors for the preliminary stages of the competition and three for the final, and that Mr. W. E. Riley, the Council's architect, and Mr. Norman Shaw, the senior architectural Royal Academician, should be nominated to act in both stages, and that the competitors in the final stage should vote for the third assessor, who will only act in that stage.

We suggest that each of the competitors in the final competition should be paid a fee of 200 guineas, and we will report next week as to the remuneration of the assessors. We also expect to be in a position to report as to the date by which the designs should be deposited at the county hall.

If the Council endorses our views, and decides to have a competition, the Council's architect should prepare detailed particulars of the accommodation required by the Council, having regard to the functions of the Council itself, the work of its committees and of the several departments, and the intricacies of their detailed workings both in their relations to each other and to the public. When fully matured, these particulars would be submitted as the basis of the competition. The instructions to competitors would indicate that the particulars showed the minimum accommodation, and that license would be permitted to depart therefrom in any details which might be considered necessary for the development of the elevations. Following the principle recognised by Government departments in the buildings for the War Office, the Local Government Board and the Admiralty, we propose to make it a condition that the successful competitor, if appointed, shall collaborate with the Council's official architect, who should have discretionary power in all matters relating to the internal economy and construction of the building.

We are forwarding to the finance committee a supplemental estimate in respect of the fees for the assessors and the competitors in the final stage of the competition, and we trust that that committee will be in a position to submit the estimate to the Council before the adjournment for the summer recess. We recommend—

"That the establishment committee be authorised to take all the necessary steps for obtaining the preliminary plans and arranging for the competition on the lines indicated in the foregoing report, for securing designs for the new county hall to be erected on the Westminster Bridge site."



Southwell Cathedral.

SIR,—The *Architect* of October 7, 1898, published a double-page plate of Southwell Cathedral from the south-east. It will be noticed that about halfway along the choir wall and close to the flying buttress there remains the weathering of the high roof to the south aisle chapel, which obviously also had a high gable. Perhaps some old print is in existence to show what that gable was like. Anyway, it should not be impossible to find an architect who could "reconstruct" the gable and roof in question, and thus make more complete the restoration of the building by such an effective addition; but in doing so care should, of course, be taken to reproduce the mouldings and shafts and small detail of the other windows of the chapel as far as possible. The present parapet of the aisle chapel is obviously of a different date to the rest of it, the south front of the parapet being a very much flattened pediment. In the additional space secured by the raising of the aisle chapel roof to its former level, room could be found, no doubt, for storing choir books, &c., not actually in use.

The choir roof itself was also apparently a high one, possibly finishing off at the east end in much the same way as Romsey Abbey Church does at present. It seems a pity to leave a long low roof of later date to disfigure the beautiful choir. The raising of it to its former apparent level would add dignity and charm to the venerable cathedral.—Yours obediently,

JOHN A. RANDOLPH.

Registration of Architects.

SIR,—The Congress passed a resolution admitting that registration or protection is advisable, so I presume the Royal Institute of British Architects will now take the matter up, and I trust that at the same time the whole question will be considered of a legal remuneration

adequate with the amount of work done. But will the present Government look kindly at a protective Bill, and so put an end to Free Trade in architectural matters? We in the country suffer most in this respect. I am not wishing to raise a political discussion; in fact, I quite understand that *The Architect* is too "conservative" to permit a discussion on tariff reform even in architecture and the "liberal" payment for our "labour." Apologising for this outburst,—
Yours, &c.,
A COUNTRY COUSIN.

SIR,—So the International Congress of Architects is at last a thing of the past. We have all had a good time, but what about the results—will any good come from the Conference? Anything tangible, and will the profession be raised to something higher than as at present? Shall we see compulsory registration and its consequent raising of the status of the architect to something better than a mere draughtsman and commission agent? Will some of the gentlemen who have worked so hard to make this Conference a success take up the registration question as ably? If they will, then they will receive the reward of deep gratitude from all who can only sign as

ARCHITECT AND SURVEYOR,
and not building specialist, sanitary engineer (drains kept in order for 21s. per annum), undertaker, building engineer, or even as a card I saw last week, "Mr. John X—, Mem. of —, Mem. —, Mem. of something else, architect, surveyor and specialist on art furnishing and decoration, sanitary surveys."—Yours, &c.,
A.R.I.B.A.

The Building Trades Exhibition, 1907—Olympia.

SIR,—It may interest your readers to know that, owing to the phenomenal success of the Building Trades Exhibition held biennially under my management since 1895, I have secured Olympia for the next show, which will be held from April 6 to 20, 1907. The available space at the Agricultural Hall has of recent years proved quite inadequate to meet the demands for space, but as the accommodation at Olympia is practically unlimited, important firms hitherto excluded will now have ample opportunity of displaying their manufactures to the best advantage.

The exhibition will be conducted upon the same lines as hitherto, and exhibits not appertaining to the building industries will be excluded.—Yours faithfully,

H. G. MONTGOMERY.

43 Essex Street, Strand, W.C. :
July 26, 1906.

GENERAL.

Mr. Thomas Garner, architect, of the Manor House, Fritwell, Oxford, sometime in partnership with Mr. G. F. Bodley, R.A., has left property valued at 13,194l. 15s. 3d.

The Extension Board of the University of London propose to arrange for a three years' course in architecture. Mr. Banister Fletcher will be invited to give the first year's course if at least sixty students enter their names as willing to pay a fee of a guinea for a session of twenty-five lectures. Place of delivery and time have to be settled.

Mr. James Kenward, F.S.A., who died recently at Great Yarmouth at the age of seventy-seven, was a member of the Birmingham and Midland Institute and of the Archæological Society. Mr. Kenward was one of the oldest surviving members of the Society of Antiquaries; he was elected in 1870, and was for a considerable period of his life in the employ of Messrs. Chance Bros. & Co., glass manufacturers, Oldbury, where he occupied an important post in the lighthouse department.

The Town Council of Edinburgh have approved unanimously of a recommendation by the Lord Provost's committee that a portion of the cattle market property at Lauriston, to the extent of 1½ acre, should be set apart as a site for the proposed new municipal art school, and the city superintendent of works was instructed to prepare sketch plans of the buildings for the consideration of the committee.

Mr. T. H. Longfield, F.S.A., architect, is retiring from the keepership of the art division of the National Museum, Dublin, which he has held for nearly thirty years.

The Hawick Town Council have agreed to accept custody of the Hawick Archæological Society's museum for behoof of the inhabitants on terms mutually agreed upon, the Corporation to provide accommodation for the large and valuable collection comprising the museum in Wilton Lodge Mansion House, situated in the Public Park, and to receive 450l. from the Society.

The Hon. Secretary of the Cape Institute of Architects has written a letter to the Commissioner of Public Works regarding the new Law Courts competition, stating that his Council was very dissatisfied with the reply to the communication addressed to him by the Institutes of Architects of Natal, Transvaal and Cape Colony, as well as his refusal to publish the assessor's report. The Institute has, therefore, deputed the president to interview some of the members of Parliament for Cape Town with a view to the question being raised in the House during the estimates, and thus endeavour to obtain the desired publication.

The Committee on Ancient Earthworks and Fortified Enclosures, of which Lord Balcarres, M.P., is chairman, expresses disappointment in its annual report that the archæological societies of the country have not yet been able to undertake the systematic scheduling of the ancient earthworks and defensive enclosures in their respective districts, and urges the importance of the publication of such lists. While increase of general interest in ancient earthworks, constructed for defensive or sepulchral purposes, is manifested, there is need for active antiquaries in all parts of the country to keep keen watch over ancient fortifications of earth and stone and to endeavour to prevent their destruction by the hand of man in this utilitarian age.

The National Service League offers three prizes for the best coloured pictorial postcards illustrating the ideal of the League, namely, national military training accepted by the nation as a civic duty. The first three prizes will be of the value of 25l., 8l. and 4l. respectively, and 1l. 1s. each will be awarded for the three designs next in order of merit.

The Office of Works has offered to grant to the Berwick Sanitary Authority a license for the maintenance of the remaining portion of Berwick ramparts not yet conveyed to them. They stipulated that the Authority should bear half the cost of maintenance of the walls, that any necessary repairs should be carried out by the Board of Works at their own discretion and that no alteration to the walls should be made by the Authority without their consent. The Mayor said these conditions were too onerous for their acceptance.

Mr. Walter Young, district auditor, in his audit of the accounts of the Acton Council, has disallowed an item of 1,500l. paid in fees to the architect of the town hall and public offices scheme, which was rejected by the Local Government Board on the ground of extravagance, the cost being 100,000l.

Mr. S. H. Egan has become senior partner in the firm of theatrical and hotel architects carried on by Mr. Walter Emden, J.P., of Lancaster Place, London, and the firm will in future be carried on under the style of Emden, Egan & Co.

The Roman Villa at West Meon will be open until the end of August. Considerable advance has been made with the excavations this summer, and it is now possible for the visitor to get a very clear idea of the ground plan of the house, which is of unusual architecture. The villa covers an area of 160 feet by 50 feet, and consists of nine living rooms, three of which are paved with mosaic, one being in a remarkably fine state of preservation. Pottery of the usual Romano-British type has been found on the spot.

At the St. Pancras Town Hall, Pancras Road, N.W., the six sets of designs submitted in the central public library competition will be exhibited on the 27th and 28th inst.

The Special Arbitration Committee of the Metropolitan Water Board at the last meeting submitted a report showing that the total cost to the Board of the arbitration proceedings amounted to 255,584l. Sir Melvill Beachcroft, chairman of the committee, observed that, in view of the fact that the arbitration involved a sum of 47,000,000l., a quarter of a million spent in law costs was not out of proportion.

The London County Council on Tuesday agreed to a motion of Captain Swinton that "consideration of the Strand frontage question be postponed until the improvements committee report as to the advisability of setting back the present northern line of frontage in the Strand between St. Mary-le-Strand and the eastern end of Aldwych, and of modifying the southern line of the frontage of East Aldwych, so that an area of land, approximately equivalent to the additional land surrendered for the widening of the Strand, may be appropriated out of the roadway of Aldwych with a view to avoiding any reduction in the area of land available on the 'island' site for building purposes."

The Architect.

THE WEEK.

THE subject of the new London county hall came up for consideration on Tuesday. We printed last week the report of the establishment committee. The finance committee, it should be remarked, are not satisfied with the arrangement. They say:—"The proposal to spend a large sum in obtaining a suitable design for the new county hall appears to be costly. We appreciate the desire of that committee that a dignified building suitable for the needs of the Council should be erected, but, looking at the matter from a financial point of view, we venture to hope that it may be possible to attain this object without offering to pay so many fees. No specific provision has been made in the capital estimates of the current financial year to meet this expenditure, although 1,000*l.* is provided for the preparation of plans, but we understand that there is no likelihood of the fees having to be paid before the end of the year. In addition to the expenditure in respect of which this estimate is submitted, further expenditure will be involved in remunerating the assessors selected to adjudicate on the designs sent in." In consequence the establishment committee only asked approval in respect of the fee of 200 guineas which it is proposed to pay to each of the competitors, not exceeding twenty-three, who take part in the final competition. It is calculated that sixteen weeks will be required for the preliminary competition and seventeen for the final stages. It is therefore anticipated that the date for receiving the preliminary designs will be May 7, 1907, and for the final designs October 3, 1907. On Tuesday Sir MELVILL BEACHCROFT expressed a fear that what would be undertaken would be an ornate building more suitable for a Parliament house than a dignified workshop. His amendment in favour of economy was lost, the voting being fifty-five votes to twenty-one. Another amendment by which the competition would be restricted to British architects shared a similar fate. Since English architects voted at the Congress in favour of international competitions, consistency compels them to accept the principle.

At the present time, when the subject of keeping roads in condition is causing so much anxiety to authorities and surveyors, it may be well to record an experiment of the county surveyor for West Sussex on the main Brighton road between Henfield and Woodmancote. Tar was first laid on the old road surface, dry rolled, and afterwards treated with a composition of tar and pitch, a sprinkling of granite chippings being afterwards applied as a finishing coat. It was then found that the road was much less noisy than ordinary macadam, and being waterproof, a much thinner coat of material was necessary than with the old form of maintenance. As regards cost, this method of construction compared very favourably with the old system, and in addition reduced the dust nuisance to a minimum. The length of road treated was 232 yards, with an average width of 21 feet, giving an area of 1,624 yards super. The total cost was 93*l.* 5*s.*, and the cost per yard super nearly 1*s.* 2*d.*; cost per mile, 718*l.* 13*s.* 4*d.* To cover the same area with granite, applied in the ordinary way, and having an average thickness of from 3 to 4 inches, the cost would be 128*l.* 8*s.* 4*d.*, the cost per yard super 1*s.* 7*d.*, cost per mile 975*l.* 6*s.* 8*d.*, showing a saving in favour of the tarred material of 5*d.* per yard super. The cost could be still further reduced were a special gang employed at the work who would travel with the roller from point to point as required. Requests were received from several parts of the county that roads should be treated with tar, but the committee assented only on condition that the locality bore part of the cost.

LAST week we noticed a light and air case in which certain rights attached to an old building were claimed for a new one on the same site. A case closely connected with it was heard on Friday last before Mr. Justice WARRINGTON. In the former case the owner of the new building was the plaintiff. In *ANKERSON v. CONNELLY* the plaintiff was the owner of old buildings, who feared that claims for an easement over his property might be created by the erection of new buildings. The defendant had purchased three houses in King's Cross Road to form a site for new buildings, and the plaintiff, who was the owner of adjoining premises, feared that his liberty in putting up new premises would be restricted. Mr. Justice WARRINGTON said that the defendant had made it impossible for the plaintiff to erect a building such as he formerly could have done without interfering with the defendant's rights. But that impossibility was the creation of the defendant, who could not therefore successfully maintain an action to enforce his claim to light. He had deprived himself of any rights which he could enforce, and judgment was therefore given that the defendant was not entitled to any easement over plaintiff's land. The decision will clear many doubts which now exist, especially in cases where one party by precipitate action considers he can secure rights or easements which cannot be interfered with by owners of adjoining property.

THE Building Act committee of the London County Council are at present considering the whole question of the Tribunal of Appeal, and propose to report on it at an early date. We have already mentioned that the members have appealed to the Home Secretary concerning the scale of remuneration. The scale laid down by the Secretary of State in 1895, and continued in operation from year to year until 1905, was, for each member, three guineas for the first hour and two guineas for each subsequent hour of each day's sitting of the Tribunal. On March 20, 1906, the County Council decided to inform the Secretary of State that it was of opinion that the present rate of remuneration was sufficient, and that no adequate reason had been shown why it should be increased. There is apparently no reason to alter that decision at the present time. It is therefore recommended that the scale should be continued in operation during the present year.

ALTHOUGH county authorities are skilful in making out claims against contractors on account of extraordinary traffic, yet that of the Dunfermline district committee of the Fife County Council against Messrs. M'ALPINE & SONS probably will long be unsurpassed. It arose out of the construction of the Dunfermline-Kincardine Railway, and the amount was 6,136*l.* 5*s.* 11*d.* Sheriff SHENNAN, who investigated the case, adopted Lord Justice BOWEN's definition that "extraordinary traffic is really the carriage of articles over the road, at either one or more times, which is so exceptional in the quality or quantity of articles carried, or in the mode or time of user of the road, as substantially to alter or increase the burden imposed by ordinary traffic on the road and to cause damage and expense thereby beyond what is common." The contractors admitted that about three miles of road were damaged. The plan adopted by the county was, however, shown to be absurd. But the actual amount of damage was difficult to ascertain. The sheriff considered each road separately, and came to the conclusion that the amount to be awarded to meet the extraordinary expenses was no more than 1,045*l.* This is only a little above one-sixth of the claim made by the authorities. The county will have the costs, although, as the sheriff said, the case was greatly overstated. Allowing that damage was done to the roads, the preposterous effort to abstract so large a sum from the pockets of contractors should have been punished by making the county authorities bear their own costs at least.

THE PROGRESS OF ART.

THERE is a class of men who always look backwards because they prefer the past to the present. It often happens that some of their representatives become heads of academies, colleges and schools, and then the students are to be pitied. Young people are often rebuked for an excess of confidence in their own abilities. But that may be more apparent than real. As a rule students should be encouraged by their guides, and especially students of art. Unless they possess extraordinary endowments from nature the life before them is precarious. In the majority of callings men have only their contemporaries as competitors. But in the arts they have to fight their way with old masters. The returns of the sales in auction-rooms during one season in London will suggest the intensity of the contest as regards painting. Sculptors and architects may not suffer to an equal extent with the painters. But their work is continually undervalued by comparison with what was produced centuries ago under very different circumstances.

When Herr VON WERNER, the director of the Berlin Academies for Art, presided at the annual distribution of prizes to the students of one of the art schools a few days ago, he adopted the tone of Mr. CROAKER when addressing them. His speech took the form of a comparison of their work with the work of the men who painted fifty years ago, examples of which were to be seen in a retrospective exhibition at Berlin. It is needless to say that he found the modern attempts far inferior to those of the students' predecessors. All arose, Herr VON WERNER considered, from the thoughtlessness and haste of modern times, from a misunderstanding of realism and other causes. Herr von WERNER, as all the world knows, is an able painter. At the present time he is the representative painter of Germany, because he paints military scenes with an accuracy of detail which would satisfy the sternest martinet in the army. There is some excuse for him if he partly adopts the tactics of the barrack-square, and endeavours to make recruits believe they will never be perfect without an extraordinary amount of attention.

Germany can take care of itself without any prompting from strangers in art as in other affairs. But when so great an authority speaks of the decadence of the present time, we might assume that his words were applicable in other countries. Is it reasonable to conclude that in England we have retrograded in the course of half a century? In replying to such a question it is necessary to clear the ground from obscurities. Firstly, it should be remarked that artists of original genius must be excluded, for they cannot be produced by well-directed training alone, however excellent. TURNER, for example, was unique, and was able to make the Royal Academy illustrious until 1851. MULREADY, another able painter, was towards the close of his career suffering from defects of eyesight. LESLIE, too, was a great humourist. But can it be said that the majority of the Academicians, such as the CHALONS, UWINS, PICKERSGILL, LEE, PRESCOTT KNIGHT, C. W. COPE, were in any way superior to an equal number of Academicians at the present time? In water-colour art works of most of the men who exhibited fifty years ago would not sustain modern criticism. Architecture affords a still more remarkable test. COCKERELL and BARRY were men who at any time would have been recognised. But was Sir ROBERT SMIRKE or PHILIP HARDWICK an architect of surpassing attainments? Both were fortunate in their clients. But would much regret be expressed if the best works of either of them were doomed to demolition?

Fifty years ago there was enthusiasm concerning Gothic. Few men were forthcoming who were able to please the clerical amateurs, who were regarded as the sole arbiters of taste. DIGBY WYATT, EDMUND BARRY, F. P. COCKERELL, and one or two others suggested skill in using the Renaissance styles

if opportunities were offered. But anyone who will read the criticisms of the architectural room of the Royal Academy cannot help coming to the conclusion that in 1856 it was much inferior to the room which is about to be closed after the exhibition of 1906. It would now be unfair to point out some of the buildings which were erected in those days and which were admired as improvements and tokens of progress, for the majority of them now appear as only commonplace examples. When half a century has run its course possibly the buildings of our time may also be found defective in the eyes of the architects who will then rejoice in the smooth courses of practice.

There was an exhibition in Paris in 1855 in which architecture was represented mainly by men who had gained reputations, such as Sir CHARLES BARRY, DONALDSON, BUTTERFIELD, HARDWICK, RAILTON, T. H. WYATT, &c. The United States section contained a few paintings and pieces of sculpture, but not a single architectural design. If an exhibition were held next year in Paris the United States could send a collection of designs that would at least have equal value to those from any of the old countries. Indeed, it would appear that English skill in construction finds greater opportunities to display its power on the other side of the Atlantic. So long as American artists can stand in the front ranks we think all lamentations about the failure of the half-century have no real basis. Germany, no doubt, must live in a state of apprehension which may have an effect upon the arts—an effect that is not unlikely to be repeated in Japan. But experience does not prove that in other countries the work of students is as unsatisfactory as that described by Herr VON WERNER. The country in which pessimism has of late years found a congenial soil cannot be expected to yield those qualities which in the old days were supposed to be the characteristics of artists. Oratory like the State painter's is adapted to make an artist hopeless, and we cannot suppose that the works produced in the art school which he addressed will in the coming year be of a much higher character.

It is fortunate that in England high officials are not sufficiently respected to make young students believe that they speak as infallible authorities. If a man like Herr VON WERNER were to appear in an English art school, the demerits of his own work would be present to the imagination of the younger students. He would be supposed to be merely discharging his duty in a manner which would please his superiors. In any English town it would be realised that where there is unlimited competition there is a possibility of something superior being evolved. The effort to invent, which enables the Patent Office to gain large sums every year, is supposed to be as necessary in art as in manufactures. Machines and other objects which were admired for their utility fifty years ago are now obsolete. And for an artist of any kind to be successful, he must, in England at least, endeavour to produce something that can be considered as a genuine novelty. Only in architecture are repetitions and simple adaptations permitted. Germany also is rivalling England in inventiveness as applied to manufactures. If similar freedom could be tolerated in the arts, results would be obtained which would be suggestive of progress, although they might not satisfy the canons of a stickler for a rigid military system like Herr VON WERNER.

The National Trust for the Preservation of Places of Historic Interest and Beauty have collected the entire sum of 12,800*l.*, which was the purchase price of Gowbarrow Fell and Aira Force and Glen, at the Patterdale end of Ullswater. The property will now belong to the National Trust and will be available to the public. On August 9 this new recreation ground will be opened by the Speaker of the House of Commons. A keeper will be placed in charge of the estate.

A BUILDING DIRECTORY.*

PEOPLE are commonly disposed to accept things which are long established as if they were, like air or water, effects and causes which there is no need to investigate. The numerous Directories of the KELLYS are notable examples. They appear at regular periods, there are no names of authors and compilers appended, and the information is obtained without giving any trouble to those whose names are printed in the pages. It is not realised that a large number of men have to be employed; that every town and village in Great Britain has to be perambulated; that a mountain of manuscript must be accumulated before the printers can be set to work on a volume of 2,700 pages like the "Builders' Directory." Then the large book, in spite of all the labour and expense, is considered to have only a temporary use, and in a limited period a successor is demanded.

It may enable us to appreciate the value of a directory as representing the building trade of this country if we consider for a moment how much would be gained for humanity if, amidst the numerous excavations in Greece, a building directory for Athens or one of the other cities were exhumed. We cannot suppose it would be extensive. But what a light it would cast upon the history of architecture as well as the social condition of the Greeks. It might be imagined from the disquisitions of some theorists that Greek temples resembled MILTON's air-formed palace and rose like exhalations, or were created by a stroke of the wand of some famous architect. There is enough to show that there was a division of labour recognised by the Greek architects. A great deal of the hard work may, of course, have been done by slaves whose names would not appear in our imaginary directory. But we might from the names discover that even in quarries there were grades which were as jealous of each other as modern trade unions, and when the blocks found their way to the sites a succession of men worked upon each of them. From the number of architects existing in a modern town we can suppose that there is more or less demand for the services of all of them, for otherwise by the laws of political economy they would seek other employment. It would be interesting to know whether many men cared to follow the art in a Greek town. It seems doubtful whether there could be always commissions of much value. Temples and public buildings were not perpetually in course of erection; and the general opinion is that the private dwellings were not of a kind to bring credit to the owners by their beauty. It is true that the architects, like other Greeks, could subsist on coarse bread and a few olives. But a clever man would find that drachmas were more abundant in the practice of another art. The condition of architects and of builders also must remain a mystery to us unless something is forthcoming which resembles a modern directory. Unfortunately, the Greeks had not acquired the skill in business which could turn such aids to account and make them a necessity.

No less interesting would be a Mediæval building directory out of England, France or Germany. The mere addresses of the architects would be sufficient to reveal to us whether laymen were allowed to design as well as ecclesiastics, and when the former superseded their rivals. There have been speculations without limit on those subjects. Yet apparently there is no better chance of obtaining definite knowledge about the Mediæval system of erecting buildings than about that of the Greeks. We possess, of course, much information relating to Mediæval buildings. But it does not afford any clue as to the men who designed or the men who may have organised the operations of construction. Pious people have turned our ignorance

to account by declaring in sermons that the architects and builders were so modest and unworldly they avoided the temptation to give permanence to their names. Nobody would venture to say that the appearance of names many times in a directory is culpable. The interest which was acquired by the sketch-book of WILARS DE HONECOURT is evidence that people still feel an interest in architects as well as in buildings. The volume would, however, have been more satisfactory if WILARS was communicative about his own everyday work, and about the men he most admired or feared.

Thanks to MESSRS. KELLY, the New Zealander of MACAULAY, after he has sketched the ruins of St. Paul's, will be able to discover all the architects and the masters in the various branches of the building trade from 1870. The fact that in less than forty years ten editions of their Directory have been called for is evidence of the vitality there is in building as a business. In the pages we can realise the growth and alterations of building, and the large number of people who are engaged in the allied industries. It used at one time to be pointed out that the co-operation of forty men was required in order to produce a common pin. But judging by the number of trades represented in the Directory, it is not difficult to comprise the work of six or seven hundred trades in one building. In the old days the general builder could without going far for materials carry out all the work that was needed in a large structure by his own men. Now trades are subdivided, and even a sub-contractor calls in external aid. Foreigners are also engaged in giving aid to English construction, and the number of machines which take the place of men can hardly be realised. Formerly building was a comparatively simple art or craft. Now it is the most complex of all. And this peculiarity is exhibited in the pages of the Directory.

It is in the country towns we can best perceive the changes. We open the volume by chance at a page relating to a town of 5,000 inhabitants. It contains an architect, brick and tilemakers, builders and contractors, carpenters and joiners, gasfitters, land and estate agents, lime merchants, locksmiths and bellhangers, painters, paperhangers, decorators, plasterers, plumbers, slaters, a sanitary engineer and a surveyor. Probably work is derived from a great part of the surrounding country. Scotland seems to be no less eager to have masters for all classes of building. Ayr is a town of 31,000 inhabitants, and it has ten architects and the trades have numerous adherents. In Ireland also architecture and building have an abundance of representatives.

It would be interesting to know whether other laws, besides the possibility of obtaining commissions, determine the number of architects and builders in certain places. There are, for example, seventeen architects or firms of architects in Bournemouth; while Cromer, which golfers so much praise, and which seems to offer a profitable field, has only two. Clacton-on-Sea, which is quite a new place, has five, and Southend eighteen.

As a rule there is a great similarity between town and country in respect of building operations, materials and manufactures. But there are some curious differences which occasionally may be only of a nominal kind. Terra-cotta, for example, is largely used, and there would be no difficulty in placing an order in London. Yet the only firm described as manufacturers is found in the country. Bath geysers appear to be a London product. It seems strange that there should be only one firm of damp-course manufacturers in all England. Incandescent gas-fittings are largely employed, but incandescent light-fitting manufacturers are confined to a few provincial towns. It seems incredible that only one firm of iron and steel sash manufacturers should exist, and only one firm of mantelpiece manufacturers. Are the makers of pneumatic bells and pneumatic tubes confined to London? Other curious instances could be given, and they suggest the difficulties which the compilers of the Directory had to encounter. Some traders

* Kelly's Directory of the Building Trades throughout England, Scotland and Wales. Tenth Edition. (London: Kelly's Directories, Ltd.)

are ambitious to be considered as specialists. But it requires time before that policy is recognised by the public. What, for instance, is a "rock-worker?" To ordinary people it might appear as another word for a mason or a quarryman, the latter being the more reasonable, as the firm describes itself as "specialists in rock formation." On the other hand, some firms produce such a variety of things they must find it difficult to select under what trade they are represented.

We have referred to the Directory under its general aspects, as it reflects architecture and the subsidiary trades. As a guide to those who have to enter into correspondence with architects and all varieties of traders connected with building construction the work is invaluable. Messrs. KELLY know how brief is the term of a Directory's utility. For although some firms fortunately appear to be unaffected by time it is the fact that other firms are retiring and newcomers are appearing. Messrs. KELLY give the information up to the latest possible date, and as far as we have examined it, it is as exact as if a Government department with numerous auxiliaries had gathered the information. All that the compilers profess to give is to be found in the pages, and it would be well for students if all books for reference were equally trustworthy.

STAPLE INN.*

AS Mr. GREWGIOUS occupied chambers in it, there can be little doubt that Staple Inn was to be the scene of some important events in "Edwin Drood," if that fine fragment had been carried through to the last chapter. English literature has, in consequence, suffered a loss. DICKENS in his youth lived in Furnival's Inn on the opposite side of Holborn. But he was well acquainted with Staple Inn, of which he gave the following graphic description:—

Behind the most ancient part of Holborn, London, where certain gabled houses some centuries of age still stand looking on the public way as if disconsolately looking for the Old Bourne that has long run dry, is a little nook composed of two irregular quadrangles called Staple Inn. It is one of those nooks the turning into which out of the clashing street imparts to the relieved pedestrian the sensation of having put cotton in his ears and velvet soles on his boots. It is one of those nooks where a few smoky sparrows twitter in smoky trees, as though they called to one another, "Let us play at country," and where a few feet of garden mould and a few yards of gravel enable them to do that refreshing violence to their tiny understandings. Moreover, it is one of those nooks which are legal nooks, and it contains a little hall with a little lantern in its roof. To what obstructive purposes devoted, and at whose expense, this history knoweth not.

Staple Inn stood in need of the aid which DICKENS could impart to it, for it is the least romantic of all the inns of London. Among its tenants there was no man of eminence, with the exception of Dr. JOHNSON, who resided there for some months in 1759; and the very numerous names which appear in Mr. WILLIAMS'S book recall no incidents which are worth relating. Apparently among all the lawyers who resided in the chambers there is no record of one of them arriving at the Bench. Old Stow can only say of it that it was one of the nine Inns of Courts standing within the Liberties of London. But, he adds, "whereof so named I am ignorant; the same of late is for a great part thereof fair built, and not a little augmented."

The word "Staple" is the surname of an English family, and it might be supposed that, as in other cases, the inn was erected on their estate. But Mr. WILLIAMS considers that Staple Inn originally signified a customs house, and in particular a customs house for wool. As it would be near Holborn Bars or Gate, the position

might be considered as suitable for levying tolls on merchandise entering the City. In the fourteenth century Staple Inn had other rivals, and from a charter of EDWARD IV., dated 1463, it is evident that the staple which had been at Westminster was transferred to Leadenhall. During the changes lawyers and law students may have found abodes within the inn. But there seems to be no question that after 1463 it was recognised as an Inn of Chancery and as nothing else. The proprietors were known as Fellows or Grand Fellows forming "The Grand Company;" sometimes they are called Ancients instead of Fellows. Tenants who were not necessarily lawyers were accepted. According to Mr. WILLIAMS:—"The occupants of the inn were of three grades: first, those who were tenants and paid rent to the Grand Company; secondly, those who had been and intended to remain tenants, who had the right to be elected as members; thirdly, those holding freehold chambers, which qualified them for election as Fellows; these latter had a share in the proprietary rights over the hall, the land and the rented chambers."

There are occasional entries in the records concerning buildings, but we doubt if it would be possible to fix the dates of the different parts or to describe the circumstances under which they were erected. In 1584 we read of a ROBERT WILLETT at his own expense having substantially wainscoted the main hall, and he obtained a lease of certain premises which he had erected, including cellars and stairs, in which Mr. GREWGIOUS might be afterwards supposed to have had a share. In the agreements with tenants a cellar, or rather part of a cellar, went with a chamber. In all that relates to legal documents Mr. WILLIAMS is as conscientious and precise as Mr. GREWGIOUS would have desired. But such information will have greater interest for lawyers than for ordinary readers.

Although many old buildings had to succumb to the new conditions of business in the neighbourhood of Holborn, Staple Inn seemed to lead a charmed life. In 1842 the taxing masters in Chancery were able to persuade the Principal and Grand Fellows of the Society to rebuild two houses in the Garden Court, which were to be used as premises by the masters. To carry out the work the Society had to borrow 8,500*l.* The mortgage was finally repaid in 1884, and four days afterwards the inn was sold. The Office of Works purchased the part held by the taxing masters, and the remainder of the inn was sold to the Prudential Insurance Company. It is gratifying to know that the property was purchased with the intention of preserving it. Mr. WATERHOUSE took charge of the restoration of the front to Holborn, and the work was accomplished without affecting the picturesque appearance of the buildings. Among the illustrations is a reproduction of a measured drawing of the roof of the hall by Mr. PAUL WATERHOUSE. Although lofty buildings may now overshadow Staple Inn it still is able to assert itself as a survival of a kind of architecture which once prevailed in the streets of London. Mr. WILLIAMS'S book narrates all that is known of the place, and his volume will impart additional interest to the houses and hall.

The Foundation-Stone was laid last week of new municipal buildings, Bromley, of which Mr. R. F. Atkinson is architect. The contractor is Mr. G. F. Minter, of Putney, whose tender was 18,793*l.*

The Holborn Borough Council agreed last week that Messrs. Warwick & Hall, the Council's architects for the new municipal offices, be paid a commission of 5 per cent. on the total cost of the new buildings. The establishment committee reported that the architects' estimate of the cost was under 20,000*l.*; the land would cost 21,000*l.*, and furniture and additions 8,000*l.*—a total of 49,000*l.* Against this the Council has 10,000*l.* on hand on capital account, and the site in High Holborn and Goldsmith Street is estimated to realise 20,000*l.*, leaving 20,000*l.* to be provided. It was decided to borrow this sum from the London County Council.

* *Staple Inn: Customs House, Wool Court and Inn of Chancery.* By E. Williams, F.R.G.S. (London: A. Constable & Co., Ltd.)

ARCHÆOLOGY OF THE CANTERBURY DISTRICT.

THE annual meeting of the Kent Archæological Society was this year held in the Canterbury district, the proceedings, which commenced on July 17, extending over three days instead of the customary two. The following account is taken from the more extended report in the *South-Eastern Gazette* :—

The usual preliminary meeting for the transaction of business was held in the chapter-house of Canterbury Cathedral. Lord Northbourne, the president, in opening the proceedings, said they could congratulate themselves that once more it had fallen to their lot to meet in the cathedral city of Canterbury. There were very few places in the world more adapted and suited to a meeting of that Archæological and Antiquarian Society, for he might almost say that the history of Canterbury was the history of England. Since they last met there a good deal, no doubt, had happened. To refer to one matter alone that must be of great interest to all connected with antiquarian subjects, as they stood there they were within easy reach of four Saxon churches. One was St. Martin's, another the ancient church of St. Pancras, where investigations had been carried on for the last four years; then there was the church of St. Peter and St. Paul, which they hoped to visit the next day, and upon which they would hear a very interesting address; then lastly there was that ancient cathedral. In no place in England would they find four Saxon churches so full of interesting matter to the historian and archæologist. One circumstance that must be interesting to those who followed the history of the Anglican Church was that in the last ten years two English archbishops had found their place of residence in that city. This he believed was entirely without precedent since the days of the Reformation, and the circumstance must be of vital strength to the continuity of the English Church, in which they were all so interested.

The hon. secretary (Mr. Sebastian Evans) read the forty-ninth annual report, which reminded the members that sixteen years had elapsed since they last visited Canterbury. In the interval the ruins of the abbey church of St. Augustine and some of the adjacent monastic buildings had been excavated, and on this occasion they would be given the opportunity of visiting, not only these, but further excavations on the site of St. Pancras Chapel. The Society had contributed 55*l.* towards the expenses of these researches. The Society had to regret the loss by death of Mr. Burch Roshier, an energetic member of the Council for many years, and also local secretary for Deal and Walmer district. Two old members—the Rev. A. G. Hellicar and the Rev. J. Tillard—had also passed away. Mr. S. Wayland Kershaw, F.S.A., librarian of Lambeth Palace, had been elected an honorary member. Volume 27 of the "*Archæologia Cantiana*" was published in October; it had been paid for, and there now stood to the credit of the Society at the bankers a balance of 411*l.* 1*s.* 9*d.*

At the conclusion of the business meeting the Society was cordially welcomed to Canterbury by the Dean. In the course of his remarks he referred to the reparation of the Bell Harry tower of the cathedral now in progress. They were, he said, taking particular care—and the architect (Mr. Caroe) was famed in that particular work—to restore the tower as it was before, and not to introduce any new features into it. That they were endeavouring also to do in so far as any other reparation was concerned. What they were doing was simply to repair the ravages of the past. Another matter touched on by the Dean was the position of the high altar in the cathedral. If they looked at the maps available they would find that until about one hundred years ago the high altar—the altar of Christ as it was called—was placed on the lower platform, and where the high altar now was the archiepiscopal chair stood for all those centuries. From an archæological point of view they could not but join with him in regretting that that alteration was ever made. The speaker intimated that the Dean and Chapter desired to restore the high altar to its proper position, but whether they would be able to do so was, he said, another matter. They were experiencing the same difficulty as that Society met with in obtaining adequate sums of money for their purpose. The present were difficult times for acquiring money, and only 13,000*l.* out of the 15,000*l.* originally needed for the work they had undertaken had been subscribed, and he was sorry to say that at a very moderate estimate they would want at least 10,000*l.* more if the western tower, as well as the other parts of the cathedral, was to be put into a state of safety.

Lord Northbourne briefly acknowledged the Dean's welcome and the proceedings in the chapter-house terminated.

Canterbury Cathedral.

The cathedral was inspected under the leadership of Mr. St. John Hope. He conducted the party over the course followed by Erasmus on the occasion of his visit prior to the Dissolution and the demolition of the shrine, passing first from the nave to the south transept and thence in turn to the martyrdom, the crypt, the south aisle of the choir, the choir itself and the upper platform. He called attention, among other things, to the iron railings or screens which exist at different parts of the building, and pointed out that they represented old enclosures. They were therefore important as part of the history of the cathedral, and he hoped no one would ever agitate for their removal. The floors also were most important and should not be tampered with. With regard to the choir, Mr. Hope remarked that whether they admired the architecture or not, there could be no doubt that for dignity, spaciousness and general magnificence this part of the cathedral was very hard to beat, not only in this country, but also in Europe. He pointed out the original position of the high altar, and said he was delighted to hear what the Dean had said that morning as to the advisability of bringing it back to its proper place and of removing the archbishop's seat to the position it occupied in the days of Anselm. In the floor of the upper platform, Mr. Hope pointed out, were the stones which formed the steps of the shrine of St. Thomas. Conspicuous objects were the tombs of the Black Prince and Henry IV. With regard to the objects hanging over the former, he was convinced that they were merely the undertaker's furniture, and that they were never worn and probably never seen by the prince himself. On the tester or flat canopy over the tomb of Henry IV. the word "*Sovereign*" several times repeated was pointed out by Mr. Hope, and he expressed his belief that the "*S*" in this word was the origin of the "*SS*" chain which had puzzled antiquarians for so many years. The question of the identity of the bones which were held to be those of St. Thomas was touched on by Mr. Hope. The remains, he said, were exactly what they would expect from all they knew of Beckett's stature, while the skull showed a cleavage such as no doubt was caused by the sword blow by which the archbishop was killed.

At the end of the visitors' tour of inspection Mr. Hope was heartily thanked by the Dean for his able guidance and interesting description of the cathedral.

Before leaving the cathedral precincts the visitors, in two parties, were kindly entertained to tea, one party proceeding to the deanery as the guests of Dean Wace and the other going to the residence of the Archdeacon, Bishop Walsh.

Canterbury Churches.

On the second day there were alternative programmes. One party (the larger of the two) proceeded by brakes to Westgate Tower, the Church of Holy Cross, St. Nicholas Hospital, Harbledown; the Black Prince's Well, and St. Dunstan's Church, while the other went afoot to the Royal Museum, Eastbridge Hospital, the Grey Friars, St. Mildred's Church and the Poor Priests' Hospital.

Mr. St. John Hope described St. Nicholas Hospital for lepers at Harbledown. The hospital was founded in 1084, presumably by Archbishop Lanfranc. Of the original Norman building only two arches now remain, but in addition to these there are fourteenth-century windows well worthy of attention. The last of the lepers there, Mr. Hope stated, died in 1674.

St. Dunstan's Church possesses a very beautiful arcade of the Perpendicular period, and a fact of interest in connection with the church is that the head of Sir Thomas More is buried in the Roper vault. The relic was brought to Canterbury by Margaret Roper, a daughter of Sir Thomas, whose idea in securing it when it was set up on a pike on London Bridge (in accordance with custom after the execution), was that it should be buried with her on her death. Margaret Roper was buried at Chelsea, but the head, contrary to her instructions, was left at Canterbury, and remains there to this day. Mr. St. John Hope, speaking of the architecture of the church, said that from a casual acquaintance with it he was inclined to think it was of Saxon origin like that of St. Mildred's.

Eastbridge Hospital was founded in 1180 for the benefit of poor pilgrims visiting the shrine of St. Thomas, a feature of interest being the crypt. Of the Franciscan house known as the Grey Friars, only a small building now remains.

This establishment dates back to 1270. Traces of Saxon work in the outer walls of St. Mildred's Church are plainly visible, notably in the south-western corner. Among the monuments in the church is a tablet in memory of Thomas Cranmer, who was a grandson of the archbishop of that name, while a small niche is to be seen on one of the pillars of the arcade on the north side, which is supposed to have a connection with Caxton, to whom we owe the introduction of the printing press into this country.

At St. Augustine's College the members were received by the sub-warden (the Rev. R. J. E. Boggis) in the unavoidable absence of the warden (Dr. Murray). Mr. Boggis gave a lucid account of the history of the monastery which once existed here. They traced it back, he said, through thirteen centuries to the time of Augustine himself. When he arrived at the end of the sixth century he brought with him forty companions, who were commonly described as monks. That was not quite correct, for some were regulars and some were seculars. First of all he founded the cathedral on land given him by King Ethelbert, and there he fixed the habitation of his secular clergy; but it was not to be expected that the regulars, or monks, would dwell together with the seculars, and so King Ethelbert gave him another tract of land on which to erect other buildings. The cathedral was founded in 597, and St. Augustine's monastery was founded in the following year. Mr. Boggis pointed out the positions occupied by the original conventual buildings, of which, he said, nothing now remained except, perhaps, a piece of wall, which might be original work. The wall of the great abbey church still existing was Norman. Within the site of that church the first ten archbishops were buried, as also were King Ethelbert, Queen Bertha and other kings and queens of later times. Mr. Boggis conducted the party round the buildings of the college, and gave an account of the foundation of this institution by the purchaser of the property, the late Mr. Beresford Hope. Among other facts of interest mentioned by the speaker in his account of the history of St. Augustine's was that King Henry VIII. founded a residence for himself there after the dissolution of the monastery. Anne of Cleves was received there when she came to see her future spouse for the first time. Later, good Queen Bess stayed there a fortnight; Charles I. entertained his bride at St. Augustine's, and Charles II. stopped there at the time of the Restoration.

Leaving the college buildings the party proceeded to the ruins of the chapel of St. Pancras and other buildings of which walls have been uncovered in the abbey field. The remains were described by Mr. St. John Hope. With the exception of the Roman church discovered some years ago at Silchester, and part of St. Martin's Church, St. Pancras was, he said, the oldest church of which any trace had been found in this country. The church belonged to a very early type indeed, the materials used throughout being smashed Roman remains from some building which had probably existed in the neighbourhood, which also yielded certain stone pillars. There was a triple chancel arch, only found in the very earliest church, such as Lyminge, built in 627, the little church built by Ethelbert in 604, of which some remains had been found at Rochester Cathedral and Reculver. The east end of St. Pancras was originally apsidal in form, though altered later. This chapel, he had no doubt, served St. Augustine and his monks while the great abbey church was being built. The original plan was altered, he pointed out, before the building had proceeded very far, three small chambers which were called porches being added. Each of these contained an altar.

Mr. St. John Hope next described the remains of the great church of St. Peter and St. Paul. How long the church of St. Augustine stood they did not know; but immediately to the east of it Ethelbert's successor, Eadbald, built another in honour of the Blessed Virgin. Thus there were three churches all in a row, that of St. Peter and St. Paul, that of Our Lady and that of St. Pancras. The Abbot Scotland cleared away the whole of Eadbald's church to erect the building which he had planned, with an apsidal termination and a great crypt with three chapels below; and to Scotland they owed all that now remained on that site, with the exception, possibly, of one fragment of Eadbald's church. Quite late in the fifteenth century there was an extension of Scotland's church eastwards, but nothing now remained of the superstructure of either building.

Concluding, Mr. Hope made an appeal for further funds to enable the trustees of the property to complete their investigations. He said that 300*l.* was required, and men-

tioned that three sums of 10*l.* were promised by members of the Society towards the amount on the previous day.

St. Martin's Church.

Progress was next made to St. Martin's Church. Here the Rev. G. M. Livett acted as guide. Both from the point of view of archæology and history the church, he remarked, was full of interest. St. Martin's, indeed, was a battle ground of archæological questions. There was no doubt a church on that spot, or the remains of a church, in which Augustine celebrated the holy rites. The Venerable Bede, the historian of the seventh century, told them that a church was built there in the time when the Romans were in the land, and that it was dedicated to St. Martin. The great question was whether any part of the church in which St. Augustine himself worshipped, and in which it was said King Ethelbert was baptized, now remained. There were two distinct kinds of architecture to be noted—the architecture of the nave and the architecture of the chancel. The chancel was composed almost entirely of brick, roughly put together, very much like that of St. Pancras, and there could be little doubt, he thought, that the two churches were of much the same date as other churches they knew of which were built in the seventh century, viz. Lyminge, Reculver and the church of which they had the foundations at Rochester. He did not think, however, that the chancel arch there was triplet, because there was hardly room there for that arrangement. The nave was built of Kentish rag, with a binding course of Roman brick inserted at intervals. That style of building was put up in the Saxon period, Roman material being at hand. The question was whether the nave was built prior to the chancel, or the chancel prior to the nave. He had spent a whole week in examining the building, and he was of opinion that the chancel, to which there were later additions, was the earlier of the two portions of the church. Mr. Livett indicated the evidence for his belief, but he admitted that two openings in the wall at the west end of the nave were undoubtedly Romanesque, a fact which suggested that the nave was built in pre-Saxon days. They must, Mr. Livett added, keep their minds still open on the whole question, because it had not yet been completely thrashed out.

Mr. St. John Hope said he differed from Mr. Livett, his opinion being that the nave was the older part of the church. The evidence for his opinion existed in the two openings in the wall at the west end, where he found alternate slabs of stone and tile buried in pink mortar, similar to the work of the so-called pharos, or lighthouses, at Dover, which was undoubtedly Roman. The nave then was, as he held, of very late Roman and pre-Saxon construction.

The third day's proceedings took the members to the villages of Ickham, Wingham, Barfreston and Patricbourne.

Ickham Church.

The Rev. Canon Nisbet, the rector, gave a description of Ickham Church. The original structure was, he said, according to Mr. Caroe, erected in the first half of the twelfth century, and probably consisted of a nave, western tower, transepts and apse, or possibly three apses. The original church ended where the present chancel began. According to Scott Robertson there was a church here in 1086, but the western door of the tower was the oldest relic, and that could be scarcely considered of earlier date than the twelfth century. The church was restored when the aisles were added to the nave, about the end of the twelfth century. There were four bells, and, besides the names of the churchwardens, there was inscribed on them the following prayer:—"Lord Jesus Christ, receive each soul for whom this bell shall toll." The register of the church dated from 1557, and in 1670 there was an entry of 5*l.* 18*s.* 3*d.*, "collected towards the redemption of Englishmen captured and reduced to slavery by the Turks." In the south transept there was the tomb of a knight of about the middle of the fourteenth century, but there was a doubt as to whose tomb it was. The ancient chest placed in the north transept had a semicircular lid, hollowed out of the trunk of a single tree. It was originally a chest in which was kept the belongings of the chantry, but this was abolished 400 years ago.

Wingham Church.

Wingham Church was briefly described by the Rev. J. M. Fox, B.A., the rector. The only remains of the first stone church, which existed in the tenth and eleventh centuries, were in the south wall and the chancel, where the clergy seats had been, but the floor had not been raised.

The chancel was largely built in the Decorated style, but the nave was of the Perpendicular period. Archbishop Peckham made the church a collegiate church in 1282. He believed much damage was done to the building at the Reformation, and he was afraid he must say of the beauties of its architecture that "the glory has departed." The church lost all its properties when Henry VIII. disestablished the monasteries, and whatever effect disestablishment and disendowment might have in the country, it would make no difference at Wingham, for the church was already disendowed.

The Rev. G. M. Livett called attention to the gravestone of 1271 in the chancel, remarking that there was not another in existence in the country.

Barfreston Church.

At Barfreston, the magnificent church, with its fine doorway built in the Norman style, was inspected. The Rev. G. M. Livett, in describing this church, said it was unique in the wealth and the peculiar method of the use of its ornament. The church was restored in 1840, but Hussey gave a most clear account of what was done at that time, so that they were able to follow its previous history, and he hoped all members of the Society would, in cases of restoration, arrange in the same way to give particulars of the new works carried out and the old work supplanted. The church was very small, 24 feet by 16 feet 8 inches, and it dated from late in the twelfth century. He called attention to the zigzag work over the chancel arch and to the dog-tooth decoration, supposed to be thirteenth-century ornament, round the sides. It was the wealth and richness of the ornament which caused him to believe the columns came from elsewhere and were not originally intended for the church. Nowhere else was there to be seen a church with a string-course which had so many different kinds of patterns, and the work generally was suggestive that the materials intended for, or perhaps used in, some other building near by, had been brought here and built up into the church. As an instance he called attention to the wheel window at the east end, where one of the mullions was of wood, the others being of stone, and his theory was that this wooden mullion was made in place of a stone one which had been broken. This, in his opinion, showed that the stone was not cut on the spot. Hussey had hazarded the opinion that the materials came from Hackington, where in 1185 Archbishop Baldwin had projected the building of a monastery, which was suppressed at his death the same year.

Patricxbourne Church.

On arrival at Patricxbourne the party were entertained to tea at the Rectory. Afterwards the Rev. Hubert Knight gave a short description of the church, the most attractive feature of which is the Norman doorway on the south side. The doorway is highly decorated, and above the arch is a niche of 1170 date, although the door itself is supposed to be of a later time.

The Rev. G. M. Livett explained that an earlier church than the present one is mentioned at Patricxbourne in Domesday Book, but the existing building was erected in the latter half of the twelfth century. There was only one other example in the country of the porch and tower being in one.

The Rev. Hubert Knight mentioned that the glass in the chancel windows was collected abroad by the Marquis of Cunningham, and was, he believed, Flemish, but he questioned whether it was all ecclesiastical.

Mr. Livett said the chancel arch was apparently of 1250 date, and it was possible that here they had a singular instance of a church built at that date with only one narrow aisle.

From Patricxbourne the members drove back to Canterbury and dispersed.

IONA CATHEDRAL.

A CORRESPONDENT of the *Scotsman*, in an article on "The Isle of Desolation," gives the following description of the present state of the cathedral:—

Iona is all of the past. Its golden age lies far behind. The present is but a desolation. One mighty spirit broods over it all, and the voyager who stays but an hour departeth meek and humble. For how poor and how wretched is the present viewed in the light of that radiant past. There above the shore, in the hearing of the never-resting sea, rises four-square to all the winds the great sanctuary which

the generations of old reared in honour of the mighty dead and to the glory of God. They who laboured at the work built not for a day. While the darkness brooded over the rest of Caledonia, here the hand of the artist wrought and impressed on the hard stone the visions of beauty which haunted him. And the west wind blowing from the sea passed on to the mainland consecrated by the music of litanies and chanted Psalms. An age of poverty did this—erected those vaulted aisles and mighty arches, those cloisters and chapels. Yes, but we in an age of abounding prosperity cannot find it in our hearts to roof them and preserve them from destruction. Truly it is humbling to stand there and think—think how abounding faith out of its poverty did build; how the zeal of the reformers left the great temple to become the nesting-place of the owls and the bats; how in the roofless fane for generations the effigies of abbots and chiefs, and the delicate tracery on pillar and window were slowly defaced by driving rain and hailstone; and how, when through the pious deed of the late Duke of Argyll, the sanctuary is again restored to the Church of Scotland and to the people of Scotland, that the Church and the nation might build again the waste place. After some years it stands there still, neither a ruin nor yet restored, neither wholly neglected nor yet cared for, neither a place made worthy of worship nor yet wholly without the rites of worship. The nave of the cathedral is still grass-grown and crumbling; the wall of the nunnery is still propped up with unsightly beams; the chancel is still chaotic and unfurnished; the cloisters are still crumbling in decay—for an age of poverty did rear that which an age of wealth cannot provide the means to re-roof. He who visits Iona will see his own generation lying in the shadow. He may approach the sacred isle self-satisfied; he will leave it humbled.

If any spot should be dear to a nation, so dear that nothing should be counted too great to do it honour, then the very dust of Iona should be precious to Scotland. There its history did dawn, there the foundation of its civilisation was laid, there the things that we know had their beginning, there the seed of all that is great and good among us was first sown in our barren soil. It comes to us all, as we stand on the beach where the indomitable man landed, by the great boulder his feet first touched and which bears his name. But his shrine stands there half-roofed, witnessing to the manner in which we cherish the memories of those to whom we owe our very being. Truly that crumbling sanctuary condemns our nation. Here for centuries the nation garnered its honoured dead, and whoever wrought deeds of daring or chivalry; thither up the narrow sound the dark galleys brought their dead, and with the sound of weeping they were laid in Reidhlig Orain. There forty-eight kings that ruled once in Scotland (not all kings of but in Scotland), four kings of Ireland, eight kings of Norway and one king of France sleep together in peace, their battles all forgot. Last of all was brought thither the good Duncan, that his resting-place might compensate his woe. The man who can stand there and contemplate Iomaire-nar-Righ—the Ridge of the Kings—without a stirring of the heart is not to be envied. "Are ye become as we, are ye like unto us?" is the thought that rises in the heart. In their day nations moved at their will, and now their graves are nameless on this crowded ridge. (A century hence, what of us, O gentle reader?) For five centuries a nation in the making sent forth its galleys, carrying thither "their dark freight, a vanished life;" chiefs came hither to be blessed; here the first king in Scotland was ordained and crowned (the first, at least, of whom we know); from hence the serried peaks of the Coolins to the north and Cruachan to the east caught the gleam of the light and flashed it over the land. And to-day a nation to whose care this shrine has been committed suffers it to stand half-roofed, eloquent with the imploring beauty of decay, a monument of national degeneracy.

A Committee has been appointed to commemorate the important work accomplished at Manchester Cathedral by the late Dean Maclure. Among his improvements may be mentioned the rearrangement of the churchyard, the addition of new buildings and the opening of the Jesus Chapel, now used as the Consistory Court. The proposal is to lay down a large brass, with a full-length portrait of the Dean and a suitable inscription. Mr. Basil Champneys, architect of the recent additions to the cathedral, has volunteered to assist the committee in the settlement of the design and in selecting a suitable position for the memorial.

NOTES AND COMMENTS.

A FEW weeks ago, it will be remembered, the old parish church of Preston, near Brighton, suffered a large amount of injury from a fire. A report has been prepared on the restoration by Mr. P. M. JOHNSTON. It appears that the tower arch had been considerably injured, but the most serious damage was the destruction of the nave roof. Mr. JOHNSTON proposes to renew it exactly upon the old designs, and to erect a plain and solid roof of the thirteenth-century type. The gallery, it is suggested, might well give place to something more in keeping with the ancient church. If this were done the light could be obtained from the western windows, and the tower arch would not be hidden. The tower floors will now be replaced and the bell cage reinstated. The old paintings ranked amongst the most interesting in Sussex. Mr. JOHNSTON proposes to deal with them in the most careful way in order that their peculiar character may be clearly suggested. The vicar and vestry were satisfied with the report, and requested Mr. JOHNSTON to prepare plans, specifications and quantities for the restoration. The church was insured, but the money has not as yet been paid.

A RECOMMENDATION has been given by the French Budget Commission which may puzzle people unacquainted with French ways. According to it the bestowal gratuitously of any article produced in the national manufactories is to be henceforth prohibited. As in other continental States, there are several national manufactories in France. But it is believed that the proposal refers only to the beautiful pottery which is made at Sèvres. It is well known that examples of the art are presented to kings and great people who have displayed friendship towards France. It is to be assumed the new law would not in any way affect similar gifts. But, in addition, large numbers are presented to Frenchmen. The ambition to be enrolled in the Legion of Honour has been the cause of many public acts which have been advantageous to France. But once entered, promotion becomes slow. Frenchmen like to be rewarded in some way or another, and among the varied products of Sèvres it is always possible to find something which will be accepted as an equivalent for political and other services. Ministers while in office are expected to give entertainments. A singer from the Opera House, an actor or a danseuse would profess to be honoured to take part in them. But it is understood that they are not to receive *louis* for their services, and are to be satisfied with a present from Sèvres instead. In the majority of cases the presents do not become heirlooms, for they are sold to the highest bidder. When it is necessary to comply with such conditions, the artists and potters of Sèvres cannot be expected to do more than to accept the conditions of the market and to produce work that, if showy, will be cheap. Indeed, the wonder is that so excellent a standard has been preserved. If the law is accepted, fictile art may be the gainer, but much dissatisfaction must arise unless some other kind of reward is discovered—such as a supplementary Legion of Honour.

WE sometimes hear of unknown benefactors who bestow gifts on institutions or individuals. But such persons should be careful in the arrangements they make whenever they wish to apply their money to the laudable purpose of building. In 1902 a lady made her will, which included the following bequest:—"I give the sum of 20,000*l.* towards the rebuilding and equipment, to the satisfaction and under the direction of my executors, of the Birmingham and Midland Hospital for Women, the enlargement of which has been recommended, and which charity I have long desired to benefit." Such is the secrecy in such matters that the lady and her advisers were not aware of the arrangements for rebuilding the hospital, nor were the hospital authorities aware of the money which they could apply. Three years afterwards she died. At that time the

building was nearly complete, with the exception of plastering, painting, furnishing and equipment. A dispute arose over the terms of the will. Mr. Justice KEKEWICH held that the gift was for a specified object. If the words "to the satisfaction of my executors" stood alone, he thought it would be competent for the executors to say that what had been done in the matter of rebuilding and equipment, though without their having been consulted or made acquainted with it, might be paid for to the extent of 20,000*l.*, less duty, out of assets. But the testatrix provided that the rebuilding and equipment, towards which the 20,000*l.* was to be devoted, must be done under the direction of the executors. That did not mean that the executors must act as clerks of works or superintending architects, but he thought that it postulated general guidance or control. On the hospital 37,915*l.* had been expended before the death of the testatrix. After a long discussion it was decided that the case should stand over until next sittings. But Mr. Justice KEKEWICH suggested that it would be in the interest of all parties if the hospital would accept one-half the bequest, the remainder being handed over to the next-of-kin. The litigation shows the folly of making people responsible for the direction of works who, although trustworthy as executors, may be ignorant of building matters.

THE subject assigned this year in the competition among architectural students for the Prix de Rome was "Un Collège de France." It was to express by its exterior aspect, which was to be at once monumental and elegant, the character of the teaching which the State so liberally dispenses in literature, the history of art and in science. It was to contain among its features a *cour d'honneur*, in which was to be placed a statue of FRANCIS I., an amphitheatre, a library, classrooms, &c. The coveted prize has been awarded to M. BONNET, whose design has the merit of avoiding all revolutionary ideas. M. ABELLA obtains the premier second Grand Prix and M. MOREAU the deuxième second Grand Prix. As is usual there is dissatisfaction with the awards. But it must be allowed that the present year does not seem to be productive of great architects if the whole of the designs are to be taken as a test.

THE removal of a house from one part of a street or town to another is not unusual. But to transport a very large mansion for a distance of about 1,200 miles, and at a cost of at least 6,000*l.*, is not an everyday operation. Mr. J. M. LONGYEAR owned a stone mansion which overlooked Lake Superior at Marquette, in Michigan. He resolved to remove to Brookline in Massachusetts, and decided that the house should accompany him. It was not removed *en masse*; the parts were taken down in sizes that could be lifted by hand derricks, and the carved moulded work was protected by crates. No less than 190 railway freight cars or trucks were required. The operations began on August 1, 1903, and the house was occupied by the owner in its new position on April 15, 1906. The removal cost about one-tenth of the original contract price for the house. The operations were under the charge of Mr. D. F. CHARLTON, of Marquette. So costly an experiment testifies to the value of associations, and henceforth the Americans cannot be accused of having no domestic sentiment.

ILLUSTRATIONS.

10 LOWTHER TERRACE, GLASGOW.

BORO' ARMS, WALSALL.

NEW OFFICES FOR THE HEARTS OF OAK BENEFIT SOCIETY, EUSTON ROAD, N.W.—ENTRANCE HALL—SECOND-FLOOR STAIRCASE AND LIFTS.

CATHEDRAL SERIES.—ST. DAVIDS: THE CHOIR AND PARCLOUSE SCREEN FROM N.E.—THE LADY CHAPEL.



The Architect: 3rd 1906.

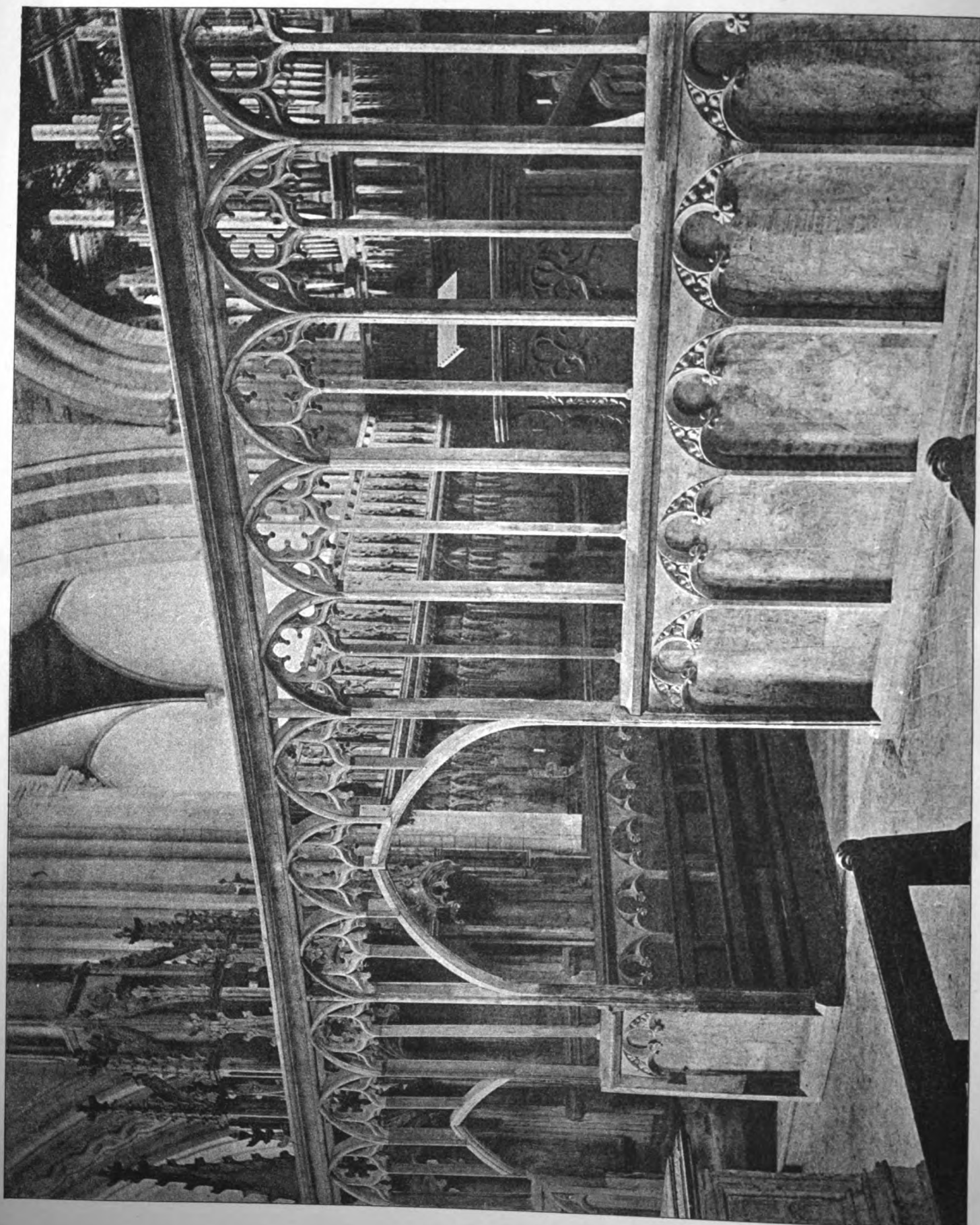


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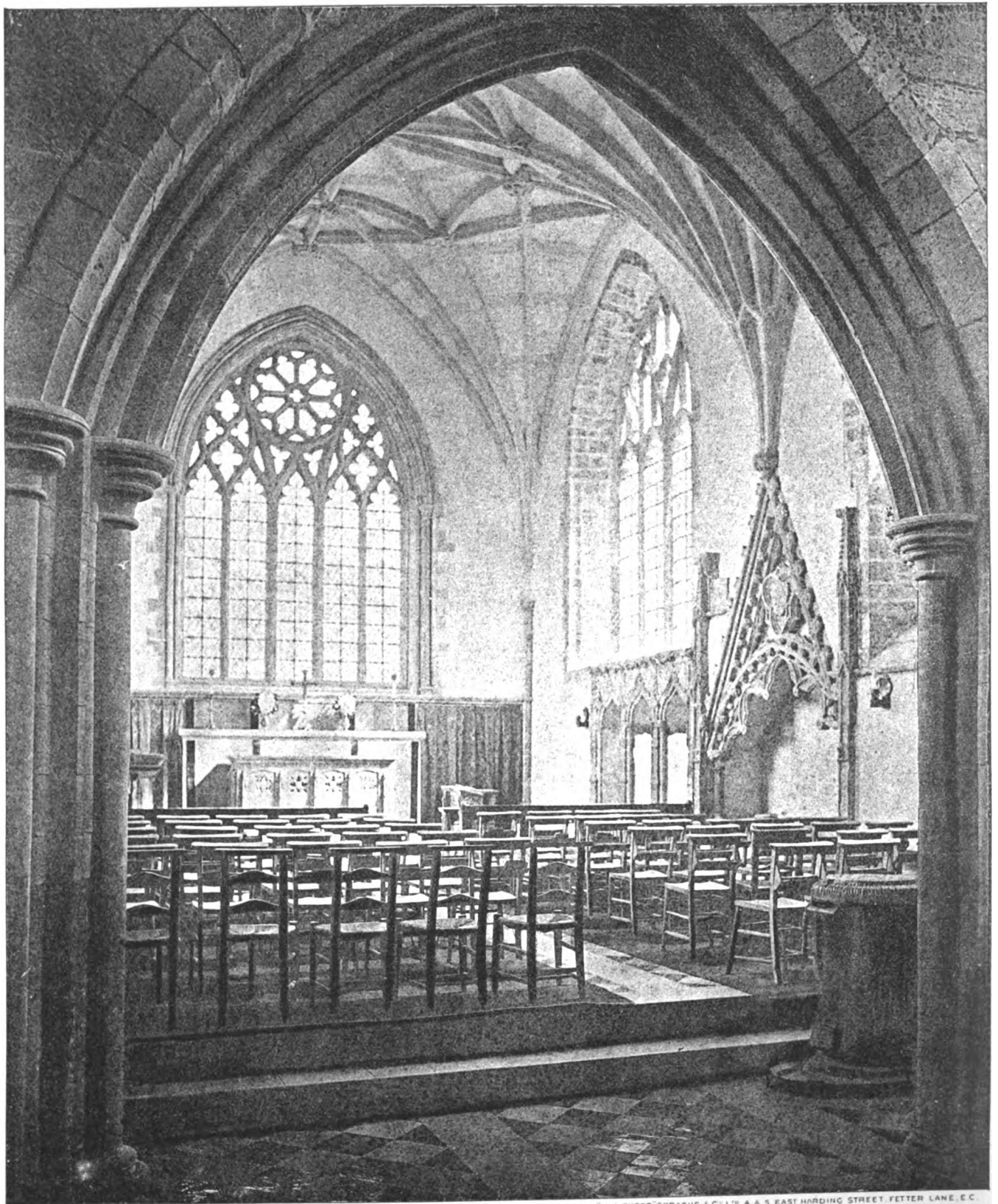




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CATHEDRAL SERIES, No. 568.—ST. DAVID'S: THE CHOIR AND PARCLOSE SCREEN, FROM N.E.

The Architect, Aug. 3rd 1906.

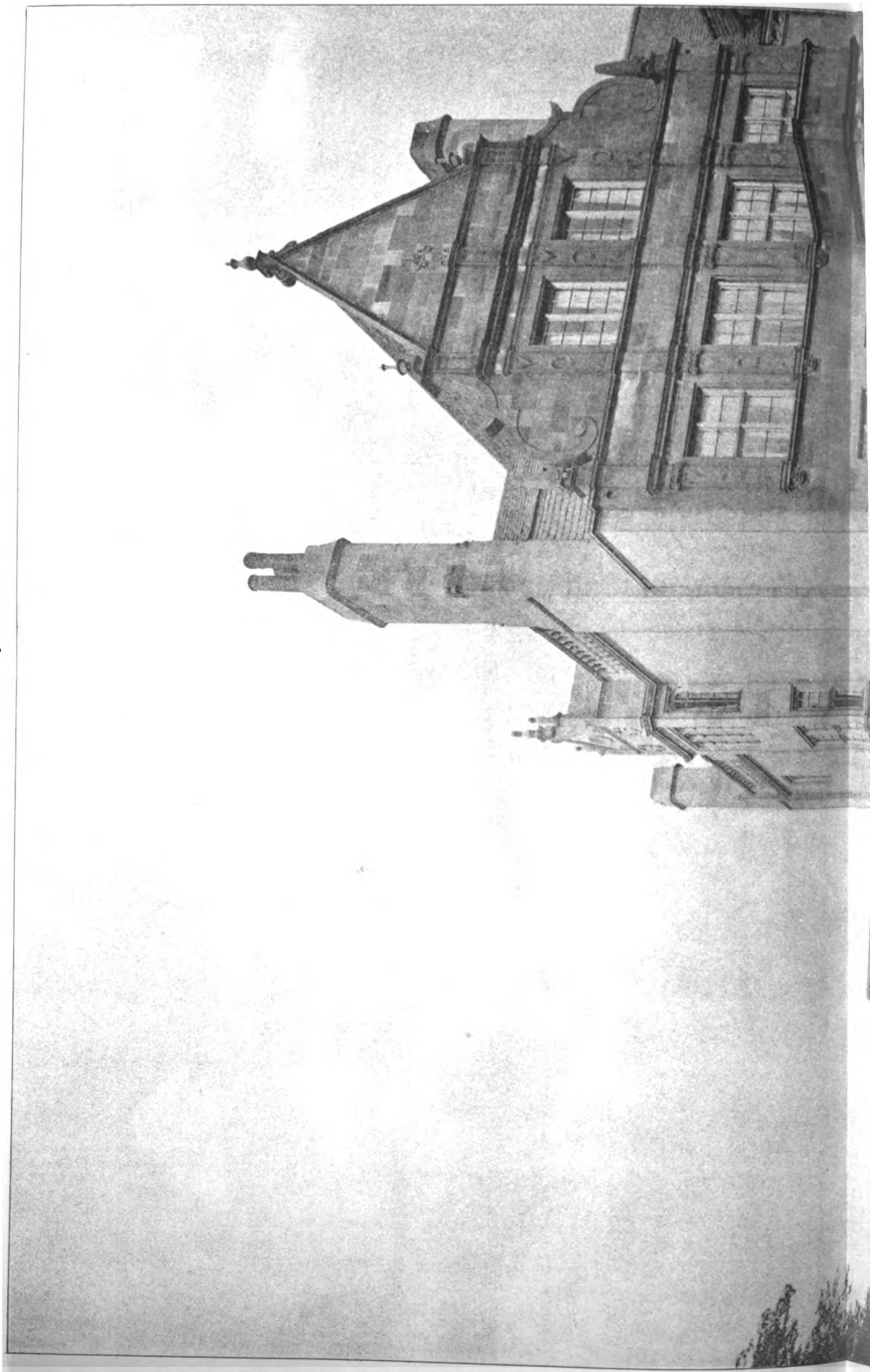


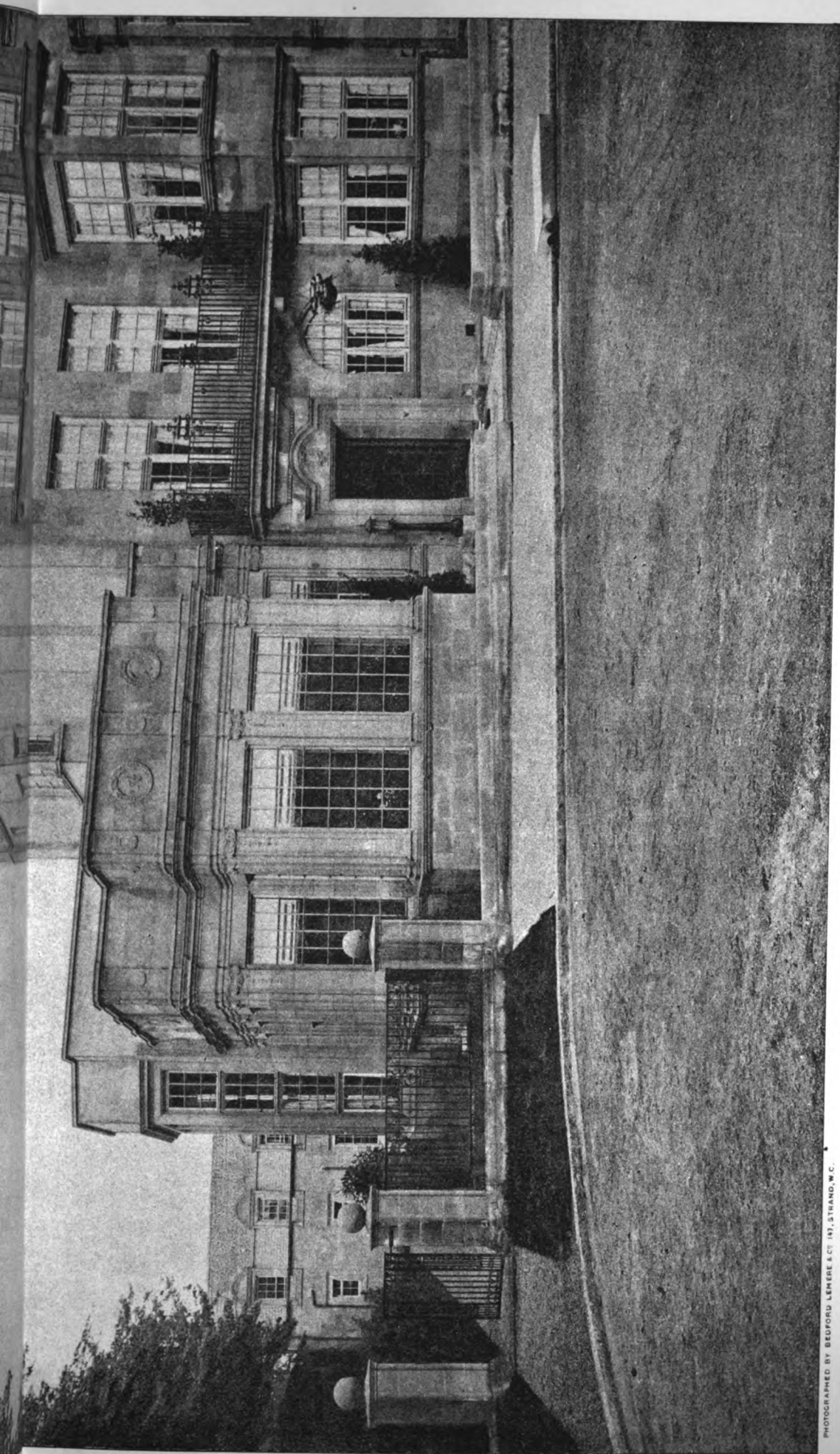
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CATHEDRAL SERIES, No. 569.—ST. DAVID'S: THE LADY CHAPEL.



The Architect, Aug. 3rd 1906.



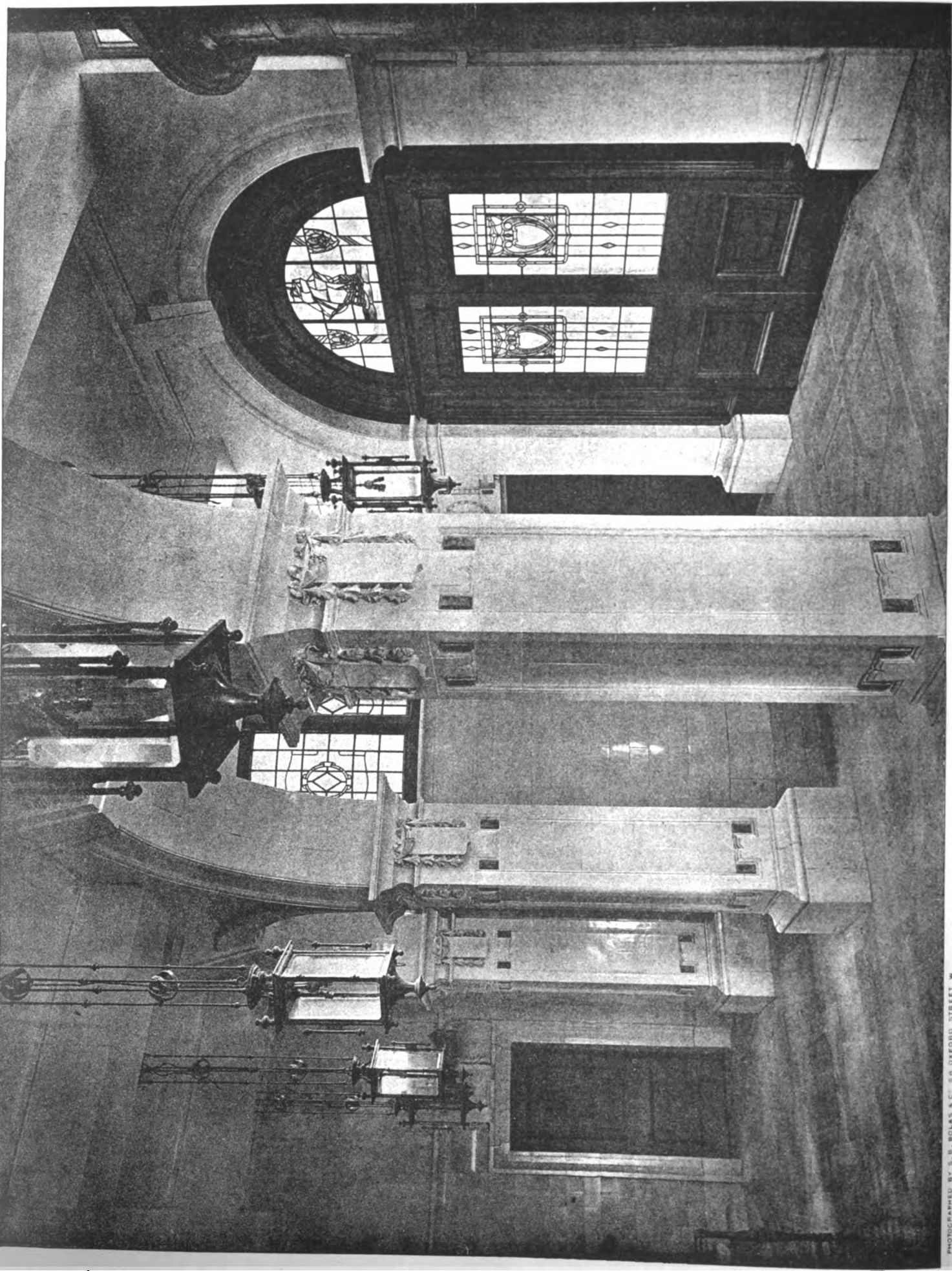


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10 LOWTHER TERRACE, GLASGOW.
JAMES MILLER, F.R.I.B.A., Architect.

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NEW OFFICES FOR THE HEARTS OF OAK BENEFIT SOCIETY, EUSTON ROAD, N.W.: ENTRANCE HALL.
Messrs. ESSEX, NICOL & GOODMAN, Architects.

PHOTOGRAPHED BY W. B. BOLAS & C^o 56 OXFORD STREET, W.

The Architect, Aug. 3rd 1906.



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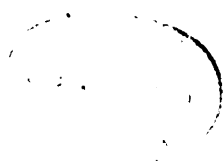
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NEW OFFICES FOR THE HEARTS OF OAK BENEFIT SOCIETY, EUSTON ROAD, N.W.

SECOND FLOOR STAIRCASE AND LIFTS.

Messrs. ESSEX, NICOL & GOODMAN, Architects.

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THE PROGRESS OF SCIENCE.

ON Wednesday the annual meeting of the British Association was commenced. The president, Professor E. Ray Lankester, M.A., LL.D., D.Sc., F.R.S., F.L.S., Director of the Natural History Departments of the British Museum, delivered the opening address. He said:—It is, first of all, my privilege to thank you for the distinguished honour you have done me in electing me President of this great scientific Association—an honour which is enhanced by the fact that our meeting this year is once more held in the venerable city of York, in which seventy-five years ago the British Association for the Advancement of Science held its first meeting.

It is a great pleasure to me to convey to the Lord Mayor and the dignitaries and citizens of York your hearty thanks for the invitation to meet this year in their city. It seems to have become a custom that the Association should be invited at regular intervals to assemble in the city where it took birth and to note the progress made in the objects for the furtherance of which it was founded. A quarter of a century ago we met here under the presidency of that versatile leader in public affairs—Sir John Lubbock, now Lord Avebury. That occasion was the jubilee—the fiftieth anniversary—of the Association.

Lord Avebury on that occasion gave as his presidential address a survey of the progress of science during the fifty years of the Association's existence. He had a wonderful story to tell, and told it with a fulness which was only possible to one of his wide range of knowledge and keen interest in the various branches of science. If I venture on the present occasion to say a few words as to the great features in the progress of our knowledge of nature during the last twenty-five years, it will be readily understood that the mere volume of new knowledge to be surveyed has become so vast that a full and detailed statement such as that which Lord Avebury placed before the Association at its jubilee is no longer possible in a single address delivered from the President's chair.

Let me ask you, before we go further, to take for a few moments a more personal retrospect, and to think of the founders of this Association, then of the great workers in science who were still alive in 1881, when last we met here, and have since gone from among us, leaving their great deeds and their noble enthusiasm to inspire now and for all future time those who have vowed themselves to the advancement of science in this realm of Britain.

There must be some here who had the privilege of personal acquaintance with several of the men who founded this Association in York seventy-five years ago. I myself knew Professor John Phillips, Sir Charles Lyell, Sir Roderick Murchison, Sir David Brewster, Dr. Whewell and Mr. Harcourt of Nuneham. All these fathers of our Association had passed away before our last meeting in York. And now, in the quarter of a century which has rolled by and brought us here again, we have lost many who took an active part in its annual meetings and were familiar figures in the scientific world of the later Victorian period. Huxley and Tyndall, Spottiswoode and Cayley, Owen and Flower, Williamson and Frankland, Falconer and Busk, Prestwich and Godwin Austen, Rolleston and Henry Smith, Stokes and Tait and many others are in that list, including one whose name was and is more often heard in our discussions than any other, though he himself never was able to join us—I mean Charles Darwin. Happily some of the scientific veterans of the nineteenth century are still living, if not with us in York. Sir Joseph Hooker, who visited the Antarctic with Ross in 1839, is still hale and hearty, and so are Alfred Russel Wallace, Lord Kelvin, Sir William Huggins and many others who were already veteran leaders in scientific investigation when last we visited York; they are still active in thought, observation and experiment.

In attempting to give an outline of the advancement of science in the past twenty-five years I think it is necessary to distinguish two main kinds of advancement, both of which our founders had in view. Francis Bacon gave the title "Advancement of Learning" to that book in which he explained not merely the methods by which the increase of knowledge was possible, but advocated the promotion of knowledge to a new and influential position in the organisation of human society. His purpose, says Dean Church, was "to make knowledge really and intelligently the interest, not of the school or the study or the laboratory only, but of society at large." This is what our founders also intended by their use of the word "advancement." So that in surveying the advancement of science in the past

quarter of a century we of the British Association must ask not only what are the new facts discovered, the new ideas and conceptions which have come into activity, but what progress has science made in becoming really and intelligently the interest of society at large? Is there evidence that there is an increase in the influence of science on the lives of our fellow-citizens and in the great affairs of the State? Is there an increased provision for securing the progress of scientific investigation in proportion to the urgency of its need, or an increased disposition to secure the employment of really competent men trained in scientific investigation for the public service?

After considering various branches of science as they appear to a naturalist, the President spoke of the duties of Government to encourage special studies.

Whilst I have been able, though in a very fragmentary and incomplete way, to indicate the satisfactory and, indeed, the wonderful progress of science since this Association last met in York, so far as the making of new knowledge is concerned, I am sorry to say that there is by no means a corresponding "advancement" of science in that significance of the word which implies the increase of the influence of science in the life of the community, the increase of the support given to it, and of the desire to aid in its progress, to discover and then to encourage and reward those who are specially fitted to increase scientific knowledge, and to bring it to bear so as to promote the welfare of the community. I am speaking on a privileged occasion to a body of men who are met together for the advancement of science, and I claim the right to say to them, without offence to the representatives of institutions which I criticise, what is in my mind.

It is unfortunately true that the successive political administrators of the affairs of this country, as well as the permanent officials, are altogether unaware to-day, as they were twenty-five years ago, of the vital importance of that knowledge which we call science, and of the urgent need for making use of it in a variety of public affairs. Whole departments of Government in which scientific knowledge is the one thing needful are carried on by ministers, permanent secretaries, assistant secretaries and clerks who are wholly ignorant of science, and naturally enough dislike it since it cannot be used by them, and is in many instances the condemnation of their official employment. Such officials are, of course, not to be blamed, but rather the general indifference of the public to the unreasonable way in which its interests are neglected.

A difficult feature in treating of this subject is that when one mentions the fact that Ministers of State and the officials of the public service are not acquainted with science, and do not even profess to understand its results or their importance, one's statement of this very obvious and notorious fact is apt to be regarded as a personal offence. It is difficult to see wherein the offence lies, for no one seeks to blame these officials for a condition of things which is traditional and frankly admitted.

This is really a very serious matter for the British Association for the Advancement of Science to consider and deal with. We represent a line of activity, a group of professions which are in our opinion of vital importance to the well-being of the nation. We know that those interests which we value so highly are not merely ignored and neglected, but are actually treated as of no account or as non-existent by the old-established class of politicians and administrators. It is not too much to say that there is a natural fear and dislike of scientific knowledge on the part of a large proportion of the persons who are devoid of it, and who would cease to hold, or never have held, the positions of authority or emolument which they now occupy were scientific knowledge of the matters with which they undertake to deal required of them. This is a thorny subject, and one in which, however much one may endeavour to speak in general terms, it is difficult to avoid causing personal annoyance. Yet it seems to me one which, believing as I do that it is of most urgent importance, it is my duty as your President to press upon the attention of the members of the British Association. Probably an inquiry into and discussion of the neglect of science and the questionable treatment of scientific men by the administrative departments of Government, would be more appropriate to a committee appointed by the Council of the Association for this purpose than to the presidential address.

At the same time I think the present occasion is one on which attention should be drawn in general terms to the fact that science is not gaining "advancement" in public and official consideration and support. The reason is, I

think, to be found in the defective education, both at school and university, of our governing class, as well as in a racial dislike among all classes to the establishment and support by public funds of posts which the average man may not expect to succeed by popular clamour or class privilege in gaining for himself—posts which must be held by men of special training and mental gifts. Whatever the reason for the neglect, the only remedy which we can possibly apply is that of improved education for the upper classes, and the continued effort to spread a knowledge of the results of science and a love for it amongst all members of the community. If members of the British Association took this matter seriously to heart they might do a great deal by insisting that their sons and their daughters, too, should have reasonable instruction in science both at school and college. They could, by their own initiative and example, do a good deal to put an end to the trifling with classical literature and the absorption in athletics which is considered by too many schoolmasters as that which the British parent desires as the education of his children.

It is more agreeable to me not to dwell further on the comparative failure of science to gain increased influence and support in this country, but to mention to you some instances on the other side of the account. As long ago as 1842 the British Association took over and developed an observatory in the Deer Park at Kew, which was placed at the disposal of the Association by Her Majesty the Queen. Until 1871 the Association spent annually a large part of its income—as much in later years as 600*l.* a year—in carrying on the work of the Kew Observatory, consisting of magnetic, meteorological and physical observations. In 1871 the Association handed over the observatory to the Royal Society, which had received an endowment of 10,000*l.* from Mr. Gassiot for its maintenance, and had further devoted to that purpose considerable sums from its own donation fund and Government grant. Further aid for it was also received from private sources. From this observatory at last has sprung, in the beginning of the present century, the National Physical Laboratory in Bushy Park, a fine and efficient scientific institution, built and supported by grants from the State, and managed by a committee of really devoted men of science who are largely representatives of the Royal Society. In addition to the value of the site and buildings occupied by the National Physical Laboratory, the Government has contributed altogether 34,000*l.* to the capital expenditure on new buildings, fittings and apparatus, and has further assigned a grant of 6,000*l.* a year to the working of the laboratory. This institution all men of science are truly glad to have gained from the State, and they will remember with gratitude the statesmen—the late Marquis of Salisbury, the Right Hon. Arthur J. Balfour, Mr. Haldane, and others—as well as their own leaders—Lord Rayleigh, Sir William Huggins, and the active body of physicists in the Royal Society who have carried this enterprise to completion. The British Association has every reason to be proud of its share in early days in nursing the germ at Kew which has at length expanded into this splendid national institution.

I may mention also another institution which, during the past quarter of a century, has come into existence and received, originally through the influence of the late Lord Playfair (one of the few men of science who has ever occupied the position of a Minister of the Crown), and later by the influence of the Right Hon. Joseph Chamberlain, a subsidy of 1,000*l.* a year from the Government and a contribution of 5,000*l.* towards its initial expenses. This is the Marine Biological Association, which has a laboratory at Plymouth, and has lately expended a special annual grant, at the spontaneous invitation of His Majesty's Treasury, in conducting an investigation of the North Sea in accordance with an international scheme devised by a central committee of scientific experts.

One of the most solid tests of the esteem and value attached to scientific progress by the community is the dedication of large sums of money to scientific purposes by its wealthier members. We know that in the United States such gifts are not infrequent; they are rare in this country. It is therefore with especial pleasure that I call your attention to a great gift to science in this country made only a few years ago. Lord Iveagh has endowed the Lister Institute, for researches in connection with the prevention of disease, with no less a sum than a quarter of a million pounds sterling. This is the largest gift ever made to science in this country, and will be productive of great benefit to humanity. The Lister Institute took its origin in the surplus of a fund raised by Sir James Whitehead when

Lord Mayor, some sixteen years ago, for the purpose of making a gift to the Pasteur Institute, in Paris, where many English patients had been treated, without charge, after being bitten by rabid dogs. Three thousand pounds was sent to M. Pasteur, and the surplus of a few hundred pounds was made the starting-point of a fund which grew, by one generous gift and another, until the Lister Institute on the Thames Embankment at Chelsea was set up on a site presented by that good and high-minded man, the late Duke of Westminster.

Many other noble gifts to scientific research have been made in this country during the period on which we are looking back. Let us be thankful for them, and admire the wise munificence of the donors. But none the less we must refuse to rely entirely on such liberality for the development of the army of science, which has to do battle for mankind against the obvious disabilities and sufferings which afflict us and can be removed by knowledge. The organisation and finance of this army should be the care of the State.

It is a fact which many of us who have observed it regret very keenly, that there is to-day a less widespread interest than formerly in natural history and general science outside the strictly professional arena of the school and university. The field naturalists among the squires and the country parsons seem nowadays not to be so numerous and active in their delightful pursuits as formerly, and the mechanics' institutes and lecture societies of the days of Lord Brougham have given place, to a very large extent, to musical performances, bioscopes and other entertainments, more diverting, but not really more capable of giving pleasure than those in which science was popularised. No doubt the organisation and professional character of scientific work are to a large extent the cause of this falling off in its attraction for amateurs. But perhaps that decadence is also due in some measure to the increased general demand for a kind of manufactured gaiety, readily sent out in these days of easy transport from the great centres of fashionable amusement to the provinces and rural districts.

In conclusion, I would say a word in reference to the associations of our place of meeting, the birthplace of our Society. It seems to me not inappropriate that a society for the advancement of science should have taken its origin under the walls of York Minster, and that the clergy of the great cathedral should have stood by its cradle. It is not true that there is an essential antagonism between the scientific spirit and what is called the religious sentiment. "Religion," said Bishop Creighton, "means the knowledge of our destiny and of the means of fulfilling it." We can say no more and no less of science. Men of science seek, in all reverence, to discover the Almighty, the Everlasting. They claim sympathy and friendship with those who, like themselves, have turned away from the more material struggles of human life, and have set their hearts and minds on the knowledge of the Eternal.

WINCHESTER CATHEDRAL.

ADDITIONAL discoveries of the unsatisfactory condition of the fabric of Winchester Cathedral have been made. Immediately following one of the services last week a loud crash was heard in the building, and soon afterwards it was discovered that the pointing of a joint in one of the ribs of the vaulted ceiling over the south aisle of the nave had fallen. The debris was composed of slate, brick and oyster shells, which had been used as packing by the original builders. The cause of the fall is believed to have been the concussion occasioned by the work of relaying the roof with lead, but examination showed that a serious weakness existed. The outer walls have been torn away from the vaulting, which has caused fractures in the spandrels of the roof. This points to either a settlement of the building or the thrust of the vaulting forcing the outer wall outwards. The outer wall is 4 inches out of the perpendicular to the height of 15 feet. Temporary measures have been taken to meet the situation pending the reception of a report on the state of the south aisle. It is anticipated that the south wall will have to be underpinned and the whole of the pockets of the wall rebuilt. It is estimated that the cost of this work will be about 5,000*l.* The work at the east end is progressing favourably. With the appeal for 30,000*l.* at present made and the west front in a decayed condition, this fresh trouble has caused much concern to the cathedral authorities.

HUNSDON.*

THE derivation of the name Hunsdon is uncertain. Salmon says:—"This village hath a noble situation upon a rising ground of gravel overlooking the meadows. The 'don,' or hill, if not named from some Saxon owner 'Hones' don, may possibly be derived from 'hounds' don, the hill where the kennel was kept."

"Hund" is the name for dog in old Scandinavian as well as Teutonic languages, so there is some little justification for associating it with the Danish word "don," for hill.

In view of the proximity of Ermin Street it is not surprising to hear, as we were told this afternoon, that there are good reasons to believe that a Roman villa once stood here. There was a Roman bath only covered in recently, and the well made by the Romans to supply the bath still furnishes water for the use of Hunsdon House. Fragments of Roman pottery and tiles have been turned up in the gardens.

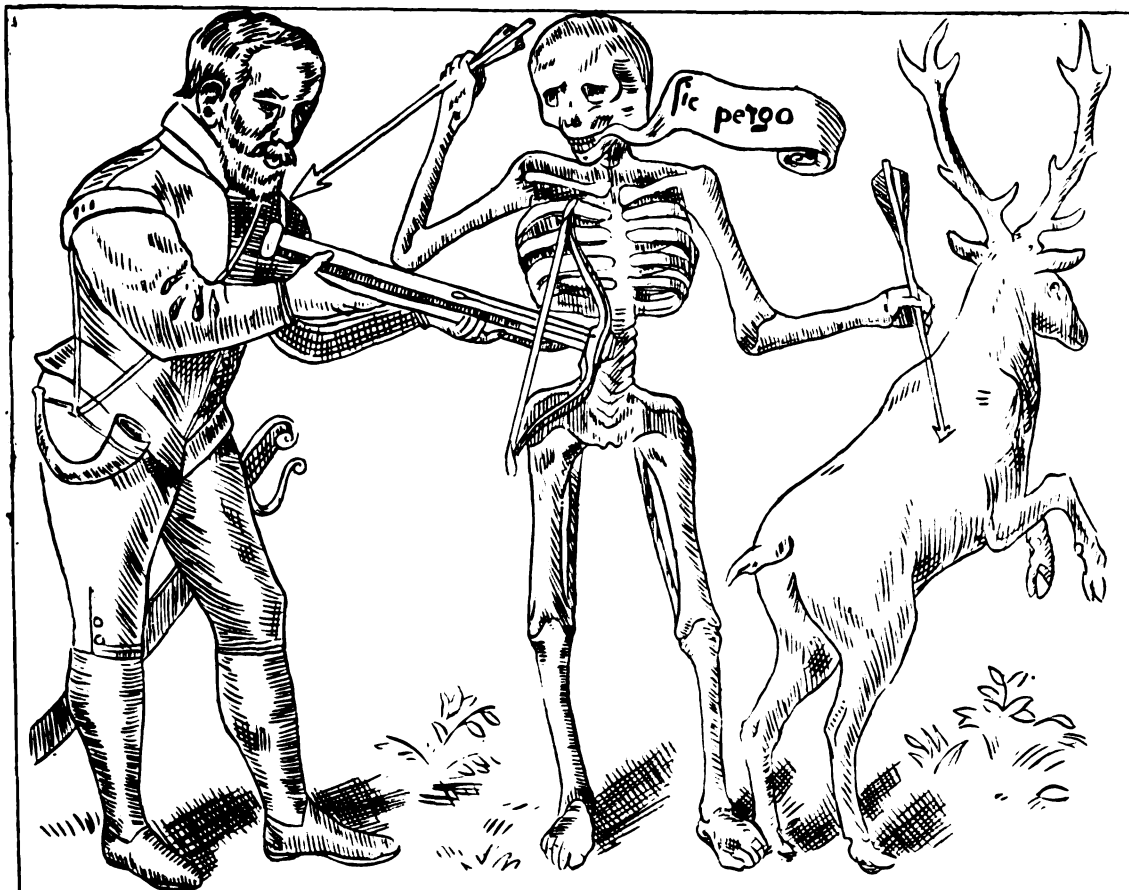
The manor of Hunsdon seems to have been originally part of Stanstead. From Domesday we learn that Alwine de Godtone, who held eleven hides and half a virgate in Stanstead, laid one hide to Honesdon. This legal transfer had, I understand, the effect of constituting Hunsdon a

manor, of which Ralph Talboys was probably the first possessor after the Conquest.

It was afterwards held by Richard de Tonbridge, eldest son of the Earl of Hertford, who in 1124 removed the monks of Bec from his castle of Clare to the adjoining village of Stoke and bestowed on them yearly a doe from his park at Honesdon. This village is the existing one of Stoke-by-Clare, or Stoke-juxta-Clare, near to Clare in Suffolk.

Four years ago, when the East Herts Archæological Society inspected Hunsdon Church, their conductor, Mrs. Morris, stated:—"There are records to show that there was a church here in 1291, and there was also a rectory as well. The value of the rectory was 12 marks per annum, and the tithes were worth 24s., according to an inquisition of Pope Gregory IV." I have not been able to find the records of which Mrs. Morris spoke, and think she inferred the church from the mention of the rectory. But in the thirteenth century the term rectory would apply to a parish or living held by a rector, either lay or clerical, who took the tithes, rather than to a residence, and the value of the rectory would be derived from glebe lands or other endowments. Mrs. Morris further states that in the time of William II. or Henry I., sixty or seventy years before 1291, "Roger de Waveney gave this church with that of Stanstead Abbots to the Priory of Merton." This would lead one to surmise

* A paper read at a meeting of the Upper Norwood Athenæum on June 9 by Mr. Jonathan Downes.



BELOVED OF ALL WHILST HE HAD LYFE
VNMOEND OF NONE WHEN HE DID DIE
JAMES GRAY, INTERRED OF HIS WIFE
NEER TO HIS DEATHS: SIGNE BRASSE DOTI LYE
YEARES THIRTIE FYVE, IN GOOD RENOWNNE
PARKE AND HOYSE KEPER IN THIS TOWNE
OBIIT 12^o DIE DECEMBRIS A^o DNI 1591
ÆTATIS SVE 69

BRASS OF JAMES GRAY, IN HUNSDON CHURCH.

that the two livings were held by one incumbent. Hunsdon-cum-Stanstead would be the designation of the conjoint parishes.

The three great historians of Herts—Chauncey, Clutterbuck and Cussans, whom I have consulted—are absolutely silent as to this point. To return to the manor. In the reign of Edward I. (1272-1307) the manor was in the possession of the Engayne family for nearly 200 years, until Robert Goldington, son of the last Engayne on the distaff side, sold it to Sir William Oldhalle. I have been unable to find the date of this sale, but Chauncey quotes from the Itinerary of William of Worcester with reference to Hunsdon House, "Willelmi Oldhal, Chivaler, first built this house about twenty-sixth year of Henry VI. (1447)."

Chauncey himself writes as if he were dubious of his facts. These are his words:—"Robert Goldington, I suppose, sold this manor to Sir William Oldhall, Kt., who served for this county in the Parliament 29th Hen. VI. (1451)." (He was Speaker of the House of Commons.) Chauncey continues:—"Was attainted of high treason in Parliament 38 Hen. VI. (1460) for adhering to the Duke of York. Shortly after" (it was the next year, 1461), "when Edward IV. obtained the Crown, Sir John Oldhall's son was restored, and built here a fair house in the mode of a castle in the reign of Edward IV. He was slain with Richard III. at Bosworth Field, 1485. But others say that Richard III. was possessor of this manor."

Mr. Cussans, the latest and I think the most correct of the historians, says of Sir Wm. Oldhall:—"This gentleman took a very prominent part in the Wars of the Roses on the side of the Yorkists, and after assisting to build the house and church, the estate was attainted after Bosworth."

Henry VII. granted the estate to his mother, Margaret, Countess of Richmond, and Thomas, Earl of Derby, her husband. Then in 1514 it was given by Henry VIII. to Thomas, Earl of Surrey, on his creation as Duke of Norfolk for his services at Flodden Field. The dukedom had been previously forfeited by his father. This duke, Thomas, died in 1524, and was succeeded by his son, the father of the poet Earl of Surrey.

In 1524 Henry VIII. resumed possession of the manor and enlarged the house and created it a palace royal, where he resided for some time, but used it chiefly as a nursery for his children, Mary, Elizabeth and Edward. Lady Elizabeth Fitzgerald, the "Fair Geraldine" of the poet Earl of Surrey, resided here with them. She was Elizabeth, second daughter of Gerald Fitzgerald, ninth Earl of Kildare, a child whose family was attainted for revolt against the Crown, and whose father was in the Tower when she was brought to Hunsdon to be cared for by her second cousin, the Princess Mary. This little homeless child was seven years old in the year of Surrey's marriage, eight years old when his first son was born. According to the custom of addressing sequences of love sonnets to anybody whom it was desired to honour and towards whom there was no personal love-suit (*vide* Dante's Beatrice and Petrarch's Laura), the Earl of Surrey, with kindly feelings towards the child, made her his Geraldine. When she was about fifteen (in 1543) she married Sir Anthony Brown, who built West Horsley Place.

The governess of the Princess Elizabeth was Lady Bryan, and one of the letters from Hunsdon and some of Prince Edward's letters from the same place are given in Strype's "Memorials."

Viscount Dillon, F.S.A., gives in the *Home Counties Magazine* of 1899 a list of New Year's gifts presented to Prince Edward at Hunsdon House on January 1, 1539. He was then under charge of Sibilla Penne, sister of Lady Sidney and wife of Henry VIII.'s barber-surgeon.

His Majesty heads the list with some silver-gilt ware, "A bason, ewer, potts and panes, and a standing cup with cover." Then follow:—

"The Lady Mary is Grace: A cote of crymosen satten embrowdered with gold, with pannses of pyrles, and sleeves of tynsell and iiij agletts of gold" (Mary, born in February 1516, was nearly twenty-three years of age).

"The Lady Elizabeth is Grace: A shyrtte of cam'ye of her own workynge" (Elizabeth was then nearly five years and a half, and Prince Edward was fifteen months old).

The list ends with the Abbot of Waltham, who gave "II oxen, XX mutton," and Mr. James Morrys, "II oxen."

On his accession to the throne Edward VI. granted Hunsdon to Princess Mary, and she resided here during his reign, and it was here that the news of his death was announced to her. On October 7, 1537, she was sponsor to the child of "one Welshe beside Hunsdon," baptized in Hunsdon Church.

When, in course of time, Queen Mary's reign was ended by her death, the estate devolved upon Queen Elizabeth. Sir Walter Scott, in his novel "Kenilworth," mentions Lord Hunsdon as one of the courtiers taking a prominent part in the revels at Kenilworth Castle, and this would be the nobleman in question.

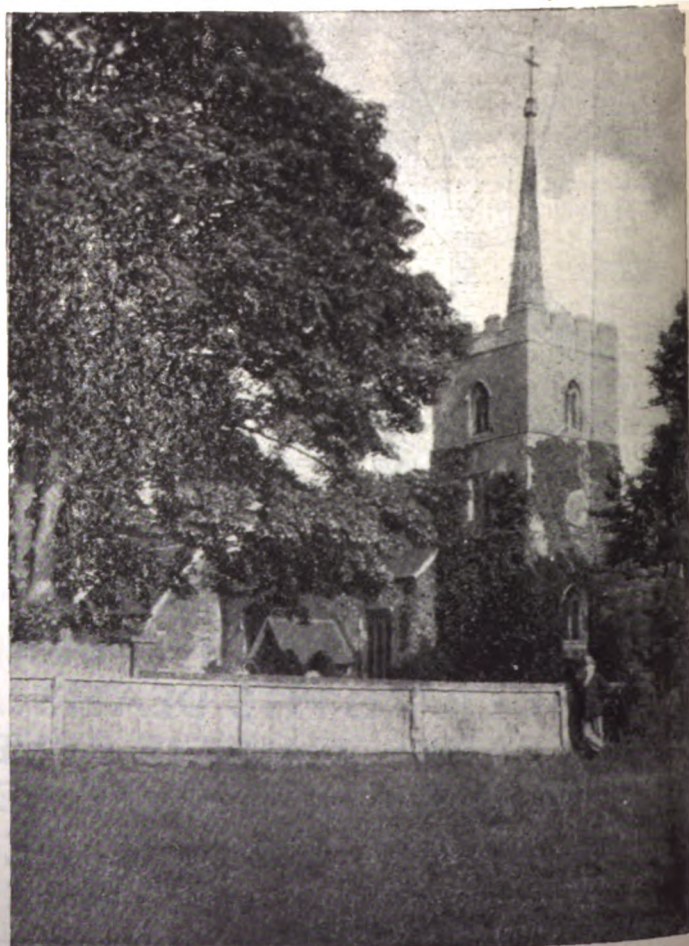
Elizabeth granted it to her cousin-german Sir Henry, son of Sir William Carey and Mary Boleyn, sister of Elizabeth's mother. In January 1559 she created him Baron Hunsdon, and he was also captain of the Band of Pensioners, Privy Councillor, Knight of the Garter, Lord Chamberlain and General Warden of the Marches towards Scotland. He craved to be Earl of Wiltshire in right of Mary Boleyn, but Elizabeth would not accede to his request, and the disappointment so affected his health that he sickened and died. Before his death, however, the queen reversed her refusal, had the patent drawn up and his robes made, and the latter were spread on his bed when she visited him to confer the dignity of earl upon him. He declined the honour, saying that as she had not granted it to him when living he could not accept it when dying. He was buried in Westminster Abbey.

Hunsdon remained in the Carey family's possession for about 100 years, when Anne Carey married William, Lord Willoughby of Parham. He sold it on her death to Matthew Bluck, one of the six clerks in Chancery. His grandson Matthew mortgaged it in 1737 to Mr. Nicholson, who bequeathed it to his nephew, Nicholson Calvert, and it was for some years the seat of the Calvert family. Since that time it has passed through several hands, until at present it belongs to the Charrington family.

Hunsdon Church.

The church is dedicated to St. Dunstan. It is chiefly of the Early Perpendicular order of architecture, built of flint about the middle of the fifteenth century, and consists of a chancel with north aisle, nave with north porch, and south mortuary chapel of later date, western tower embattled and surmounted with slender spire containing eight bells.

It was once rich in stained glass placed in 1440-50 by Sir Wm. Oldhalle, then owner of Hunsdon House. Much has disappeared, but in the upper lights of the east window the Annunciation and the Adoration of Our Lord in Glory are depicted. In the south chancel windows may be seen the white rose of York and fetter locks, another Yorkist badge.



ST. DUNSTAN, HUNSDON

In the upper lights of a north window in the nave are some other fragments representing six of the Apostles.

The glass in the chancel window bears the date 1440-50, according to Mrs. Morris.



FETHER LOCK: A SHACKLE OR PADLOCK.

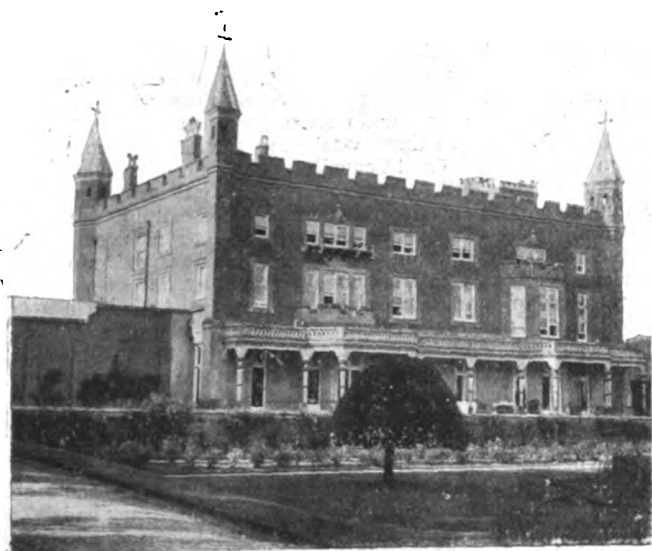
It was the badge of Edmund Plantagenet, of Langley, fifth son of Edward III., and of his great-grandson Edward IV.—From Boutell's "Heraldry."

In the chancel there is a recess in the north wall, said to be an Easter sepulchre, but this is doubtful. It bears three shields with coats of arms, and an inscription that "Francis Poyntz, knight, lies here—1528." In the south wall is a piscina and sedilia, bricked up during the restoration of 1851 under direction of Rev. Richard Thackeray (cousin of the novelist), but opened out in 1872.

There is a handsome altar tomb to Sir Thomas Foster, knight, justice of the King's Bench. He died in 1612.

On the south of nave is the mortuary chapel erected by Sir John Carey, afterwards third Baron Hunsdon. In a recess is a handsome altar tomb with recumbent figures of Sir John and Lady Carey. This was the second baron of Hunsdon, son of Sir Henry, first baron.

There are brasses to Wm. Gray, ob. 1517, and to Margaret, wife of John Shelley, citizen and mercer. Her figure is portrayed dressed in a shroud, formerly tied in a knot at the head and feet, but the two ends of the brass have disappeared. Her hair hangs down, and parts of her body and limbs are visible. Above her is an oriental Trinity, the First Person as an aged man with papal tiara, the Second as a Crucifix and the Third as a Dove. But the most notable brass is that affixed to the north wall of the nave to James Gray, keeper to Hunsdon House, who died 1591. It repre-



HUNSDON HOUSE.

sents a huntsman with crossbow, and an effigy of Death standing between him and a stag, smiting both at once. From the mouth of Death proceeds a label, with the words "Sic pergo," which may be translated, "Thus I go ahead," or "Thus I proceed about my business."

The epitaph reads thus:—

Beloved of all whilst he had lyfe
Vnmoend of none when he did die
James Gray, interred of his wife
Neer to this deaths-signe brasse doth lye
Yeares thirtie fyve, in good renownne
Parke and howse keeper in this towne
Obiit 12 Die Decembris Aº Dni 1591.
Ætatis sue 69.

There was an amusing discussion over this brass in the *Gentleman's Magazine* over a century ago. On October 10, 1794, "Philographice" sends a drawing of the brass and a copy of the epitaph, but his only remark is that the engraver was no anatomist. On February 8, 1795, "Temp Caneton" writes:—"It is meant to commemorate the extraordinary death of the gamekeeper, who expired suddenly whilst in the act of shooting at a buck with a crossbow. The same church contains many other very curious monuments."

"D. H.," writing on March 7, 1795, says:—"I see no reason for supposing that the brass plate at Hunsdon means anything more than that the man who in his time killed so many bucks was himself at last overtaken by death. To this the motto 'Sic pergo' evidently alludes—'thus I go on till the same fate befalls me.' All else must be the mere tradition of the persons who show the church."

"S. E.," on May 4, writes:—"I was inclined to the opinion of 'D. H.' respecting the brass plate at Hunsdon till I observed that Death holds a dart in each hand, which seems to denote that the stroke was inflicted on both objects at the same time. Neither 'Philographice' nor 'Temp Caneton' have given the motto. 'Sic pergo' may as well refer to death as the huntsman, 'Thus I go about my usual business.'"

Clutterbuck, in his description of the brass, says that "Death is withdrawing the arrow from the wounded hart with his left hand, whilst striking the huntsman with the arrow held in his right."

It is impossible now to ascertain which of these interpretations is correct, but it is reasonable, seeing that Death says, "Thus I proceed," that it alludes to the simultaneous death of the huntsman and the deer.

The font is original, but it was so energetically restored (?) in 1851 that it appears to be a new one. It is interesting because of the fact that on two occasions Queen Elizabeth officiated as sponsor. The following are copies from the register, which dates from 1546:—

"1576.

"Mrs. Elizth. Cary, daughter of Sir George Cary Knight, borne the 24th of March and baptized the 7th June, 1576 predict. Our soverayne lady the Queenes Ma^{tie}, the Countess of Warwick, godmother, Earl of Sussex, godfather."

"1584.

"Mr. Emanuel Scrowpe, sonne of Mr. Thomas Scrowpe, Esquier, was borne the first day of August and baptized the XVth daie of the same month, the Quenes Ma^{tie} beinge godmother, the Erle of Arundell and the Lorde Scrowpe beinge godfathers." As before mentioned, Queen Mary was sponsor here previous to the dissolution of monasteries.

The open pulpit and the screen before the Carey chapel are worthy of note, as good examples of Jacobean carving.

The first five of the bells bear inscriptions as follows:—

- No. 1. "Jesus be our spede 1630."
2. "God save the King 1630."
3. "The Rev. W. Calvert, Rector, J. Bryant of Hertford fecit 1787."
4. "Philip Eliot, Rector. Joseph Galton, John Hunsdon churchwardens 1668."
5. "Anthony Bartlett made mee 1652."

WILTON HOUSE.

FOR the annual meeting of the Wiltshire Archæological Society the district of Wilton was selected. The Earl of Pembroke is the president for the year, and the opening meeting was held in Wilton House, which Emerson described as the renowned seat of the Earls of Pembroke, a house known to Shakespeare and Massinger, the frequent home of Sir Philip Sidney when he wrote the "Arcadia," where he conversed with Lord Brooke, a man of deep thought and a poet, who caused to be inscribed on his tombstone, "Here lies Fulke Greville Lord Brooke, the friend of Sir Philip Sidney." As president of the meeting the Earl of Pembroke delivered an address in which he said:—

I think that I cannot do better than give you a short summary of some of the objects of interest in this house, which you will see when you go round, and at the same time recall to your recollection in more or less chronological order some events of historical interest that have occurred here from time to time in the lives of successive Earls of Pembroke. I pass over the earlier period relating to the battle between King Alfred and the Danes in 871, to the founding of the abbey, its history, with its associations with Cardinal Wolsey, all of which subjects have been so fully dealt with by Aubrey, Sir Richard Colt Hoare and

the late Mr. James Nightingale, and I pass on to the period of William, the first Earl of Pembroke, so created by Edward VI. in 1551. He it was who, as Sir William Herbert, was granted the abbey lands by Henry VIII., and he built the house from designs said to have been made by Hans Holbein. Of this house only the central tower on the east side, and the porch which formerly stood in the north-east corner of the quadrangle, but is now in the garden, remain. A portrait of this earl, attributed to Holbein, is in the library. He was a very leading and powerful nobleman in the days of Henry VIII., Edward VI., Mary and Elizabeth, and no doubt his power and importance during the first-named reign was increased by the fact of Henry VIII. marrying Catharine Parr, the sister of Anne Parr, Lady Herbert. On the occasion of the marriage of Queen Mary with Philip of Spain in 1554, Lord Pembroke received the Spanish envoy, and lodged him at Wilton for one night, on his way from Plymouth to Winchester. This earl died in 1570, and was succeeded by his son Henry, the second earl, who married Mary Sidney, sister to Sir Philip Sidney. That famous soldier, courtier and poet was a constant visitor to Wilton, and tradition tells us that he composed the famous "Arcadia" while wandering up and down the avenue in the park which still bears his name. In 1574 Queen Elizabeth paid a visit to Wilton, and it is possible that the "man Shakespear" was present upon that occasion. Philip Massinger, whose father was attached to Lord Pembroke's household, was brought up at Wilton. Unfortunately there is no portrait here of this earl, but that of his wife Mary Sidney, by Marc Geerarts, is in the library. He died in 1601, two years before the death of Queen Elizabeth, and was succeeded by his son William, the third earl. There is much controversy as to whether Shakespeare dedicated his sonnets under the initials "W. H." to this earl as William Herbert, or to Lord Southampton, but we have abundant evidence of his having been a great patron of the famous poet, and a portrait of him by Mytens, with an old MS. pasted on the back on which one of the sonnets is quoted, is now in the Single Cube Room. Another portrait of him by Vandyke is in the Double Cube Room. This earl entertained James I. at Wilton in 1603. He died without a son in 1630, and was succeeded by his brother Philip, the fourth earl, who had already been created Earl of Montgomery. This earl entertained Charles I. more than once at Wilton, and that monarch "did love Wilton above all places and came thither every summer" (Aubrey). This earl rebuilt a great portion of the house, notably the south front, which was designed by Inigo Jones, and he also laid out the old formal gardens from designs by Isaac de Caux. Of these gardens, however, nothing remain except a few statues and fountain, pillars, &c. This earl is the centre figure in Vandyke's famous family picture, which with other portraits by the same painter is in the Double Cube Room. He died in 1649 and was succeeded by his son Philip, the fifth earl, who is one of the figures in the big picture, and whose portrait, again by Vandyke, is in the ante-room to the Double Cube. A portrait of his wife, Penelope Naunton, by Vandyke, is also in the Double Cube. He died in 1669 and was succeeded by his son William, the sixth earl, whose portrait as a child, by Sir Peter Lely, is in the Single Cube Room. He died unmarried in 1674, and was succeeded by his half-brother Philip, the seventh earl, who married Henrietta de Querouaille, sister to the Duchess of Portsmouth. He had no son, fortunately, as he was not a very reputable nobleman, and his only daughter married John, Lord Jeffreys, whose portrait by Lely is in the library. There is no portrait known of this earl. He died in 1683, and was succeeded by his brother Thomas, the eighth earl, who was one of the most remarkable men of the time. He took an active part in the quelling of the Monmouth rebellion, was Ambassador Extraordinary to the States-General, Lord Privy Seal, First Plenipotentiary at the Treaty of Ryswick, Lord Lieutenant of Ireland, Lord High Admiral of England, and held many other appointments. He also brought over William of Orange. But in addition to this versatility in public life, he was a great "virtuoso" and student of art, and it was he who collected all the antique statues, busts, altars, sarcophagi, &c., which are ranged round the cloisters, having purchased in addition to his own collection the antiques collected by Lord Arundell, by Mazarin and Richelieu. A portrait of Earl Thomas by Wissing hangs in the Single Cube Room. He died in 1733, and was succeeded by his son Henry, ninth earl. This earl was a soldier, and was in 1751 constituted Lieutenant-

General of the King's forces. He was a great architect, and it was during his time that the Palladian bridge and the casino in the park were built. He also built Westminster Bridge. His portrait by Sir Godfrey Kneller is in the Single Cube, and his bust in the dining-room. He died in 1750, and was succeeded by his son Henry, tenth earl, who also was a soldier and a great lover of horses. He built the riding school at Wilton, and another at Whitehall, but the latter was subsequently pulled down. His portrait and that of his wife, by Sir Joshua Reynolds, are in the ante-room, others of himself and his horses, by Morier, in the billiard-room, and his collection of pictures of horses in all the attitudes of the *haute école* are in the lunging-room. This earl entertained George III. in 1778, when His Majesty held a review of the army on Camp Hill. He died in 1794, and was succeeded by his son George Augustus, the eleventh earl. It was during the lifetime of this earl that James Wyatt was employed in rebuilding the house. He built the cloisters and present entrance-hall, and also the library, but unfortunately was allowed, in order to carry out his plans, to pull down most of the north and west sides of the house. The whole of the gardens were rearranged and laid out about the same time under the personal supervision of Lady Pembroke, a daughter of Count Woronzow, the then Russian ambassador to London. It was about this time also that Inigo Jones's arch, with the lead statue of Marcus Aurelius on the top, was moved to its present position from the former site on the top of the hill in the park. I must apologise for having given you perhaps too much family history, but I found that the chronology of the objects of interest in the house and grounds was so much more easily marked out by taking the Earls of Pembroke in their succession than by any other plan, that I have risked the possible charge of talking too much about my own ancestors in order to give you information according to dates.

WEST MEON ROMAN VILLA.

BY permission of Mr. Meinertzhagen, the proprietor of Brockwood Park, the members of the Hampshire Field Club and Archaeological Society on July 25 visited the remains of the Roman villa which have been unearthed in Liffen's Wood, on the estate, during 1905 and 1906, under the direction of Mr. Moray Williams, F.S.A. Mr. William Dale, F.S.A., who organised and conducted the excursion, read a short paper, says the *Hampshire Advertiser*, about the Roman domestic buildings of Britain in general. About the civil life of the Roman occupation we know exceedingly little. What we do know is briefly this—setting aside the military camps and stations, there appear to have been certain small walled towns in which there was some sort of municipal or town life. Silchester and Venta Belgarum were examples. Mr. George E. Fox, F.S.A., goes so far as to say that Silchester must have been a self-governing place resembling our own municipalities. Outside the towns the country seems to have been divided up into estates or villas, at any rate in the vicinity of the roads, although there must have been great tracts of land unoccupied. The word "villa" is territorial, and means the estate or farm in which the great house was included. The houses, whether in towns like Silchester, or in the villas, were fairly uniform and were of two kinds. In some there was a long straight row of rooms with a corridor by the side, in others there were three such rows of rooms, set round an open court. Both of these types, the "corridor" and "courtyard" type, occur at Silchester. These houses do not resemble the Italian houses, and are regarded as local types, although they had Italian details such as hypocausts and mosaic flooring, and they varied in size and magnificence according to the means of the owner. The house at the villa of Bignor in Sussex, where are to be seen the finest mosaics still in situ, covered $5\frac{1}{2}$ acres of ground. The materials are nearly always native. The tesserae are made of brick or native rocks, and at Silchester they copied on the border of the pavement the bryonia plant they saw growing in the hedges. The warming arrangements were effective. In certain living-rooms the floors were hollow, and the heat from a stoke-hole circulated underneath them, and also up the sides of the room by means of flue tiles. Where the floor is supported upon tiles placed one on top of the other, or pilae, the hypocaust is said to be "composite." In others the solid floor is traversed by radiating channels, and the hypocaust is said to be "channelled." The quality of the mosaics is very varied. The pavements at Brading are ambitious in design, but somewhat rough

in execution, and inferior to the Bramdean villa, of which there are drawings in existence, although as a result of neglect which is truly deplorable, the pavements themselves have been allowed to perish. At Bignor the tesserae are not more than about $\frac{1}{4}$ -inch in size and the design is masterly and free. About the superstructure of these houses we can only guess. It is highly improbable there was a second storey. They had glazed windows and plastered walls, the plaster being decorated in colour, and they were roofed with tiles or slabs of stone, and sometimes thatched or reeded, nor do we know to what particular use any of the rooms were put. The people who lived in them spoke Latin—most of them were pagans, but some must have been Christians. The vessels they used were of pottery made in Britain under Roman influence, although with them is nearly always found the beautiful red ware imported from Gaul, and once called Samian, and sometimes pewter was used. Bronze fibulae and other personal articles give us hints of how they dressed, and careful examination of the rubbish pits has told us they baked bread and flavoured it with the seeds of the opium poppy, and had several kinds of fruit, including two kinds of plum and the medlar. Oysters and fish from the sea were also brought to them, while they appear to have eaten the flesh of most of the animals that serve for our food. All this and a great deal more may be found in the Silchester reports. Somewhere in that crepuscular period of the history of our country, the fifth century, these houses were forsaken. In some cases they show signs of fire—most of what was of any value was taken away. Bronze coins by the hundred were thrown away, although that was not the case here. The beautiful mosaics either perished or were mutilated, and frosts and roots of trees uprooted them, and often, as at Bignor, and most likely here too, the floor was wilfully broken through in order to obtain the tiles of the pilae. We must add to all these the sins of the unskilled explorer, or the neglect of those who have explored and then left the result to chance. The Bramdean pavements have so perished, and also the beautiful baths of opus signinum at the Twyford Villa, as well as the careful drawings of Miss Longmore made at that site. It is because we have in Mr. Williams a careful and intelligent explorer, that he wanted them to give him a slight tangible proof of their sympathy, and more particularly because he had another villa in view where he was not likely to have such liberal help as the owner of this property had given him. He would propose a grant of 5*l.* from the club funds towards the expenses of the excavations.

Mr. A. Moray Williams, B.A., returned thanks, and then conducted the visitors, who numbered about fifty, over the site. It had long been thought that Liffen's Wood, which is about a mile from West Meon, concealed a Roman building, and in 1904 Mr. Williams commenced the excavations, and by 1905, with the general help of Mr. D. Meinertzhagen, he had uncovered parts of a substantial house. Roughly, the villa covers an area of 160 feet by 50 feet, and contains a group of ten living rooms. Three are paved with mosaic and three with coarse red tesserae, the flooring of the four remaining having completely disappeared. One of the mosaic pavements is in a remarkably fine state of preservation. There is also a two-chambered hypocaust. Mr. Williams does not think the house extends much further than the area already touched, but further exploration is desirable. Finds have been comparatively few, and do not include coins or other datable or important objects. But a deposit of charcoal, black earth, slag and rude potsherds was found some hundred yards south-east of the house. The slag, examined by Dr. H. B. Baker, F.R.S., is iron slag, containing rather more iron than would be usual in modern slag. It may indicate a smithy, and the iron worked may have been obtained from the weald clay, which comes to within ten miles of West Meon. The visitors were much interested in all they saw and heard.

The Edinburgh Water Trust have under consideration a report by the city gardener approving the proposed afforestation of 5,000 acres at the Tallia works. The amount of planting to be undertaken annually should, he suggests, be about 200 acres—that is, four plots of 50 acres each. He does not think this could be done at less than 7*l.* per acre on the average. At that rate the annual outlay on planting would be 1,400*l.*, and allowing for contingencies such as beating up, &c., it might be taken at 1,500*l.* On this basis the cost of stocking the whole area would be 37,500*l.*, spread over twenty-five years.

MEDIAEVAL TILES OF WORCESTERSHIRE.

DURING the visit of the Royal Archæological Institute to Worcester a paper was read by the Rev. Canon Porter, of Claines, upon "The Mediæval Tiles of Worcestershire."

The Mediæval tiles of Worcestershire, he said, were so remarkable, and so exceeded in beauty those of any other county that it was surprising that they had not attracted more attention. His attention was drawn to them by the late Lord Alwyne Compton, a former Dean of Worcester, whose death was greatly regretted by that Society. The only paving in the cathedral of any importance was *in situ*, and that was valuable as showing the original arrangement. It was to be found in some rooms between the transept and the chapter-house, and over the room known as the parlour. It could not be earlier than 1377, as that was the date the rooms were built by William Poer, the cellarer. The tiles were very faint and much obliterated. They covered 70 square yards and contained some exquisite designs in foliage.

The tiles of Bredon, which were arranged in the risers of the steps of the sacarium, formed the finest heraldic series that England could show. After careful examination of the drawings of the eminent architect, Mr. Rowland Paul, he had fixed the date of the series at 1372-5. Many of those present would be familiar with the very curious badge and interlaced sickles which were seen in Mr. St. John Hope's drawings of the garter plates at Windsor. Those tiles were made at Droitwich, and before 1887 he often found them in various parts of the neighbourhood, at Porter's Mill (Claines), St. Peter's (Droitwich), Cotheridge, and, best of all, at Little Comberton. Comparatively few of these pavements remained in their original position, partly owing to ignorant restoration and partly to the practice of breaking the floor to form vaults—a most pernicious custom. When they restored Claines Church they found the remains of bodies within 2 inches of the feet of the worshippers. That would partly account for their not having in the county a single perfect example of the fine sepulchral cross which used to be, in living memory, in the north aisle of the lady chapel of the cathedral.

In the fifteenth and in the earlier years of the sixteenth centuries tiles were, so far as they knew, only produced at Droitwich and Malvern kilns, but there must have been a kiln at or near Hailes Abbey, as there were marked differences between that pavement and their own. The Canon then described the process of manufacture. A square of red clay from 4 inches to 6 inches across having been partially hardened in the sun, a design was impressed by a stamp cut in relief, and the whole coloured with a whitish coloured clay. That being allowed to dry, the superfluous hard clay was scraped off, and the "quarrel" (as it was called) thus formed was put into the kiln. There was a grave difficulty as to glaze, and the speaker had once or twice been deceived at first sight by a modern tile as Mediæval. The exact tone of the old yellow glaze it seemed impossible to obtain, but at Malvern the tiles had it splendidly.

Canon Porter suggested that all old tiles when refixed should be placed on the wall, as they would then not be worn. This had been done with marked success at Claines, Fladbury and Hindlip. He was convinced that far the largest portion of Worcestershire tiles of the fifteenth century were made at Droitwich and Malvern, where kilns and fragments of tiles had been discovered. The Droitwich kiln was discovered in 1837 in the parish of St. Mary, Witton, and the kiln at Malvern was found by a distinguished architect in 1833, within 200 yards of the priory church. The proceeds of these two kilns have been found in various parts of England. The glorious tiles of Malvern were very well known. They were the finest in the world, and as they had always been on walls they were in a fine state of preservation. Not many were earlier than 1460, when the church was rededicated by Bishop Carpenter. After commenting upon the interesting designs to be found upon tiles in Worcestershire—he showed an illustration of one depicting all the accessories of the Cross—Canon Porter concluded by describing in an interesting manner four sets of Malvern tiles.

The Vice-President observed that they had listened to quite an ideal paper. It was extraordinary that upon a subject which many of them had expected to be extremely technical they should have had an audience like that kept in close attention the whole time, everyone feeling that the address was being poured out of a remarkable fountain of special knowledge on the subject. He had never heard an

archæological paper which seemed to him so completely scientific, so full of suggestiveness of every kind.

A discussion ensued, says the *Worcester Chronicle*, which the President subsequently characterised as the most interesting they had had at any of their meetings. He also remarked that it appeared a great piece of good fortune that they were in view of a revival of the study of ecclesiastical tiles. One thing which had struck him in the paper was that the tiles produced in Worcestershire should be all of one particular class, of the type in which the patterns had been cut into the red clay and the pattern itself filled up with white or yellow slips forming the white pattern on the red background. As a rule there was no incising, simply a sort of painting by pouring yellow slip over the body of red clay. There was a really fine collection of tiles in the British Museum, and the only way to study the matter scientifically and properly was to enlarge that collection. He appealed to Canon Porter to persuade his friends in Worcestershire to let them have specimens of the various local manufactures—they already had one of the grandest specimens of the Malvern series. He proposed a hearty vote of thanks to Canon Porter for his paper.

This having been carried unanimously, Canon Porter, in reply, mentioned that he had been a member of the Institute for thirty-one years, and it was a great pleasure to him to again read a paper before them. With regard to specimens going to the British Museum, he could only say that the clergy were but the temporary guardians of what was in their churches, and he for one would never be a party to encouraging the removal of any of the old tiles from their proper places, not even to go to the British Museum.

The President mentioned that excavations were often made, and no care taken of the tiles, &c., and in such cases they might be sent to the British Museum, where they would be carefully preserved.

GENERAL.

The Exhibition of Belgian art at the Guildhall Art Gallery closed on Saturday. In all 150,000 visitors have passed through the turnstiles, the daily average being about 1,500.

The London County Council have made arrangements for the "Council Chamber" at No. 17 Fleet Street to be open to the public, who will be admitted free every week-day, except Good Friday and Christmas Day, between the hours of 10 A.M. and 2 P.M. The room will be available after those hours for meetings of societies, &c., on terms to be arranged.

The Edinburgh Town Council have adopted the recommendation to make a Register of Historical Buildings in Edinburgh at a probable cost of 20*l*. It has been found that a register of such houses exists, having been prepared by Mr. Bruce Holmes and Mr. Thomas Ross, architect. That had been placed at the disposal of the Council. The money asked was to bring the register up to date and make a map on which these houses would be marked.

A Site at the east end of the Serpentine has been selected for the bronze statue, representing Physical Energy, by the late Mr. G. F. Watts, R.A.

Her Royal Highness Princess Louise, Duchess of Argyll, has consented to design a massive challenge trophy, "The Argyll Shield," to be competed for annually at a pipe band contest held at Dunoon in connection with the Cowal Highland gathering on August 25. The design of the shield will be purely Celtic in character.

Sir T. D. Gibson Carmichael has been appointed a trustee of the National Gallery, in succession to the late Sir Charles Tennant.

The National Trust stated last week that 900*l*. is still required to complete the fund for the preservation of Barrington Court, and donations should be sent to Mr. Nigel Bond, secretary, 25 Victoria Street, Westminster.

Mr. Harcourt, M.P., First Commissioner of Works, hopes to have a scheme for the improvement of the ventilation of the Royal Scottish Museum, Edinburgh, ready for consideration on next year's estimates.

Messrs. Russell & Cooper, 11 Gray's Inn Square, have been placed first in the limited competition for a central library in St. Pancras by Mr. J. Belcher, A.R.A., the assessor. The cost of the building and site is estimated at about 33,000*l*. The other five competitors are each to receive an honorarium of forty guineas.

The Midsummer Examinations of the Institute of Architects increased the roll by 129 probationers, and seventy-six registered students; sixty-one candidates also passed the final and special examination.

Mr. Walter Gay, the American painter, who resides in Paris, has been promoted to the rank of officer in the Legion of Honour.

The Late Mr. Alfred Beit in his recently published will gives the picture painted by Sir Joshua Reynolds and called "Lady Cockburn and her Children," which was for some years in the National Gallery, to the National Gallery. He gives the picture by Sir Joshua Reynolds called "Mrs. Boone and her Daughter" (afterwards Lady Drummond) to the Kaiserliche Museum in Berlin, and a bronze statuette, "Hercules," by Polajuolo. He gives the majolica plate, which is out of the service of Isabella Gonzaga d'Este, and was bought at the Spitzer sale in Paris, to the Museum für Kunst und Gewerbe, Hamburg.

Sir John Ure Primrose presided at the inaugural meeting of Provand's Lordship Literary Club, founded to preserve intact, if possible, the oldest house in Glasgow, situated at 1, 3 and 5 Castle Street (Cathedral Square), corner of M'Leod Street. It is a fifteenth-century house visited by Mary Queen of Scots, and the last remnant of Old Glasgow. The Marquis of Graham has consented to be honorary president; Sir John Ure Primrose, Bart., president; Mr. Arthur Kay, vice-president.

At Melley Abbey in July, 1907, there will be a historical pageant dealing with the period at the abbey from 1239 to 1538-9. The profit will go to the Winchester Cathedral Restoration Fund. It will represent scenes chiefly from the plays of Shakespeare, to illustrate English history during the period of 300 years of the abbey's existence as a Cistercian monastery.

The General Purposes Committee of the Marylebone Borough Council recommend that a new town hall be erected, so that the whole of the work can be carried on under one roof.

The University of Leeds are to confer the honorary degree of Litt.D. upon Sir Charles Holroyd, a native of Leeds, who is now director of the National Gallery.

The San Francisco Board of Public Works have condemned the City Hall, which cost 1,400,000*l*., as unsafe.

The National Collections have been enriched by Raphael's "Madonna of the Tower," Herman Saftleven's "Christ Preaching on the Sea of Galilee," Madox Brown's "Chaucer at the Court of Edward III.," and five works of Turner—"The Old Chain Pier, Brighton," "A Ship Aground," "The Arch of Constantine, Rome," "Tivoli" and "The Burning of the Ships."

The Belfast City Hall, of which Mr. A. Brumwell Thomas, of Westminster, is architect, was formally opened by the Lord-Lieutenant of Ireland on Wednesday.

Professor Ray Lankester, the president of the British Association for this year, has been asked to retire from the directorship of the Natural History Museum, South Kensington.

Mr. Harcourt, M.P., First Commissioner of Works, in answer to a question in Parliament, has stated that, in accordance with a scheme sanctioned by his predecessor, it is proposed to build the Stationery Office upon the vacant land behind the National Gallery of Art at Millbank. The extensions originally contemplated when the site was offered by the Government to Sir Henry Tate in 1893 have already been made. He promised to make inquiry as to the future needs of the Gallery, and to reconsider the matter before next year's estimates are framed. He mentioned that some space is still reserved for the purpose of the Gallery.

A Question was asked in the House of Commons respecting the reduction of space above the ground floor in Regent Street after rebuilding. Mr. McKenna, in reply, stated that no complete design has been settled for the rebuilding of Regent Street other than the Quadrant, but as the houses in the whole street will be rebuilt in the near future by degrees, either singly or a few at a time, a general building line for the whole street has been agreed between the Commissioner of Woods and the London County Council. A reduction of 3,400 feet in the area at present occupied is contemplated, but as the upper storeys of many of the houses will be built further out than at present there will be no loss in cubic contents, and it is not expected that the land revenue will be adversely affected. On the other hand, the street will be widened.

The Architect.

THE WEEK.

ALTHOUGH ARNOLD BÖCKLIN was born at Bale and should therefore be considered as one of the Swiss artists, Germany has claimed him as one of its representative painters. His early studies were no doubt in Düsseldorf, but he worked also in Antwerp, Brussels, Paris and Rome. Many Germans, however, believe that no modern artist possessed more of the national characteristics. Like GOETHE, he tried to realise antique subjects in a German manner. His scriptural subjects were also peculiar. He could in addition be a realist, and yet no one was better able to represent subjects from "A Midsummer Night's Dream." During the last eight or nine years of his life he lived at San Domenico, near Florence. Lovers of his works are now troubled because the owner of the villa in which he lived and died has decided to blot out or change everything which is suggestive of the artist's occupation. He is within his rights in doing so, for ordinary tenants might not care to have before them reminders of their own inferiority. It is therefore proposed to make arrangements by which a part of the villa at least will always recall the painter who could claim to be the most modern of German artists. That end cannot be attained without the expenditure of a fairly large sum of money. It remains to be seen whether the five years which have elapsed since BÖCKLIN's death have diminished the enthusiasm for the painter of the *Battle of the Centaurs*, the *Nymph and Satyr*, the *Hermit in the Desert*, and other works which were produced by a truly original man of genius.

THE action *FEAR v. PHILLIPS*, which has been tried before Mr. Justice JELF at Lampeter, Brecon, London and Swansea, differs from ordinary light and air cases owing to the view of the circumstances which was taken by his Lordship and which gave character to the decision. Plaintiff and defendant were both tenants of the Corporation of Aberystwith. The defendant obtained a new lease in last October, under which he erected an arcade, a coliseum, shops, &c. He raised the back wall of his premises from 17½ feet to 41 feet 8 inches, and from 21 feet 1 inch to 48 feet 9 inches. As the plaintiff's back yard was only 11 feet 8 inches wide there could be little doubt of a diminution of light and air. It was contended that the obstruction was not sufficient to become a nuisance—an argument which his Lordship overruled—and it was also contended that there was acquiescence on the part of the plaintiff, which was likewise set aside by the Judge. The important point, according to his Lordship, was the deprivation of air. His Lordship pointed out that the right to light could only be acquired under the Prescription Act, while the right to air could not be so acquired. By improperly raising the two walls defendant had been guilty of interference with air, which was actionable. Whether there was less air was doubtful, but there was interference with its salubrious character. His Lordship said there were few authorities on the subject, and in order that his decision might be reviewed he had resolved to assess the damages as to air and as to light separately, viz. 200*l.* for light, 200*l.* for air and 25*l.* for illness in plaintiff's family, which it was alleged arose from the interference. A stay of execution was granted.

THE report on "The Effects of Tremors on Astronomical Observations, with especial reference to the Greenwich Observatory," which Professor H. H. TURNER presented to the British Association, has special interest at the present time. He considered if an instrument be turned from one position into another very different, it would not take up its new position all

at once, but for a few minutes after it had been set there would be slow, minute changes going on, arising from the yielding to stresses and the giving way of friction. This was no mere theoretical supposition, for such changes had been proved to occur in the case of the Greenwich transit circle by a long series of flexure observations made in 1894. Any change in the tremors in the neighbourhood of an observatory would probably introduce some systematic changes in the observations of zenith distance. The changes were of a kind which might be very difficult to explain, for they might occur in spite of the fact that all the other circumstances had been preserved precisely the same. It was to be remarked also that the previous existence of tremors from railways was no safeguard against a totally new interference from those at present threatened. The former would naturally be intermittent; a train passed now and again, and the observation of a particular star might suffer a little, but if the engines of the generating station produced continuous tremors all the observations would be affected. Professor TURNER was able to refer to a paper by Dr. ROBINSON, the astronomer, on a case of disturbance which occurred at the Observatory of Armagh, owing to the proximity of the Ulster Railway. It was found that the observations were disturbed in several ways by the shaking of the mercury trough with which observations were made by reflection, and the consequent difficulty in determining the nadir point. Dr. ROBINSON found that if after the bisection of a star, but before the microscopes were read, a train was heard to pass, the shaking caused a displacement of the instrument, and the record might consequently be erroneous by as much as four seconds. The County Council, we suppose, will not wait for the results of complex experiments, but will take it for granted that there is a possibility of danger, and although it may be remote will do all that practical engineers can suggest to prevent tremors occurring.

A LANDLORD through his agent lets premises to a tenant, nothing being said as to repairs. The floor of the kitchen is in a bad state of repair, and the landlord's agent agrees to do the repairs. The repairs are not done, and consequently the tenant's wife is injured. The tenant recovers damages for breach of the contract to repair. Can his wife also recover damages for the injuries she has sustained? The House of Lords in the case of *CAVALIER v. POPE* have decided that she cannot. The contract to repair was not made with the wife, and therefore she cannot sue upon it. Apart from contract, the law placed no duty upon the landlord to effect the repairs. As he owed no duty to anyone except the tenant with whom he had made the contract the wife had no cause of action. As Lord JAMES OF HEREFORD said, "Moral responsibility, however clearly established, is not identical with legal liability." Tenants, if they succeed in inducing landlords to make repairs, should see that the repairs are done promptly, lest the consequences of non-repair injure their families.

It is a disappointment to the Greek Government as well as to all students of Classic archaeology that the recent diving operations off the coast of Kerigo or Antikythera have not been successful. The fine figure of a youth, known as the Ephebos of Antikythera, which was one of the earliest discoveries and is now one of the most interesting objects in the National Museum at Athens, suggested that many valuables were lying at the bottom of the shallow sea. But a rival to that work has not been recovered. The diving may now be considered as ended. Fragments of the sailing vessel which contained the sculpture and of statues and vases are not considered to be equivalents for the labour and expense which were necessary. Apparently the sunken vessel foundered while on a voyage to Byzantium with some of the spoils of Greece.

THE BRITISH MUSEUM.

THE President of the British Association, in his inaugural address, drew attention to the fact that science is not advancing in public consideration and support. Professor RAY LANKESTER thought the cause was the defective education given in schools and universities. His remedy was improved education for the upper classes. He implored the members of the Association to carry out the spirit of the Institution, which was the advancement of science, by insisting that their sons and daughters should receive reasonable instruction in science in schools and colleges. Schoolmasters, he said, believe that what parents require is trifling with classical literature and success in athletics. Men who are anxious for the promotion of art in the country are also lamenting the general indifference. Architects are supposed to believe that the educational system must be revolutionised in order that the world in general may be able to appreciate their art. Some support is undoubtedly given to all these jeremiads by the return of the chief librarian of the British Museum. The number of visitors during the year 1905 was 813,659, while in 1904 the total was 954,551. In the reading-room there was a diminution from 226,323 to 214,940. In other departments there was a reduction; the Natural History Museum alone showing a notable increase of visitors. It may therefore be concluded that if the public do not study science or art, compensation is not to be found in the attention given to treasures in the Bloomsbury Museum.

The official return is especially interesting from the accounts which are given of the excavations undertaken by the Trustees at Nineveh and Ephesus. In 1820 RICH, who was the political agent at Bagdad, examined the mounds near that town and received information concerning slabs with figures in relief which had been taken out of the ruins. He came to the conclusion that the great mounds of earth covered the remains of ancient buildings. No importance was attached to his opinion—at least, in this country. About twenty years afterwards M. BOTTA, the French consul at Mosul, tried the experiment on a great mound known as Kouyunjik. He was not successful, and on the suggestion of a peasant he transferred his operations to Khorsabad. It was not long before he was amply rewarded by the architectural and sculptural remains which were unearthed and the illustrations of which astonished Europe. BOTTA was a friend of AUSTEN HENRY LAYARD, who had long been eager to explore the remains, and in 1845 he was enabled to begin digging at the great mound at Nimroud. His first important discovery was a colossal bearded head, the sight of which frightened the Arabs and caused the operations to be suspended.

At Kouyunjik it was necessary to descend to a depth that was considered immense by the Arabs, for in some cases trenches had to be formed to a depth of 30 feet. The remains of a magnificent palace were found, every apartment having sculptured panels representative of a different subject. It was calculated that the bas-reliefs, if put together, would measure about two miles. There were twenty-seven portals flanked by winged bulls and sphinxes. After LAYARD's departure the Trustees took up the work, and it has been from time to time resumed. According to the Blue Book, the latest excavations at Kouyunjik were commenced in 1903 and continued until 1905. The mound may now be considered as exhausted, for trenches were cut in all directions in order to ascertain whether any remains had been overlooked. The latest discovery is the site of the Temple of NABU, the god of war of Nineveh. The report says:—

The ruins were cleared, but the building had been so utterly destroyed and burnt, presumably by the Elamites at the capture of the city, that it was not possible even to make a complete plan of it. The library of tablets, which it probably contained, must have been entirely destroyed.

So thorough indeed was the destruction of the city by the conquerors, to judge from the condition of the remains, that the preservation of the collection of tablets now in the Museum, and forming only a part of the great library of Sennacherib and Ashur-bani-pal, must be attributed to some accidental falling in of debris, which thus covered them and saved them from the enemy.

LAYARD had pointed out that while at Nimroud most of the buildings showed no sign of fire, it was evident at Kouyunjik there must have been a terrible conflagration. Whether it was the same fire that destroyed the palace of SENNACHERIB and the Temple of NABU is a question which may be left to the discussion of historians. It is to be regretted that all parts of the temple of the war god were so completely destroyed that a plan cannot be made. What FERGUSON said still remains true, viz.:—"There are no religious edifices sufficiently complete to enable us to form a distinct idea of what the architectural arrangements of these temples were. As belonging to a Semitic people we should expect them to be few and insignificant." A bas-relief found by BOTTA at Khorsabad represented a small building with two columns, having capitals of a rude Ionic type, has been supposed to show either a temple or a fishing kiosk. LAYARD drew the conclusion:—"The edifices hitherto explored at Nineveh appear to have been palace-temples—that is to say, they served both for the residence of the king, who was the high priest as well as the political ruler of the nation, and for the celebration of great religious ceremonies in which he was the principal officiator. Such was also the case in Egypt, where the palace also comprised the temple."

The great structures of Nineveh, although they caused intense excitement some sixty years ago, cannot be said to have had any influence upon modern architecture. The discoveries by Mr. WOOD of the remains of the Temple of DIANA at Ephesus are of more general interest. The peculiar Ionic capitals and the sculptured drums might be considered as revelations. As has happened elsewhere in classic lands, and the practice has been continued during the Christian era, there were at least four temples erected on the site. Archæology has advanced during the thirty years which have passed since Mr. WOOD's discoveries, and curiosity is excited about remains which at that time were not valued. The report imparts the following information concerning the recent excavations:—

The excavations on the site of the Temple of Artemis at Ephesus were brought to a close on June 17. The result of the two seasons' excavations is as follows:—The remains of four temples superimposed one on another have been examined. Taking these temples in order, from the latest to the earliest, they are:—(1) The temple of the middle of the fourth century B.C., which was the main object of Mr. J. T. WOOD's exploration. Mr. WOOD removed almost every relic of it, and his work proves to have been very thorough. The remains which he discovered are those now in the British Museum. (2) The temple built in the middle of the sixth century B.C., usually associated with the name of CRÆSUS, was the original object of the recent exploration. This temple was only touched by WOOD. The whole area of the surviving platform has now been cleared, and, from the numerous fragments recovered, an architectural restoration of all except the architraves will be possible. (3) The third temple, the existence of which has been hitherto unsuspected, was very little below the level of the one above, and was of smaller area. Only small traces of it remain, and its period of existence was probably short. (4) Of the lowest and earliest temple, the structure of what may have been the naos or statue-base alone remains. The lowest blocks of this structure are laid on the virgin sand. It was here that numerous objects of gold, ivory, &c., were found. From the style of these objects it is inferred that the period of this earliest temple was probably not earlier than the seventh century B.C. The work was much impeded by abnormally heavy rains.

Several important additions have been made to the collections. The late C. A. BUCKLER, architect, bequeathed a valuable series of architectural drawings of

English cathedrals and other churches. Already the Museum possessed many others by members of his family. Donations of drawings of the old masters and engravings are also recorded. The most conspicuous addition to the Department of Egyptian and Assyrian Antiquities is the sculptured wall from the chapel of the pyramid, in the island of Meroë, of a Queen CANDACE of the first or second century, presented by the Government of the Sudan. The following description is given :—

This pyramid was built for one of the great queens of Meroë, who bore the title of "Candace," probably during the first or second century of the Christian era, and its chapel and forecourts and propylons were sculptured with elaborate reliefs, representing the queen's funeral procession, the offerings made in the tomb, &c. The queen's name is nowhere found on the walls in hieroglyphics, and the cartouches, which are sculptured in high relief and in a very prominent place, have not been filled up. At one end of the wall the queen is seen seated by her consort, whose name also is unknown. She wears a fringed garment with ropes and tassels, and on her arms are elaborately ornamented armlets. The reliefs on the other portion of the wall represent a table of offerings, the Hall of Osiris, the Judgment Scene, rows of divine and other figures making offerings and pouring out libations before the queen, who is also seen leading four bulls for sacrifice. The reliefs on the wall are typical of the best class of funereal sculpture in the island of Meroë, of which, before the arrival of this object, there was no example in the National Collection.

Among the purchases are a series of rare Egyptian scarabs, dating from about 3,500 to 650 B.C.; a collection of upwards of 600 Babylonian inscribed tablets of about 2,400 B.C.; and a valuable series of Babylonian cylinder seals.

By gift from the Marquess of SLIGO, the Department of Greek and Roman Antiquities has received the greater part of the two flanking columns of the doorway of the Treasury of ATREUS at Mycenæ. These have been supplemented by casts of other fragments, presented chiefly by the Greek Government; and a restoration of the structure has been built up in the room of Archaic Greek sculpture. The remains were described in a paper by Mr. CECIL SMITH, which was read before the Congress of Architects, and of which a report appeared in this Journal.

The expedition to Lhasa has enriched the Museum with a number of brass, copper, wood and stone figures of deities, many containing manuscripts and charms, temple-vessels, pictures, furniture and book-covers, idol ornaments and charms from Lhasa and monasteries in Tibet; also nine temple-pictures with representations of various deities in colours, and a series of clay images and dagobas, used as votive offerings.

The Government of India have also presented very important manuscripts, books and objects of antiquity and curiosity chosen from the collections formed during the expedition.

A CORNISH STONE CIRCLE.

AMONG the categories which are ascribed to ARISTOTLE as a summary of the varieties of subjects of propositions "time" is included. To him as to others it appeared to be inevitable that an object must exist in a particular time as well as in a particular place. Many other men at later periods who devised a different sort of summary respected "time" and "place." Modern logicians endeavour to dispense with both or to give them less importance. Even from the rough system of the phrenologists "time" cannot be excluded.

To make "time" a category was the more remarkable, because the Greek historians, who might be supposed to find the necessity of it in narrating events, were almost indifferent to dates. HERODOTUS never seemed to question any statement made to him about the duration of a kingdom or a temple. It was his business to describe the prodigies he saw or heard about in his travels, and his gullibility was measureless. Once in five hundred years he believed the phoenix arrived in Egypt, bringing with him the embalmed body of his

venerable parent, which he deposited in the Temple of the Sun. In the temple dedicated to PERSEUS was a chapel with an image of the hero, and he frequently appeared as if to gaze on the likeness of himself. As evidence the priests showed one of his sandals, which was two cubits in length. Whenever it was necessary to employ antiquity as an adjunct of greatness the priests or scholars did not scruple to retail their legends to the traveller, and HERODOTUS in his simple way considered it was his duty to relate all he heard. He was, however, exact if compared with some of the Indian annalists, who believed that virtuous men could live on earth for 100,000 years, and that one of their monarchs reigned for 6,000,000 years.

From this early looseness in treating chronology men were compelled to realise that unless some means were taken to insure accuracy their annals in course of time would also resemble fables. Hence they took care to inscribe dates upon public buildings, and adopted the other precautions against forgetfulness which were then possible. Unfortunately the means were not always enduring, and chronology is in consequence a subject which is marvellously diversified. We have only to compare the periods of the Chinese with those still accepted in a great part of Europe in order to perceive how uncertain must be the conclusions relating to the progress of time.

Geological investigations have given an impetus to a study of the subject. Once it is assumed that the earth existed from a time which is beyond the span of even Chinese chronology, the next question becomes, "What is the earliest proof we can bring forward of the existence of man on the globe?" The solution is aided by the circumstance that man left records of his existence which, although they do not take the form of written annals, are perhaps more acceptable. As in this country we possess means for a very wide study of geology, so we have also numerous objects on a great scale to aid us in the study of prehistoric archæology. Among them the first place must be given to the stone circles which for many years have been puzzles to most observers. We need not here attempt to enumerate the uses which they were supposed to fulfil. In a country which is endowed with churches having "long-drawn aisles" it is natural to suppose that the stones served in aiding religious processions, or in the observation of the sun and stars, which it is not unreasonable to infer were assumed to be images or symbols of Divine powers. BERNARD LAZARE, who is a great authority in the Quartier Latin if not at the Institut, in his legend of "L'Offrande à la Déesse," has suggested the grand effect which could be produced with a stone circle for a temple.

The British Association possesses a committee whose purpose it is to undertake excavations in order to discover, if possible, the age of the stone circles in this country. The report which was presented this year to the York meeting relates to the Stripples Stones. They are the survivors of those which formed a large stone circle in an out-of-the-way district of East Cornwall between Bodmin and Camelford. There are four stones still standing, and all are in positions which indicate that originally they formed part of a true circle. There is another stone which is a foot or two out of the true line of the circumference, owing probably to a difficulty in laying out a circle having a diameter of 146½ feet. About three miles distant is the Fernacre circle, which has also a diameter of 146½ feet. Whether the correspondence was the result of accident or action cannot be known. Mr. H. St. GEORGE GRAY, who had charge of the excavations and who made the survey, says:—"It may safely be stated that the circle originally consisted of twenty-eight standing stones, placed at an average distance of 16½ feet apart. Of stones in their relative positions in the true circle there are at the present time four standing, one almost recumbent, eight recumbent and one which may not have been a stone of the circle, but merely a modern

introduction when the wall was built. In Mr. LUKIS's plan (1879) we get five standing stones and ten prostrate stones falling in the line of the circle, which shows that during the last three decades the Stripples Stones have altered much from pillage."

The reason for selecting the Stripples Stones circle for examination was that it was one of the four known circles which were surrounded by a vallum and a fosse, the latter being within the former. It was also found that bays or recesses were formed on the outer margin of the fosse which give it a peculiar character. Another remarkable feature shows the ingenuity of the men who raised the circle. In excavating round one of the prostrate stones it was found that fairly large blocks of granite were used as wedges in order to give security to the stone, which had a base that was somewhat pointed. This effort was met with in only one instance, but it is sufficient to show that the primitive men were able to reason.

It was evident also that in excavating the fosse the men were not as skilful as modern navvies and were careless as to giving a uniform slope to the sides. They knew the advantage of having a rounded bottom, and they were able to extend the width of the cutting in some places from $9\frac{1}{2}$ feet to 16 feet. About a dozen pieces of oak were found in one of the cuttings. On some there are traces of rough cutting, but it is impossible to say whether the cuts and hacks were made before the wood was placed in the ditch.

When speaking of ditches or other aids to defence it is customary to suppose that with prehistoric man no other purpose was in view. Mr. GRAY maintains that one part, at least, of the fosse was intended to serve for the drainage of the central plateau. As there is bog-iron ore near the surface there is a tendency after much rain for the ground to become swampy. And a drain would therefore be an aid to keep the circle in a fitting condition. Naturally the ground is not perfectly level. But if a corresponding drain existed on the south side of the circle it must have been very narrow.

The object of the excavations was, as we have said, to discover if possible some evidence of the age of this circle. As yet the subject has not been sufficiently studied to enable observers to discern differences of treatment in the stones. Nor does it seem possible that the monoliths will ever yield the desired information. Value is accordingly attached to the most insignificant relics which may be found in excavations. Mr. GRAY has the courage to declare that the few flint-flakes which were turned up in the twenty-five various cuttings are no certain evidence of date. The flint-flakes may have belonged to a later time and may have been produced in some other district. Not one object in bronze was met with, and, in fact, the only point cleared up is that the circle was not a burial-place, since there was no trace of human remains in the excavations. The absence of all archæological evidence—and a very humble class would give satisfaction—imparts, however, a peculiar interest to the Stripples Stones. Whether they were raised in the Neolithic or Early Bronze Age, the removal and fixing must have been the work of men whose only claim to have been worthy of entering within the zone of elementary civilisation was the instinct which enabled them to collect large stones—they vary from 6 feet to 12 feet in height—with an intention which is not to be discovered, but which was not at least for shelter.

COAST EROSION.*

THE erosion of our coast must be studied in conjunction with the deposition of the material eroded. When examined in this way we find in England that it has not been a continuous process, varying when short periods are studied, but averaging the same from century to century. Instead of this regular process, the rapid accumulation in certain places teaches us that coast erosion, as we now see

it, began at a definite date, before which conditions were entirely different. If this were not so, the area of the new lands, accumulations of shingle and of sand-dunes would be much greater. It does not seem practicable to obtain exact measures, but the rates of accumulation of various recent deposits and of the silting-up of our harbours suggest that the cliff erosion only began 3,000 or 4,000 years ago, or at about the date when our harbours were already in use and Stonehenge was being raised.

In order to understand the nature of the changes that are now going on it is necessary to look back to the Neolithic period to see what the country was then like, otherwise the existing irregularities of our coast-line will be quite unintelligible. It is not needful to go back further, but we must picture the country as it looked when the sea stood 60 feet lower.

A close study of the buried land surfaces, or "submerged forests," found in the alluvium of all our estuaries at various levels down to about 50 feet below the present sea-level shows that oak trees flourished on the lowest of these ancient soils. This shows that the sea then stood so far below its present level that the highest tides could not reach the roots of these trees. These old land surfaces seem all to be of Neolithic date. During this period the seaward end of all our valleys was deepened till the channel reached about 60 feet below its present level. The south and east coasts of England were utterly unlike what we now see. Instead of bold cliffs there was a wide coastal plain, like that which still extends for many miles west of Brighton, separating the rising Downs from the coast. This plain extended out approximately to the existing 10-fathom line.

About 4,000 years ago there set in a fairly rapid but intermittent subsidence of the land or rise of the sea. This subsidence flooded great part of the coastal plain, brought the waves within striking distance of the rising land behind, and submerged the lower part of all our valleys.

The process seems to have been more rapid and jerky than any change which has been recorded of late years, for the deposits in all our big estuaries tell the same tale. We find rapidly deposited marine silt alternating with thin beds of peat or soils with trees. But the vegetation is usually nothing but brushwood or quick-growing trees, and the peat also is of rapid growth. Only at the very bottom of these deposits, far below the present sea-level, are oaks of more than 100 years to be seen.

The rise of the sea-level may have been completed about 3,500 years ago. Whatever may be its exact date, the completion of the rise is the starting-point of our present inquiry. Only then commenced the coast erosion which we now see; only then did our existing shingle-beaches and sand-dunes begin to form.

At first erosion was rapid, for the sea was merely eating into loose talus or into cliffs of little height; and protective banks of shingle and sand take time to accumulate. As the land is cut into, the cliff becomes higher and shingle-beaches and sand-dunes form, all tending to make the width of the strip destroyed annually less and less.

Of the land thus destroyed part is washed into deep water and lost, but much of the coarser material is rolled into shingle-beaches, or forms sand-banks and dunes. These form our best protection against further inroads. If the coast erosion is stopped, shingle, beach and sandbank will themselves wear out and disappear, and valuable low-lands behind may be spoilt by the sea.

Another compensation for the loss on the coast will be found in the great gain of alluvial land in the sheltered estuaries, but against this must be set the rapid silting-up of our harbours, even of those into which no streams flow.

Before we take for granted the desirability of attempting to stop the erosion of our coasts (except near towns) we must strike a balance between loss and gain. If the loss exceeds the gain there will still remain the question, Shall we obtain any sufficient compensation for the enormous cost of any works put up to protect agricultural land?

Some curious problems are suggested by this inquiry. Many may think them of no practical importance, but to the geographer and geologist they are of great interest. If what is said above is correct, and since civilised man has lived in Britain there has been a rapid change of sea-level followed by a long rest—what are the prospects of a similar period of rapid change again setting in? A new rise or fall to the extent of a few feet would have most disastrous effects on all our coasts and harbours, and would also seriously affect our inland drainage until things were adjusted to the new conditions.

* A paper by Clement Reid, F.R.S., read before the British Association at York.

THE CHALFONTS AND JORDANS.*

CHALFONT ST. PETER is a large village intersected by the river Misbourne. A few half-timbered houses, one or two gabled roofs and the ford across the river are perhaps the most striking and interesting survivals of a by-gone age. Fords—locally called splashes—are common in the neighbourhood. The church is of little architectural interest, but it is an admirable adaptation of a red-brick church of the last century. The old church collapsed on July 8, 1708, and a new one was erected in 1714. The church was more or less Gothicised by Street in 1854. He inserted Decorated windows and built an enlarged chancel terminating at the east end in a large window of five lights and divided from the nave by a broad and severely plain arch. The respective corners of the church are finished with stones brought from the ruins of the ancient city of Verulam. The church has several beautiful stained-glass windows of different dates. But the most interesting objects are the three memorial brasses which survived the rebuilding of the church. These, removed from the stones in which they were originally embedded, have been varnished over and placed so as to form part of the decoration of the chancel.

The centre brass in the north wall of the chancel depicts the figure of a priest in full vestments, A.D. 1545. It is a palimpsest, a figure of an earlier century having been altered to suit the change of costume. It bears the inscription:—"Of yor charite pray for ye soule of Sir Roberte Hanson, sumtyme Vicar of this Churche of Lytyll Myssenden, which deceased the XXVth day of August, A°. Dni. M^oV^oXLV., whos soule God pardon." At this time the tithes were the property of the monastery of Little Missenden. In 1539, when the monasteries were dissolved, the advowson of the living was bought from Henry VIII. for 594*l.* by Robert Drury. The Drurys were lords of the manor during the sixteenth century.

On the left of the centre brass are the figures of William Whappelode in full armour and his lady in the dress of the period, both with their favourite dogs at their feet. The figures are well executed, and the inscription runs:—"Here lies William Whappelode senior and Elizabeth, his wife, sometime the wife of William Restured, Esq., the which William Whappelode deceased on the 20th day of November, in the year of our Lord 1398, on whose soules God have mercy. Amen." The Whappelodes were lords of the manor for some time.

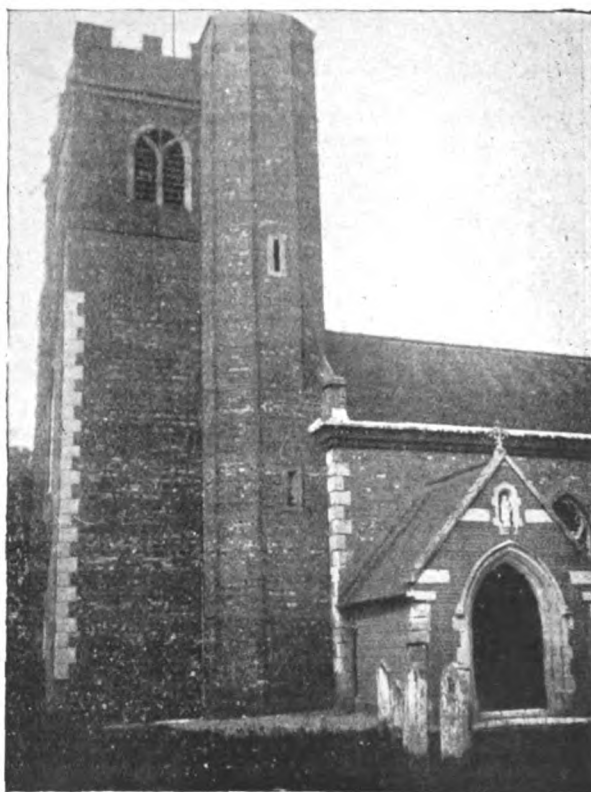
On the right of the centre brass are the figures of another of the Whappelode family and his wife. The inscription runs:—"Here lie William Whappelode and Margery, his wife, son of Sir William and Elizabeth, sometime the steward of the household of the most reverend Father in Christ, the most illustrious lord, the Lord Henry, Cardinal of England and Bishop of Winchester, which deceased on the 16th day of November, A.D. 1446, on whose soules God have mercy. Amen."

The church registers are singularly complete in their entries, and date from the year 1538, when they were first ordered to be kept by Act of Parliament. The early history of the parish of Chalfont St. Peter is very obscure. But it is mentioned in Domesday Book that the first lord of the manor was Lewin, a brother of King Harold. There is a very complete set of pewter Communion plate in the church.

A house called The Grange hard by the church was a noted place for secret meetings of the Quakers or Friends it being then in the possession of Pennington, who suffered much imprisonment for the sake of conscience. It afterwards became the property of the infamous Judge Jeffreys. Since then, however, it has been twice rebuilt. At one time it was occupied by a retired army officer, who insisted on being (temporarily, of course) immured in his own vault in the church, in order to satisfy himself that the air bricks inserted in the outer wall of the church would give sufficient ventilation. Strange to say he died a few days afterwards. At the cross roads near the village is an obelisk to commemorate George III. being in at the killing of a stag on that spot.

The church of Chalfont St. Giles stands near the south side of the village on very low ground. The building is an intermixture of flint, brick and stone, chequered, and consists of a nave with two aisles, a chancel and a square embattled tower at the west end. The north aisle is an addition to the original building and the round pillars have

been cut down to their present condition, though the bases of two of the pillars are still round. In the south wall is a four-foil-headed piscina, and the ancient approach to the rood-loft may still be traced in the piers. The square font has been cut out of a single block of stone. On the south walls are remains of frescoes. The beams of the nave rest on large carved corbel heads. The church as it now stands is principally Decorated and Perpendicular. The east window is Decorated, and is elegant and curious. Within the Communion rails is an altar tomb in memory of Thomas Fleetwoode, 1570. It is of dark coloured marble, having in front three circular compartments formerly charged with coats-of-arms. On tablets of brass affixed to a stone in the wall are the effigies, all kneeling, of:—(1) A man, (2) his first wife, (3) the four children by the first wife, (4) the second wife, and (5) the fourteen children by the second wife. The church is approached from the west through one of the most remarkable lych-gates to be met with in a day's journey. It is underneath the first floor of a cottage of which the massive oak beams may still be seen, the gate being of a turnstile pattern.



CHALFONT ST. PETER.

The secluded village of Chalfont St. Giles passed into the possession of Thomas Fleetwood in 1564. A member of this family, a Colonel George Fleetwood, was one of the judges of Charles I. He was subsequently convicted of high treason, and the estate was forfeited to the Crown. Chalfont House, once the ancient manor of the Brudenels, is situated in a beautifully wooded and undulating park, watered by the Misbourne, and contains one of the largest ash trees in England, measuring some 25 feet in circumference. Walpole was a frequent visitor here.

The mansion called The Vache is situated about 1½ miles from the church. In front is a brick building to the memory of Captain Cook. The parish church contains many memorials to the Lords of the Vache, as its successive owners have been known. Close to The Vache are the remains of an ancient monastery, the chapel of which served for the inhabitants of the house. The village of Chalfont St. Giles is, however, most interesting as the place of refuge chosen by John Milton in 1665, when the plague was devastating London. The house—a humble half-timbered cottage—in which he lived, "a pretty box," as he himself called it, was hired for him by his friend Ellwood, the Quaker. Ellwood had been introduced to Milton in 1662. In order to improve his scholarship he had offered to read Latin works to the blind poet, who in

* Read by Mr. Arthur J. Pitman at a meeting of the Upper Norwood Athenæum on June 23.

return assisted Ellwood in his studies. Ellwood afterwards became a tutor in the family of the Penningtons, was closely associated with the Quaker sect, especially with George Fox and William Penn, and was buried at Jordans. The cottage in which Milton lived is now preserved for the use of the public, having been bought by public subscription in 1887 as a memorial of the fiftieth year of Queen Victoria's reign, after many proposals had been made to purchase the house with a view to its removal and re-erection in America. It is the only house connected with Milton which still exists, and it is in almost the same state as when Milton lived there. It is supposed to have been built by one of the Fleetwoods, as their arms appear over the door. The porch, where we can imagine he sat and conversed with his friends, has disappeared, having decayed with the process of time. Inside the old-fashioned diagonal chimney has been replaced by a square one. The largest room, that nearest the road, is very possibly as it was in the poet's tenancy, while the mantel-piece in the room on the other side of the porch dates at least from his time. Altogether it is extremely probable that this residence is the scene of



MILTON'S COTTAGE.

many of the happiest events of Milton's later life. It is related that on the occasion of one of Ellwood's visits Milton handed to him the complete manuscript of "Paradise Lost." When he had read it Ellwood observed, "Thou hast said much here of Paradise Lost, but what hast thou to say of Paradise Found?" When Ellwood called on Milton a few months later in London he was shown the second poem, called "Paradise Regained," and Milton added, "This is owing to you, for you put it into my head by the question you put to me at Chalfont, which before I had not thought of."

It may be mentioned that Chalfont St. Giles is the home of the Middlesex cricketers—the Hearnies.

Jordans, or Jourdans, is the name given to the meeting-house and burial-ground which have so many intimate connections with the Society of Friends, more popularly known as the Quakers. The whole district teems with associations with the religious sect which cultivated so many ideas of civil and religious liberty, and whose advocacy of the abolition of slavery and of the reform of prisons must for ever redound to the honour of people whose lot for a long time was to suffer bitter persecution and horrible punishment. It would be difficult, perhaps, to find a spot of greater seclusion so near to the busy life of London. But the solitude of its position serves only to add to the grandeur of the simplicity which the place suggests. The meeting-house was built about 1679, and the oak benches and rostrum remain as they were in the beginning. When one reflects on the great and noble persons like William Penn, George Fox, Pennington, Elizabeth Fry, and others of the sect who have worshipped in the meeting-house, and have expounded when, as they quaintly put it, they were "moved by the Spirit," one cannot but agree that in spite of the absence of marble pile, mural tablet or coloured window the place is fitly called the "Westminster Abbey of the Quakers" and the "Mecca" of the great majority of Americans who visit this country. On the walls are to be seen a list of the 385 burials in the adjoining ground and a list of the marriages solemnised in the meeting-house. Opposite the rostrum and high up the

wall sliding shutters are to be seen. The exigencies of the Stuart period necessitated some such arrangement. For we read that it was no uncommon occurrence for the house to be surrounded with soldiers and for the worshippers to be taken away to durance vile. It was therefore the custom for the men folk only to occupy the floor of the meeting-house, the women occupying the room behind the sliding shutters; and this room being part of the dwelling-house rendered its occupants free from molestation. It is not to be wondered at that the Quakers adopted any possible device for saving their women from the horrors of imprisonment, however short the time, when we consider the kind of place a prison was. For instance, the prison in Nottingham was simply a hole in the ground beneath the jailer's rooms, with no provision for the necessities of life, and in which filth indescribable accumulated on the floor day by day. The sexes were not separated, and gentle lady was herded with ruffian—murderer or what not. It is indeed wonderful that anyone ever came out of such a place alive. The place where the horses were stabled is still to be seen.

In the graveyard are a few stones marking the burial-places of some Quakers, but the vast majority are unmarked. The most noteworthy grave is that of Wm. Penn and his wives and children. And it is Penn's grave which forms so great an attraction. For Penn was the author of a code of laws so simple and making for such a large measure of civil and religious liberty that it would have done honour to the profoundest legislators.

William Penn, the founder of Pennsylvania, and son of Admiral Sir William Penn, was born in the Liberty of the Tower, London. Although educated at Oxford and accustomed to mix with persons of high social degree, he rapidly became impregnated with Quaker habits and modes of thought, and suffered imprisonment for resistance to various Acts of Parliament which ran counter to his conscientious beliefs. The influential position of his father at Court was the means of large tracts of country on the other side of the "herring pond" being granted to the family. One extensive tract was named "Pensilvania," in honour of the admiral. As proprietor and governor of Pennsylvania and the adjacent territories, Penn was invested with executive as well as legislative power, and the Constitution he created for the governing of these territories was framed on the largest basis of civil and religious liberty. He settled the lands to a very large extent with people of his own persuasion, who were only too glad to be under the rule and governance of one who was so much in sympathy with their views. When Pennsylvania was invested with all the rights and privileges due to its position as a State, the interests of the Penn family were commuted for an annuity. His declining years were, however, embittered by disputes between the various occupants of the lands and by the misdeeds of his son and of his steward, which brought pecuniary embarrassments. Finally, an apoplectic seizure ended in death on July 30, 1718. It is tolerably certain that the memory and acts of Wm. Penn will be commemorated as long as the United States of America shall last. His two wives and several children were interred beside him, and in the enclosure we have seen to-day lie many others whose memories are cherished by that band of people—at once so peculiar and yet so high minded as to compel the admiration of the whole of the civilised world. The conditions of the trust require that services shall be held at least once every year, and the last Sunday in May is the annual day on which the Quakers foregather to commemorate their glorious past.

ENGINEERING LABORATORIES, EDINBURGH.

A PAPER was read by Professor T. Hudson Beare at York on the block of buildings completed in the early part of the present year for the Engineering School of Edinburgh University, and gave details of their equipment.

The building is T-shaped, the head of the T facing west. In the head of the T, on the ground-floor, are provided large laboratories for the testing of materials and for hydraulics. The first floor is devoted mainly to a laboratory for experimental work which does not require heavy machinery. On this floor there are also a small lecture-room, the departmental library and the private rooms for the staff.

The back block of the building is also divided into two floors: the lower forms the lecture theatre and the upper the drawing office. The lecture theatre will seat about 120

students, and on the lecturer's table are all the needful appliances for experimental demonstrations, there being steam, gas and electrical connections. There are also the necessary appliances for darkening the room in order to allow of the free use of lantern demonstrations. The drawing office is a fine room, about 45 feet square, lit entirely from the north and east, the roof being of the saw-tooth pattern, the floor-space giving room for about sixty independent drawing-tables. Special rooms have also been set aside for blue print-work and photography.

A workshop and heat laboratory has been provided for by roofing in and connecting to the main building a piece of ground lying to the north-east of the main building. The workshop and laboratory contain examples of all the ordinary machine-tools, gas-engines, steam-engines and other plant for experimental research in connection with thermodynamics.

The building is heated by hot water and by steam: an independent boiler-house has been constructed for this purpose, with two large boilers.

A considerable amount of additional apparatus has been installed in these new buildings. The testing laboratory now contains a 100-ton Buckton machine, with the necessary electric motor, pump and accumulator; a 60,000-lbs. Riehle machine; an Amsler 100-ton machine, specially designed for compression and bending work; and a complete installation for the testing of cements, mortars, &c.

In connection with the hydraulic laboratory a water tower has been constructed at the south-east corner of the building; at the top of this tower is a large cast-iron tank, holding about 10,000 gallons, and giving a head of 65 feet above the floor-level of the laboratory. The floor of the laboratory is on two different levels: on the upper level are placed the various turbines, water-wheels and other hydraulic machines on which experimental investigations will be carried out. The water discharged from these machines passes into one or other of three rectangular channels formed in the floor, and the quantity is measured by allowing the water to pass over weirs. The water then flows into one or other of two large rectangular tanks, each 11 feet square by 5 feet deep, sunk below the lower floor-level of the laboratory, where it is measured again by floats, with rods moving in front of carefully graduated vertical scales. From these lower measuring tanks the water is lifted by an electrically driven 20 horse-power centrifugal pump back to the storage tank in the water-tower. The hydraulic equipment includes a Venturi meter and other forms of meters and a considerable amount of other apparatus for experimental work.

The paper was illustrated by a considerable number of lantern views.

SCOTTISH ECCLESIOLOGICAL SOCIETY.

THE members of the Scottish Ecclesiological Society recently visited Dunglass and Cockburnspath. The party first visited the old church at Dunglass, by permission of Sir Basil and Lady Hall, under the guidance of Mr. Ross. The church is in a state of almost perfect preservation. It is built in the form of a cross, the longer limb being about 100 feet long and the shorter about 70 feet, with a chapel or sacristy on the north side. The stone-vaulted roof is entire throughout, and no timber was used in the construction of the edifice. There are several beautiful details in stonework, in particular the sedilia, divided into three seats by arched canopies richly carved. Several windows have their tracery entire. There is a central tower supported on four piers of singular form on plan, with fine connecting pointed arches. There are several coats-of-arms. One, an impaled shield, has the Home arms and the arms of the Pepdies. The church was founded in 1403, and was probably in course of erection in 1556, when Pope Nicholas granted relaxation of penances to such as yearly visit the college kirk of Dunglass. About the same time Patrick Hume of Powlert, with his wife, Helen Schaw, endowed a chaplain to celebrate mass and for chanting, principally at the altar of St. Cuthbert situated in the south aisle. There are several carvings in the church representing angels playing on musical instruments. In the very throes of the Reformation things appeared to have gone on here just as they had always done. Only a few years before the settlement of the Protestant Church, Lady Huym, also lady of the life-rent of Dunglass, commanded the provost, Abraham Crechoun, to install Sir Hugh Hudson as one of the prebendaries of the church, and to give him possession of the manse and garden belonging to the pre-

bendary, "taking his oath as is customary by touching the holy gospels of God," and a fortnight later he was duly admitted at eight in the morning by tendering to him the Bible and taking his oath. Even 20 years after the Reformation the Church appears to be going on in the old way. The old clergy who remained faithful to the Church were allowed for their lifetime some pittance, more or less, but there seems here to have been new provosts and prebendaries appointed till a late time. Adjoining the church is the mansion house, on the site of an ancient castle. A great tragedy took place here in 1640, when a party of Covenanters under the Earl of Haddington held the castle. Some of them taunted an English page about their superiority to his countrymen, when he ignited a barrel of gunpowder stored in the building, the consequences of which were dreadful, many being killed. In Cockburnspath, the village adjoining Dunglass, there is also an interesting church. The Rev. G. V. Dunnet, minister of the parish, acted as guide to the party on their visit. The church has not fared so well as Dunglass, but it has some interesting features, specially a round tower at the west end, which projects half outside and half inside, and rises a stage above the roof. This tower is old, but it is not easy to fix a date. Some other portions of the church exhibit work probably contemporary with that of Dunglass.

EXPLORATION IN EGYPT.

AMONG the papers read before the British Association was one by Professor W. M. Flinders Petrie, F.R.S., on "The Hyksos and other Work of the British School of Archaeology in Egypt."

A great earth-bank camp, twenty miles north of Cairo, proves to belong to the Hyksos or Shepherd Kings, who held Egypt from about 2400 to 1600 B.C. The camp is about 1,500 feet across, the bank 100 to 200 feet thick and over 40 feet high. The outside was a great slope of white stucco 60 to 70 feet high, and the entrance was a long slope of over 200 feet ascending over the bank. No such fortification is known before in Egypt. Within a year or two the defenders threw out flanking walls to command the sloping roadway. All of these works are only suitable for archery defence. Two or three generations later, when the stucco face was decayed, an entirely different system was adopted. An immense wall of fine limestone, 45 feet high, 6 feet thick and over a mile long, was built outside of the bank, which thus ceased to have any slope, and became a walled city. This all accords with Manetho's history, these archers having overcome the Egyptians without a pitched battle, just as the Parthians later destroyed the Roman army. And after a century the Hyksos built a great and mighty wall round their camp at Avaris, which is probably the structure here discovered. The cemetery of the Hyksos shows that there was a continuous degradation of work in the scarabs during this age. Hence it is possible to begin a systematic arrangement of all the names on Hyksos scarabs, which comprise the greater part of the kings of that race. They appear to have been Semites who came from the region between Syria and Mesopotamia, and they were pushed forward into Egypt and Cyprus by a migratory movement. The full details of this and the following discoveries will be found in "Hyksos and Israelite Cities," large edition, the annual volume of the British School. Other work has brought to view the store city of Raamses, built by the Israelites along with Pithom, and the cemetery of the city of Goshen.

The town and temple built by the high priest Onias has also been found, and it fully substantiates the accounts given by Josephus about this interesting migration of the Jews into Egypt in the second century B.C.; and a later cemetery at Gheyta shows how Eastern influence was filtering into the country before the great Arab conquest.

The Linlithgow Town Council recently communicated a suggestion to H.M. Office of Works as to the re-roofing of the Parliament hall of Linlithgow Palace. A reply was received in the following terms:—"Westminster: July 17, 1906. Sir,—Your letters of May 3 and 9 last addressed to Mr. W. T. Oldrieve, of H.M. Office of Works, Edinburgh, having been submitted to the Board, I am directed by the First Commissioner of His Majesty's Works, &c., to inform you that there is at present no practical proposal under consideration for the restoration of any part of Linlithgow Palace for actual occupation.—I am, your obedient servant, W. J. DOWNER."

NOTES AND COMMENTS.

WHEN PERRAULT was able to fascinate LOUIS XIV. and his Minister COLBERT with his design for the façade of the Louvre opposite the church of Saint-Germain l'Auxerrois the ground between the building and the street was not supposed to be as level as it is at present. The designs show that there were trenches which were intended to suggest that the palace was a building which might stand a defence in an emergency. Some time ago we stated that M. REDON, the architect who has now charge of the Louvre, had discovered the existence of the trenches, which are still in a perfect state, and can be turned without difficulty into a decorative feature. His recommendations required a long time to consider. But at length the French Government have approved of them. The ground along the fronts to the Quai, the Rue de Rivoli and the Place Saint-Germain l'Auxerrois will be excavated, and in the course of a few months the eastern part of the palace will be seen standing on a substantial substructure, with a trench or fosse strengthened by counterforts outside it. It is anticipated that the appearance of the buildings will be improved.

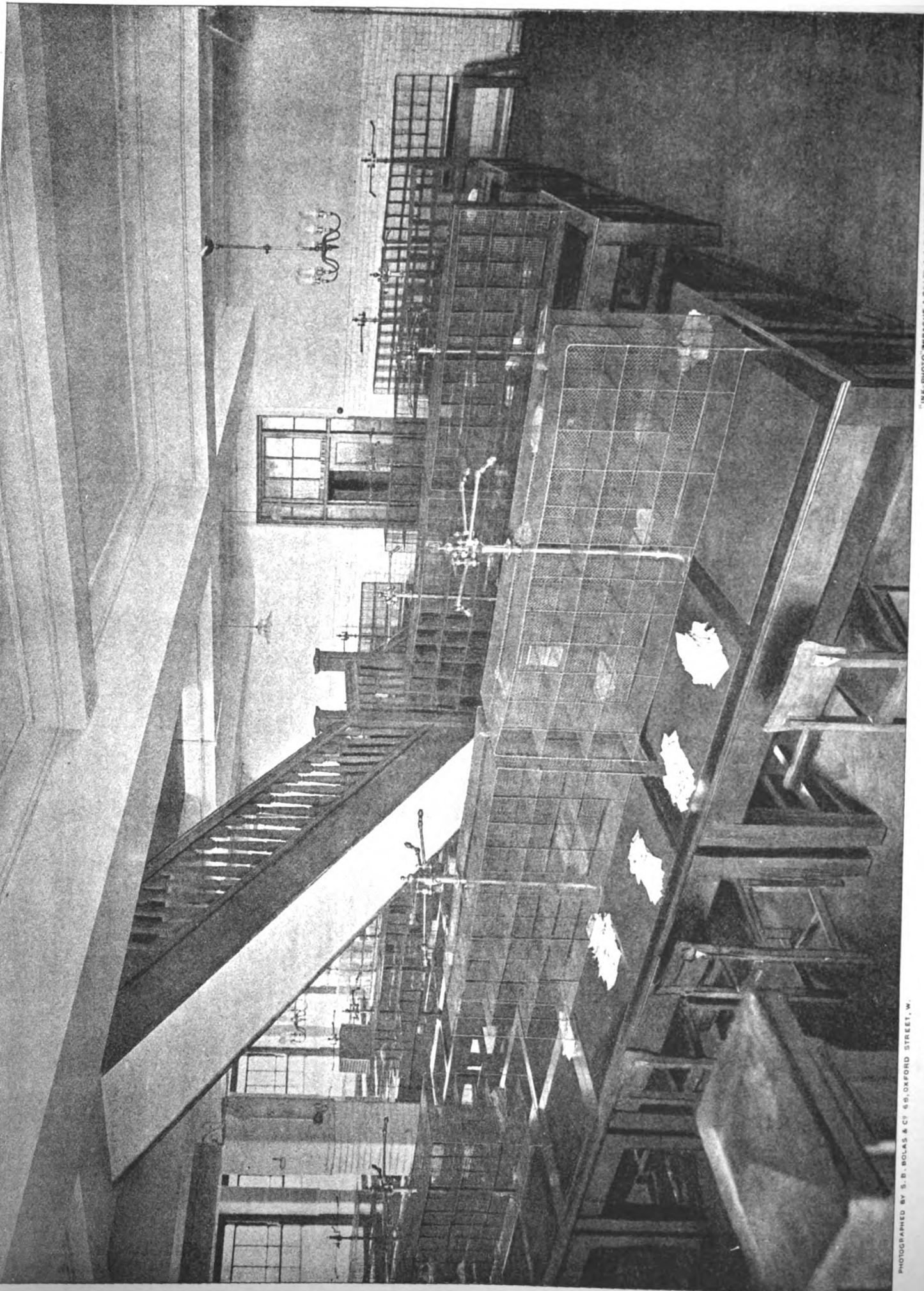
WHEN a building is let out to different tenants, all of whom have a right to use the entrance-hall and staircases, the landlord cannot so restrict the space occupied by the entrance-hall that the reasonable enjoyment of the property demised will be impeded. On the other hand, if the entrance-hall is larger than is required by the tenants, they cannot prevent the landlord from utilising in any way he sees fit the surplus space. These principles were illustrated by the case of *F. C. STRICK & Co. v. The City Offices Company, Ltd.* The plaintiffs were tenants of offices in Baltic House, 27 Leadenhall Street. The building had an entrance door 10 feet wide, leading to a hall 17 feet 9 inches wide, opening by an archway 6 feet wide into another hall also 17 feet 9 inches wide. The landlords intended to use part of these halls, and thereby to diminish their available width. The plaintiffs insisted that they had a right to pass over the whole space of these halls, and applied for an injunction to prevent the landlords from proceeding with their scheme. SWINFEN-EADY, J., held that the plaintiffs could only restrain the landlords from proceeding with their scheme in so far as their reasonable right of passage was impeded. In such a case the plaintiffs had not the right to go over every square inch of the hall. They only had the right to a way of dimensions necessary for the proper conduct of their business.

THE Governor of California, immediately after the earthquake of April 18, appointed a commission of professors and geologists to investigate the subject. The evidence was too apparent of the extent of the area of the movement by an examination of the surface of the ground. But the commission may also be said to have defined its depth. The first shock was recorded at one of the observatories at 12 mins. 6 secs. past 5 A.M., and between that hour and 7 P.M. there were thirty-one shocks. A line of rift can be traced, and there was destruction on either side of it for a distance of from twenty-five to thirty miles. In the city of San Francisco the commissioners say there were four types of ground — (1) the rocky hill slopes, (2) the valleys between the spurs of the hills which have been filled in slowly by natural processes, (3) the sand dunes, (4) the artificially filled land on the fringe of the city. The greatest destruction was among buildings erected on the made ground. The filled-in material and the swampy foundation upon which it rests behaved as a mass superimposed upon the earth's surface, rather than as a part of the elastic crust itself. On the rocky slopes and ridge tops, where, for the most part, the vibration communicated to buildings was that of the elastic under-

lying rocks, the destruction was at a minimum. On some of the hills chimneys fell very generally and walls were cracked; on others even the chimneys withstood the shock. It is remarkable that while the made ground in the vicinity was profoundly disturbed, steel structures of "Class A" were relatively passive. Thoroughly bonded and well-cemented brick structures, on deep and solid foundations, seem to have been equally competent to withstand the shock, except for occasional pier-like walls not well tied to the rest of the building. Wooden frame structures suffered through the effect of underpinning and bracing, especially when found on made ground. Pipes laid on made ground also suffered more than those on a rocky bed, except in the immediate vicinity of the rift. The commissioners suggest an acceptance of the geological conditions, and that costly public buildings should be erected on sites as near as possible to the rock. They believe it was owing to the State University at Berkeley being founded on rock that the buildings were practically uninjured. The report will be likely to delay the creation of a new San Francisco, and temporary buildings may have to serve for some years as in the primitive days of the city.

THE Pont de Saint-Pères in Paris has to sustain a very large amount of traffic, as it leads from the gateway in the Place du Carrousel to the Rue de Saint-Pères. It is a cast-iron bridge, and was erected seventy years ago under the direction of POLONCEAU. At the extremities four immense statues were placed in 1847. The sculptor was PETITOT, and the figures represent Abundance, Industry, the Seine and the City of Paris. It has been found necessary to renew the roadway, for the wood-paving had become decayed and was in a dangerous condition. M. RESAL, who has charge of the works, will have the whole surface laid in iron on which wood blocks will be set. The roadway will be brought nearer to the horizontal, and bracing will be introduced to prevent the movement of the bridge, which, although not uncommon with cast-iron bridges, is sometimes disagreeable. Originally no provision was made to support the weight of the statues, for they were not comprised in POLONCEAU's design. They will be removed, and it will therefore become more easy to improve the approaches. The statues will be sent to the Dépôt Auteuil, where they will find themselves making part of a very large company of similar works which have fallen out of favour. The paving is to be carried out with expedition.

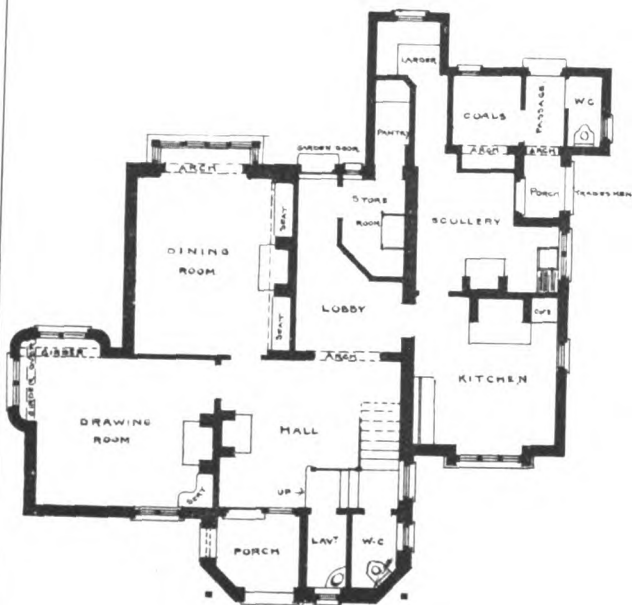
THE London Public Health Act, 1891, imposes upon the sanitary authority the duty of removing house refuse, and for neglect of this duty renders it liable to a penalty not exceeding 20*l.*; but it is under no obligation to remove trade refuse without payment. In the case of the Mayor of Westminster v. Gordon Hotels, Ltd., the question arose whether the ordinary refuse of a large hotel was house refuse, which the sanitary authority was bound to remove, or whether it was trade refuse, which it was not bound to remove. It is clear that if the distinction was drawn by asking whether the refuse was produced by the ordinary user of the house by a tenant or tenants, or whether it was produced by the user of a house for the purpose of carrying on a trade, the refuse in question was trade refuse. But to solve the question in this manner would give rise to many insoluble difficulties. What, for instance, would be the position of a person who kept a boarding-house, who let furnished apartments, or who entertained paying guests? Accordingly, the Court laid it down very sensibly that the distinction between house and trade refuse must be drawn by reference, not to the mode in which it is produced, but to the character of the refuse itself. If it is "produced by a house in the way in which a house is ordinarily used" it is house refuse and not trade refuse.



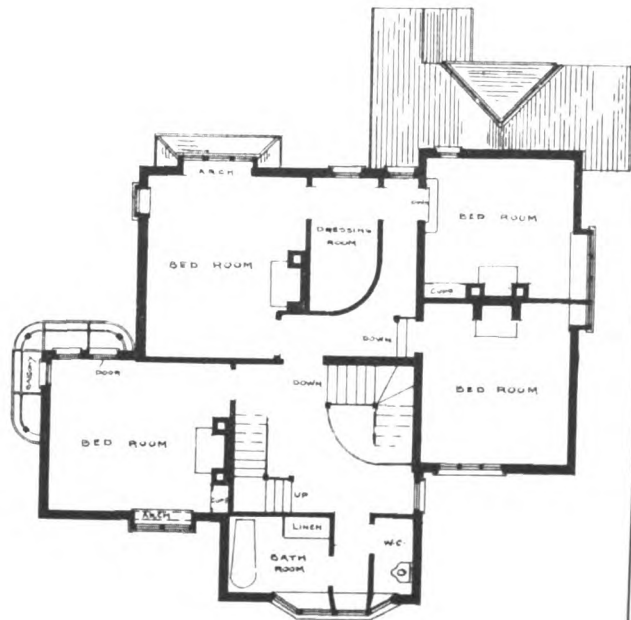
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GROUND FLOOR PLAN



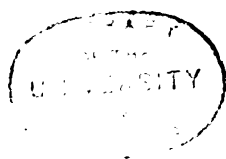
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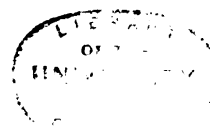


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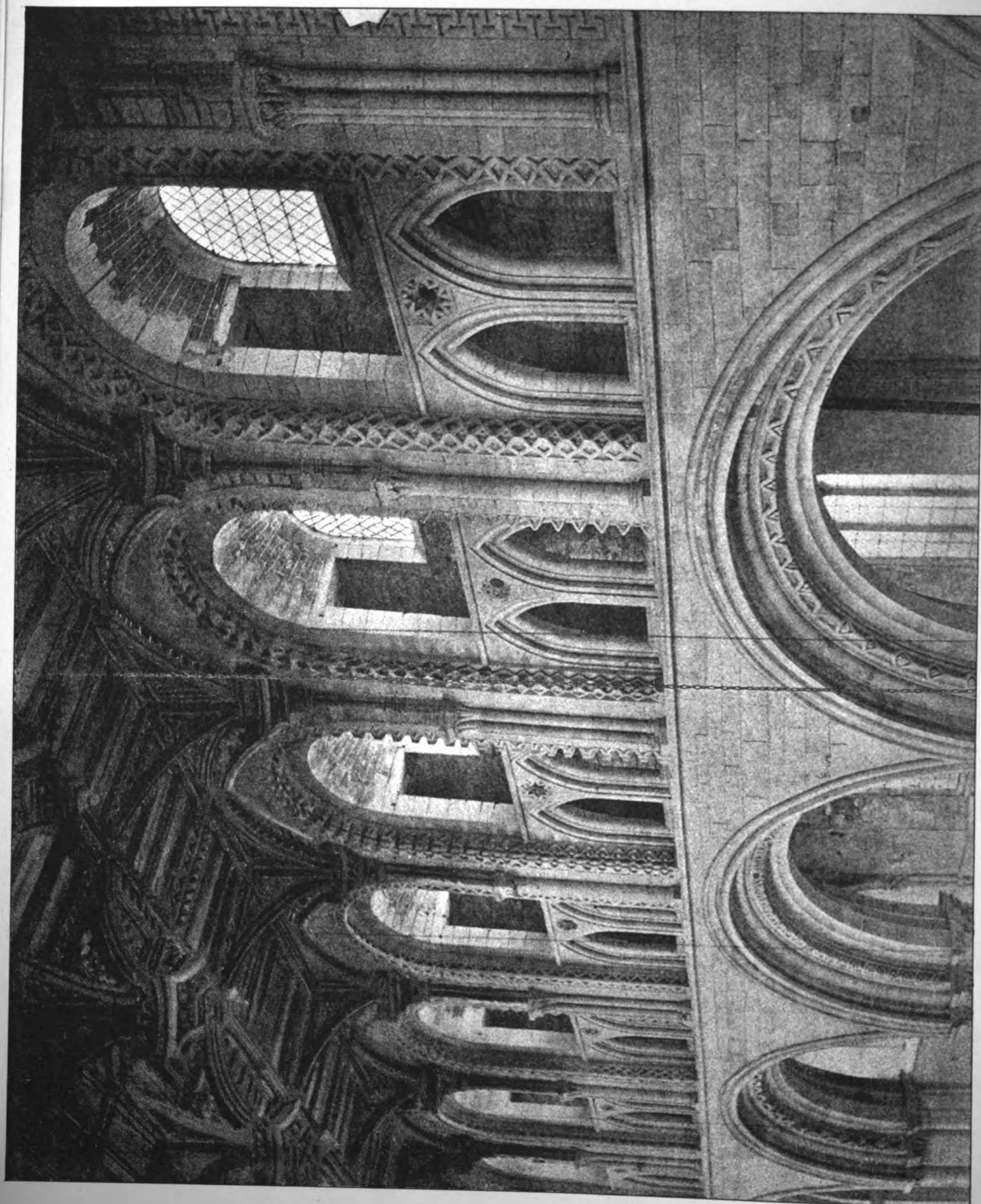
HOUSE: REIGATE, SURREY.

C. E. SALMON, Architect.





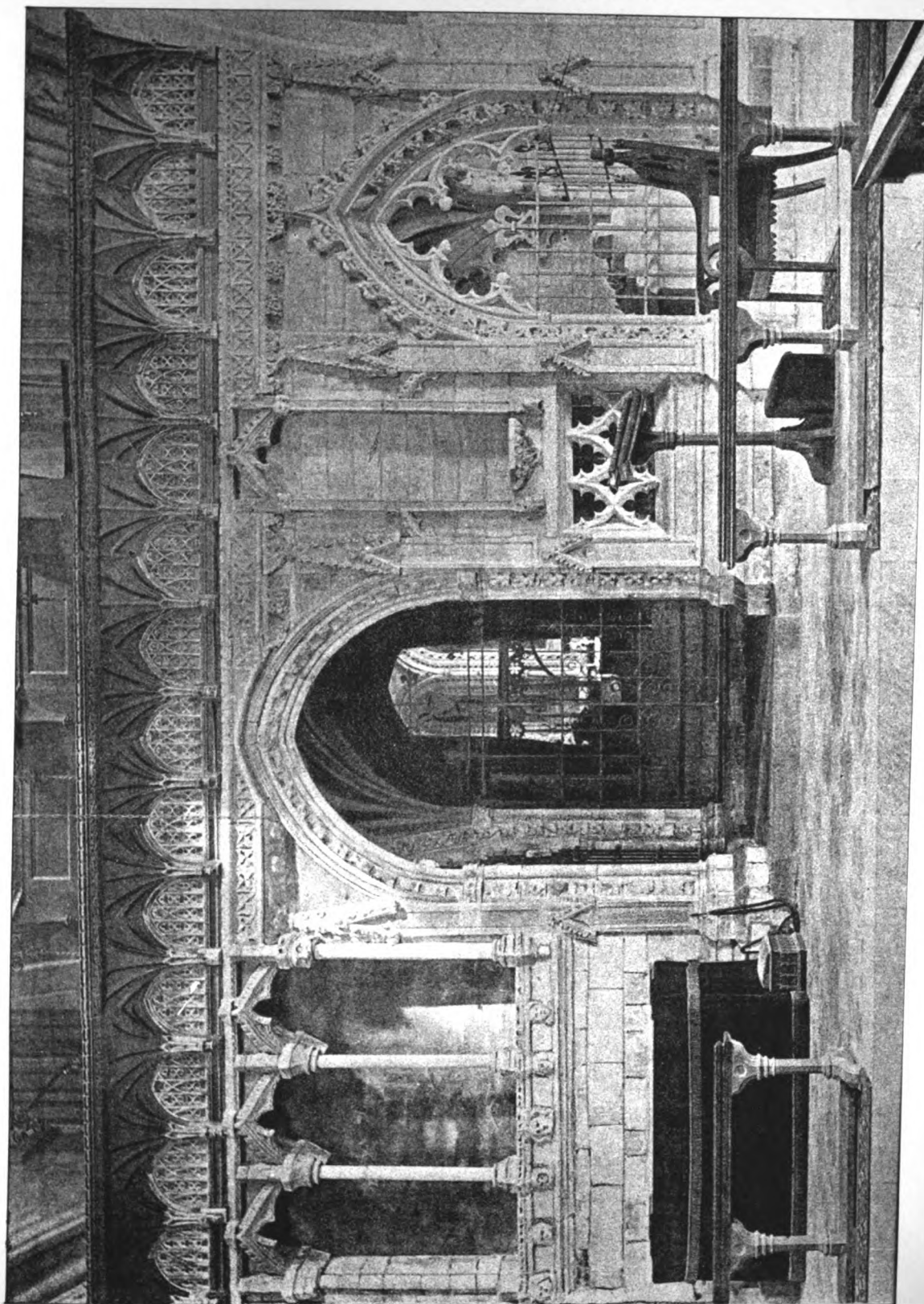
The Architect, Aug. 10th 1906.



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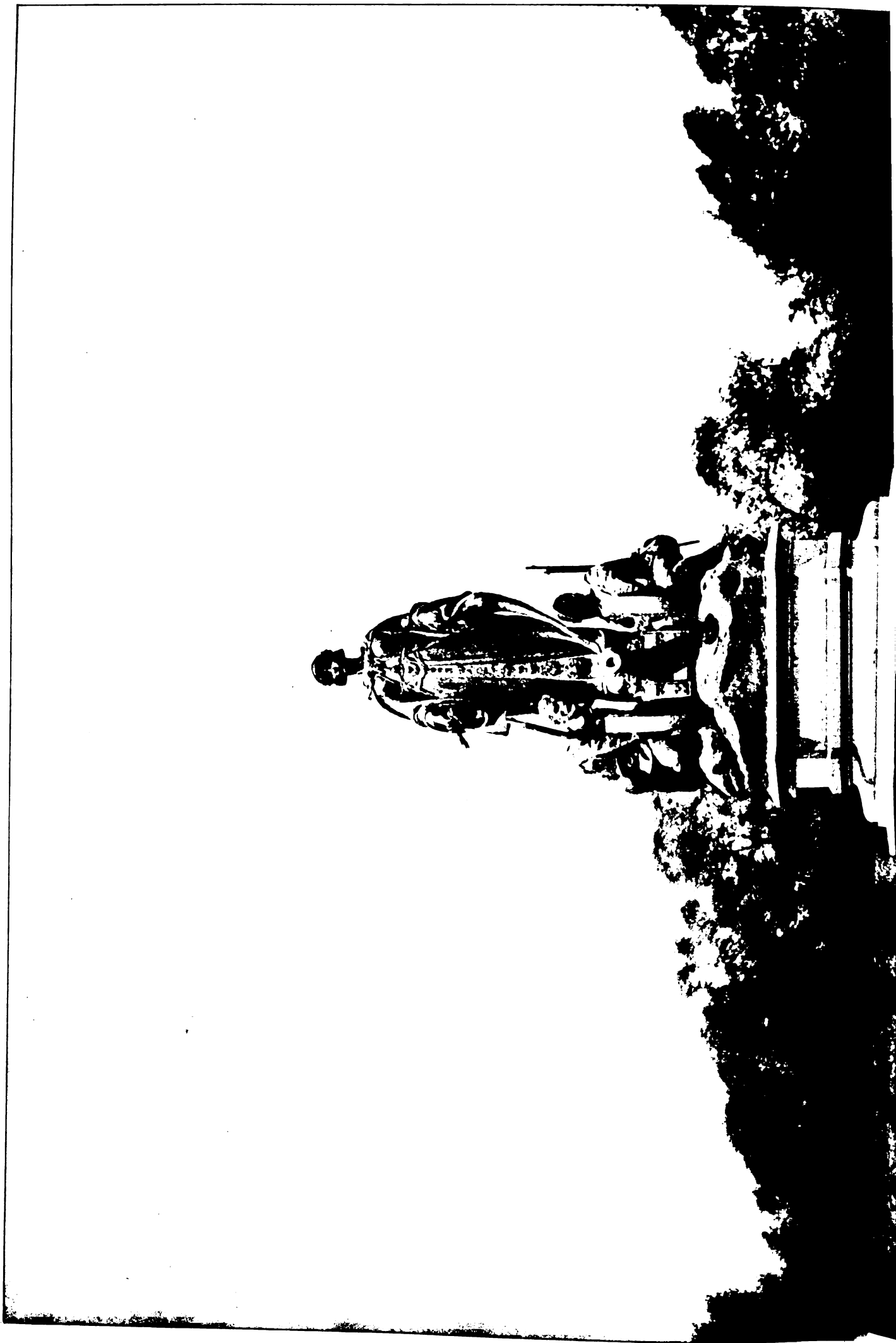
CATHEDRAL SERIES, No. 570.—ST. DAVID'S: THE TRIFORIUM AND CLERESTORY FROM TOP OF ROOD SCREEN.

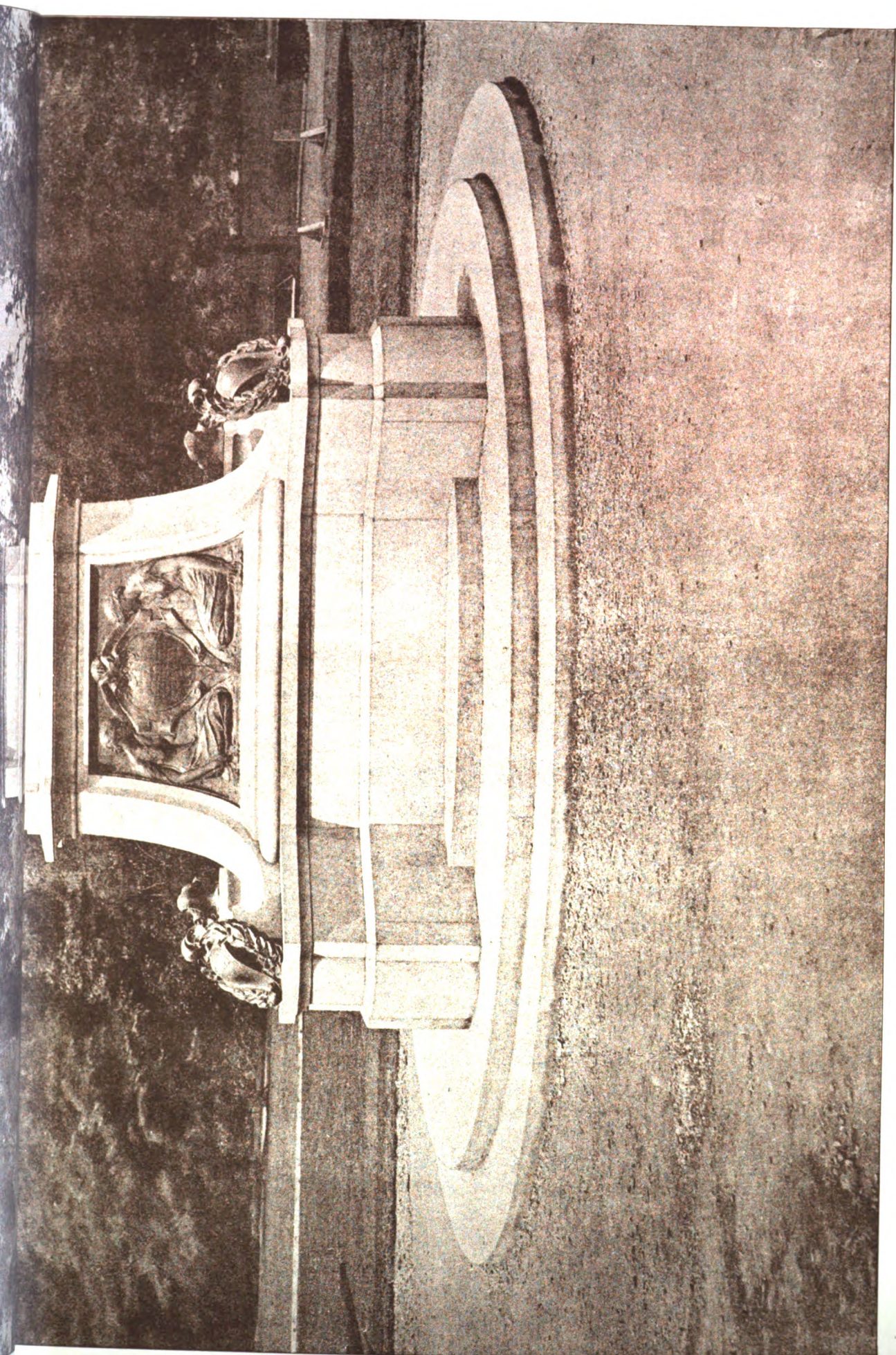
The Architect, Aug. 10th 1906.





The Architect, Aug. 10th 1906.





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SOLDIERS' WAR MEMORIAL, BIRMINGHAM.
ALBERT TOFT, Sculptor.





CITY HALL, BELFAST
ALFRED BRUMWELL THOMAS

Aug 10th 1906.



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BELFAST.

THOMAS, Architect.



ILLUSTRATIONS.

CITY HALL, BELFAST.

IRELAND, unfortunately, has not been for a long period in a condition that could be considered as favourable to the production of architectural works. The completion and opening of the new City Hall, which took place on Wednesday of last week, deserves to be considered as an historic event. As the Lord-Lieutenant of Ireland said on the occasion:—

It is a day for congratulations and for rejoicing, rejoicing, not of a superficial or complacent sort, but rather the rejoicing of thankfulness, high hopes and purposes. Just as it is the chief glory of this splendid edifice that it is characterised, not merely by magnitude, but by beauty and grace, so it is the case that the true greatness of any community or State consists, not mainly or wholly in the magnitude of its resources of wealth and population, but rather in the tone and spirit which pervade its affairs and influence. So to-day we feel that the occasion is not only one for gladness, but also one of high hope and expectation and the most profound good wishes. Heartfelt, indeed, are the wishes which we with united hearts offer to-day. May the massiveness of this noble structure typify the sure and stable foundation of the prosperity and welfare of this great city and community; may the beauty and grace of the design and execution of this building and its artistic features symbolise and more than symbolise the culture and all that is best in public and private life, the promotion of all that is true and lovely and of good report.

The building was erected from the design of Mr. BRUMWELL THOMAS, of Westminster, and the contract was carried out by Messrs. H. & J. MARTIN. In the construction 25,000 tons of Portland stone from the O.P. quarries of the Bath Stone Firms have been employed. The principal front has a length of about 300 feet. The towers at the angles have a height of 115 feet, and the dome rises to 173 feet. The entrance hall measures 70 feet by 40 feet. Marbles have been used for the construction of the staircase. The council chamber measures 68 feet long by 38 feet wide. It is provided with balconies, and the seating is arranged as in the House of Commons. The great hall, which is 120 feet in length, will accommodate about 1,000 people, and there are in addition galleries for 250. There are several stained-glass windows by Messrs. WARD & CO., of Belfast. The entire equipment of sanitary appliances was entrusted to Messrs. GEORGE JENNINGS, of Lambeth, comprising their special Century closets with syphonic discharge, "tip up" and "lift out" lavatory basins in marble, and latest improved type of urinals.

SOLDIERS' WAR MEMORIAL, BIRMINGHAM.

THE memorial we illustrate was recently unveiled in Cannon Hill Park, Birmingham. It was designed and executed by Mr. ALBERT TOFT, sculptor, and is not only admirably composed, but is also expressive of its purpose—which is not always the case with English memorials. The uppermost figure represents Peace, who is supposed to be crowning Courage and Endurance. As the *cire-perdue* process was adopted the sculptor's modelling has been reproduced to perfection. The pedestal, which is of an architectural character, is constructed of granite; each of the four faces has a bronze panel. The front or dedication panel is made to be suggestive of grief by two kneeling figures. At the corners of the buttresses wreaths and shields are introduced, inscribed with the names of the battles in which the Birmingham warriors took part.

CATHEDRAL SERIES.—ST. DAVIDS: THE TRIFORIUM AND CLERESTORY FROM TOP OF ROOD-SCREEN.—THE ROOD-SCREEN.

THE screens of St. Davids Cathedral are of great interest. According to the description by Messrs. JONES and FREEMAN, the choir was divided into three parts to correspond with the three grades of the clergy, viz. the bishop or dean, precentor, chancellor, treasurer; next the four archdeacons and the holder of the golden

prebend; then the curial prebendaries and non-capitular members. Last week we published a view of the sanctuary screen which divided the stall choir from the more eastern part containing the altar. The screen now illustrated separates the chancel from the nave, and is necessarily of a more solid character. The appearance of the screen prior to the restoration may be inferred from the following description:—"The rood-loft projects a little into the nave; it is a very rich example of the Decorated style, but is very much disfigured by some mean ordinary paling running along the top, and a clock face within a lozenge-shaped wooden frame in the middle. This rood-loft shuts out the transept from the nave; in the centre of it is the entrance into the choir, under a pointed archway which is elegantly vaulted; the arch towards the choir is filled up with mean wooden doors having a fanlight above them, very similar to what is frequently seen in taverns." The second illustration represents mainly the peculiar triforium and clerestory, as well as the very elaborate if unsuitable timber roof. The cathedral was originally intended to be vaulted. The marked contrast between the interior and the exterior of the cathedral must strike every visitor. Standing outside one receives the impression that the building is in the severest form of Romanesque. But within the amount of ornament is almost sufficient to dissipate the belief, for we seem to have a building of a Transition type in which the Gothic element was predominant.

NEW OFFICES FOR THE HEARTS OF OAK BENEFIT SOCIETY, EUSTON ROAD, N.W.—BASEMENT.

HOUSE, REIGATE, SURREY.

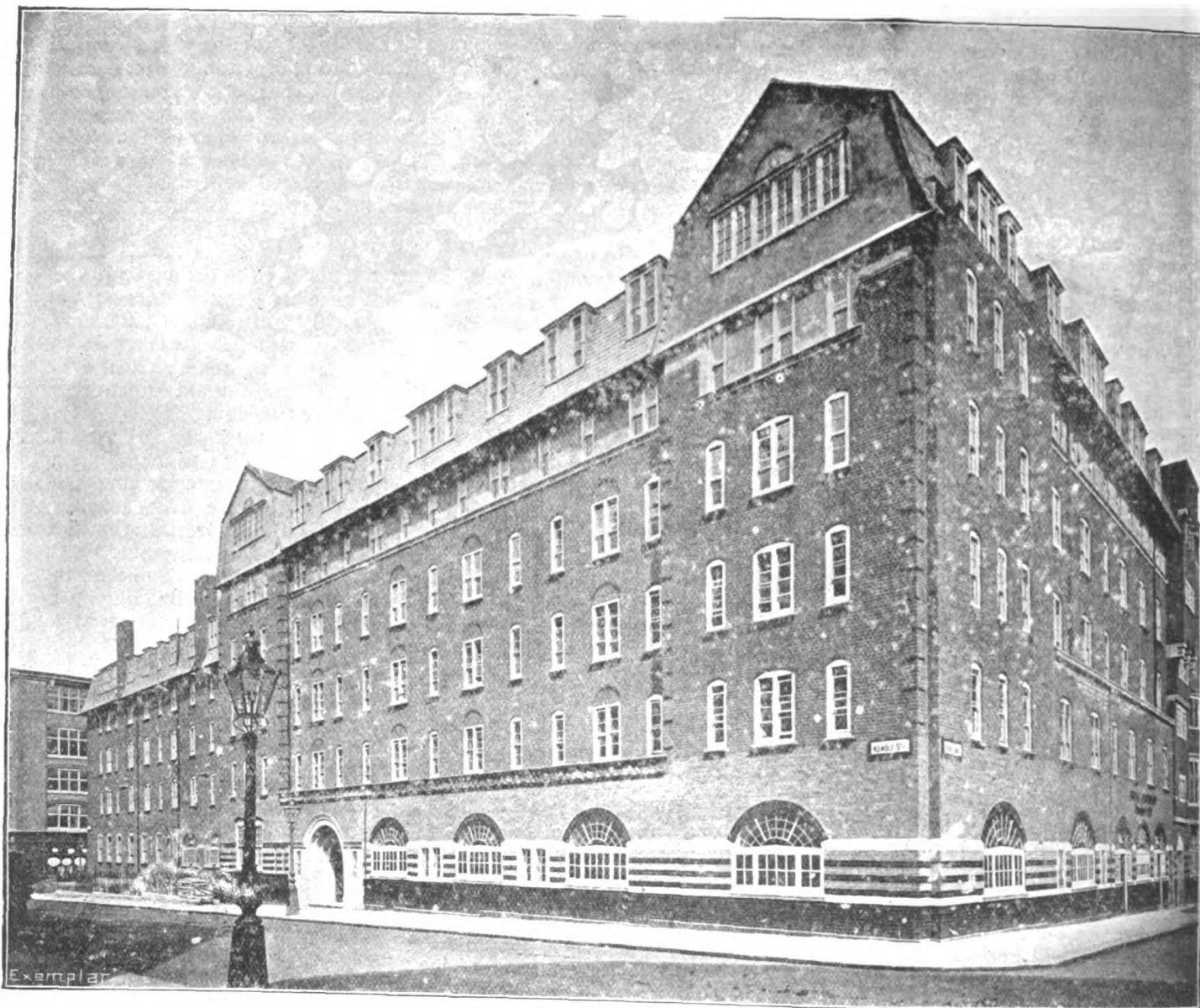
THIS house has been erected on the well-wooded Manor Road estate, at the foot of the North Downs, and commands extensive views along this range to Guildford and beyond; to the south views of the Weald and the South Downs are obtained. The lower portion of the house and chimneys is of local red brick; the upper part is covered with rough-cast of a cream tint, except over the kitchen quarters, which is tile hung. The gables are treated with solid half-timber work and brick-filling, left rough from the saw and dressed with Stockholm tar. The tiles are red, hand-made and sand-faced. The chief internal features are the hall sitting-room and dining-room inglenook. The builders were Messrs. C. NIGHTINGALE & SONS, of Reigate, and the architect Mr. C. E. SALMON.

EXCAVATIONS AT SPARTA.

THE work of the British school at Sparta in 1906, according to Mr. R. C. Bosanquet, M.A., F.S.A., has been to survey the site and investigate the Romano-Byzantine fortress. Parts of the Hellenic town wall have been discovered and traced, and general conclusions have been formed as to the extent and disposition of the town at different periods. The sanctuary of Artemis Orthia has been examined and the stratification of a "geometric" and a "Corinthian" layer determined. Ivories, lead figurines and grotesque clay masks have been found, the last affording evidence as to naturalism in archaic Spartan art. The later Hellenic period is a blank; in Roman times there was a further development of the cult, and numerous votive inscriptions recording musical and athletic victories of Spartan boys in the second century A.D. have been found. In the third century A.D. a theatre-like building was constructed in the *temenos*, the proscenium of which was the front of the temple.

Mr. William Mitchell, hon. secretary of the Cockburn Association, has prepared a memorandum on the subject of the National Galleries Bill. He suggests the completion of the National Monument on the Calton Hill, Edinburgh, for the National Gallery.

BRUCE HOUSE.



THE site of the building, which is the latest effort to provide a municipal lodging-house on a large scale, has an area of about 28,171 superficial feet, and has a frontage of about 220 feet to Kemble Street, 108 feet to Drury Lane and 139 feet to Kean Street. The plan of the building is E-shaped above the ground floor, so arranged as to provide adequate light and air to the cubicles. The building is six storeys in height. The elevations are of red brick facings, relieved with glazed and Luton bricks, stonework and rough-cast, and the roofs are covered with green slates. The ground floor (lodgers' section) comprises spacious dining-room (including hot chamber and lodgers' crockery store), smoking-room, reading-room, writing-room, locker-room, parcels-room and w.c.'s and urinals for the use of lodgers. The ground floor (administrative section) comprises office, superintendent's quarters, clerk's bedroom, female staff sitting-room and bedrooms, porter's day room and shop.

The basement (lodgers' portion) comprises lavatory, feet washing-room, baths, dressing-rooms, lodgers' wash-house, boot brushing-room and barber's and bootmaker's shops. The basement (administrative portion) comprises establishment scullery, kitchen, bread and milk store, larder, crockery store, shop store, general store, bedmakers' day-room, soiled linen-room, clean linen-room, establishment laundry (including drying chambers, one being set apart for mattresses), ironing-room, heating chambers and coal stores, and a disinfecting chamber.

The upper storeys, comprising 709 cubicles (with sanitary appliances on each floor), afford accommodation for 699 lodgers and ten porters. On the ground-floor there is a room facing Kean Street, which it is proposed to let for commercial purposes.

The dining-room has a floor area of 5,177 feet, including the space around the hot plate. Fixed teak tables and seats

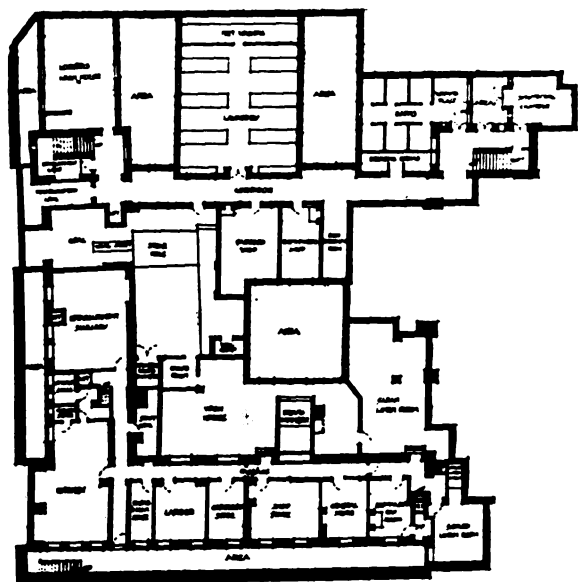
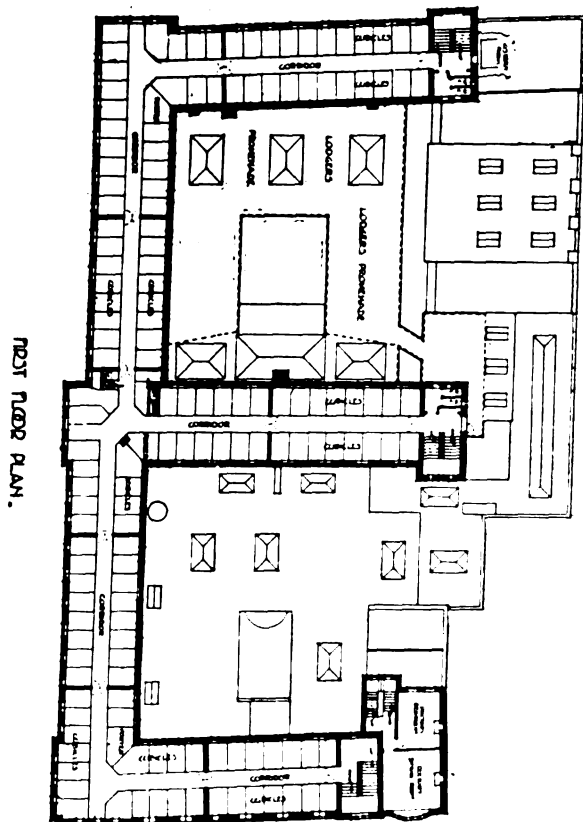
are provided to accommodate 360 men at one time. Near the middle of the room a spacious open chamber is provided for a large hot plate, at which lodgers can, if they desire, cook their own food. Sinks, with hot and cold water, are provided in two recesses off this chamber, where food can be prepared for cooking. A cylinder is fixed at each end of the hot-plate chamber with a constant supply of hot water for making tea, &c., and there are also two large cooking ranges. The lodgers' crockery store is placed on the north-east side of the dining-room.

The smoking-room is arranged on the main frontage, at the corner of Kemble Street and Drury Lane, and has a floor area of 1,907 superficial feet. Fixed teak tables and seats, accommodating ninety-six men, are provided in addition to movable arm-chairs. The room is heated by means of two open fireplaces, with special provision for the discharge of warm air. The reading-room is approached from the two main corridors, and has a floor area of 2,720 superficial feet. Fixed seats and tables are provided to accommodate 136 men, in addition to a number of movable arm-chairs. Two polished teak bookcases are placed on the east wall of the room, containing books for the use of lodgers. Three open fireplaces, with special provision for the discharge of warm air, are provided, and the room has a central open area which is accessible to lodgers. A special waiting-room is provided, approached from the reading-room. It has a floor area of 317 superficial feet, and will comfortably accommodate twelve men at one time. This room is heated by means of two steam radiators.

The locker-rooms are approached from the main corridor at the rear of the dining-room. They are fitted with 690 sheet-iron lockers, with teak doors. The parcels-room is approached from the main corridor, and is fitted with shelving for lodgers' boxes and parcels. The water-closets and urinals are approached through a disconnecting lobby

at the end of the main corridor. There are thirty-four water-closets and eight urinals.

The first-floor flat over the dining-room and portion of locker-room is railed off for use as a promenade for lodgers, garden seats being provided. It is approached from the central staircase. (The portion of the building over the basement contains four storeys of cubicle floors, and the remainder five storeys.) Each cubicle floor is divided into sections by division walls, which admit of the isolation and disinfection of sections in the event of contagious disease, and would also check the spread of fire.

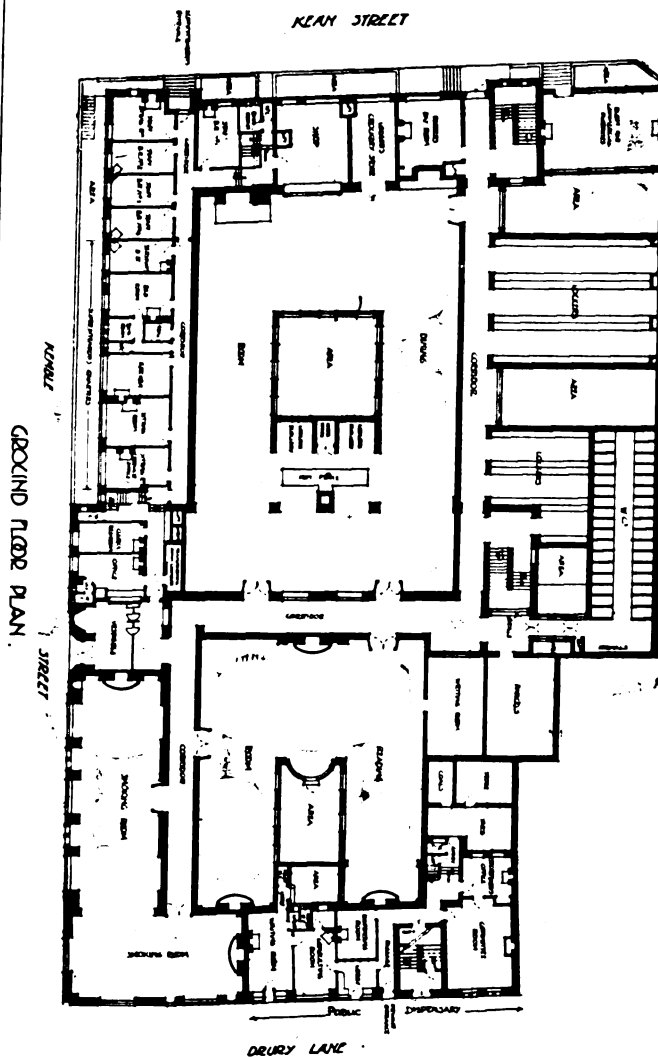


BASEMENT PLAN.

Each lodger has an independent cubicle having a minimum width of 4 feet 10½ inches, and an area of 36 superficial feet, and is lighted by a separate window. The height of the storeys from floor to ceiling is 9 feet, with the exception of the top floor, which is 8 feet 9 inches. The partitions between the cubicles are 7 feet 6 inches in height, that portion adjoining the corridor is 6 feet 6 inches in height, thus insuring ample ventilation. The cubicle partitions are framed wood with panels which can be taken

out and replaced if necessary without disturbing the framing. Each cubicle contains an iron bedstead with spring mattress, the whole of which can be folded back against the partition for the purpose of readily sweeping and cleansing the floor.

There are two principal staircases leading to the cubicles, and, in addition, one emergency staircase. These are so arranged as to make it practically impossible for any part of the cubicle corridors to be cut off from one or more of the staircases in the event of fire. Iron grates, fitted with panic bolts, are provided to the staircases to prevent lodgers having access to the cubicles during prohibited hours. Teak doors have been provided on the landings of the staircases in order to check the spread of fire from one floor to another, and each staircase is fitted with a fire hydrant with hose pipes at the level of each cubicle floor.



There are four w.c.'s on each floor on the staircase landings for night use, with the exception of the top floor, where two w.c.s are provided. Taps for drinking water are also provided at these landings.

The office, situated on the left of the entrance, is provided for the clerk, who is responsible for the issue of all tickets and keys to the lodgers and the giving of general information. The clerk is provided with a bedroom and lavatory accommodation adjoining the office.

The superintendent's quarters comprise superintendent's office, two sitting-rooms, two bedrooms, bath-room, &c. A private staircase leads to the first floor.

The surfaces of the walls in the principal corridors, staircases, lavatories, kitchens, cold stores, &c., have been finished in glazed bricks or tiles. The public rooms generally have dadoes of coloured tiles 7 feet 9 inches high. The reading and writing-rooms are provided with picture panels of prints framed in teak. The smoking-room has coloured pictures, similarly framed, and in the dining-room coloured tile pictures with tile frames are provided. The floors of the principal rooms are laid in wood blocks on concrete. The fireplaces to the reading and smoking-rooms are designed in coloured glazed tiles, with Hopton wood stone

dressings and mantel shelves. The floors and staircases throughout are of fire-resisting construction.

Mr. W. E. Riley, the Council's architect, has prepared the designs and superintended the work of construction throughout. Mr. Maurice Fitzmaurice, C.M.G., the chief engineer of the Council, has been responsible for the hot-water installation and the electric lighting.

The lodging-house is named after Mr. W. Wallace Bruce as some recognition of the many years of devoted work which he has given to the subject of housing in London. Mr. Bruce has been five times chairman of the housing of the working classes committee and has been a member of the committee for fourteen years. Mrs. Wallace Bruce kindly performed the opening ceremony.

THE LAKE VILLAGE AT GLASTONBURY.

THE eighth report of the committee for investigating the Lake Village at Glastonbury, consisting of Dr. R. Munro (chairman), Professor W. Boyd Dawkins (secretary), Sir John Evans, Dr. Arthur J. Evans, Mr. Henry Balfour, Mr. C. H. Read and Mr. A. Bulleid, which was presented to the British Association, states that the excavations were reopened this year, again under the joint superintendence of Mr. Arthur Bulleid and Mr. H. St. George Gray. Digging began on May 7, and was continued for four weeks until June 2. Two days were lost on account of heavy rain, and much inconvenience was experienced from the consequent flooding of the trenches. The percolation of water from the peat and the excavated ground of former years adjoining the digging necessitated the continued use of a pump. The area explored covered some 580 yards, and was situated at the north-west corner of the village, lying to the east and south of the piece of ground examined in 1905. During the digging this year another dwelling-site was discovered, hitherto unrecognised, bringing the total up to 83.

The number and the variety of the "finds" were well up to the average, and the structural discoveries were of exceptional interest and importance. Dwelling mounds 67, 74, 76 and 83 were explored in their entirety; Mounds 68, 71 and 72, partly excavated in 1905, were completed; the larger part of Mound 73 and the north-west quarter of Mound 75 were examined and await completion next year. As in former seasons, numerous photographs were taken and sectional and ground plans were made. The following points of interest were noticed in the different mounds:—

Mound 67.—This dwelling-mound was of medium size, and formed one of a group of six situated at the north-west corner of the village, lying east of Mound 68 and north-east of Mound 83. It was protected along the north, north-east and east aspects by the border-palisading, and was composed of four floors. The greatest diameter of the mound east and west was 25 feet, the total thickness of clay near the centre being 2 feet 7 inches. The whole mound was tilted downwards and outwards towards the palisading on the east of the dwelling. The substructure was strong and well preserved, especially under the east and north-east sides of the dwelling. The upper layers of timber were arranged in an east and west direction, the deeper layers being placed at right angles to these and parallel to the palisading. Thick layers of brushwood supported other parts of the dwelling-floors. Portions of an older and discarded palisading were discovered in the peat underlying the south-east quarter of the mound. The peat situated south of Mound 67 was composed of a heterogeneous mass of vegetable *debris* containing chips of wood, stones, bones of animals (including the nearly complete skull of a horse), and quantities of coarse hand-made pottery.

Floor I. was composed of yellow clay, and measured 13 feet 6 inches east and west. The hearth was well preserved, and consisted of a raised patch of baked clay measuring 4 feet 3 inches east and west, on the surface of which a well-arranged central area of lias slabs 3 feet 3 inches in diameter was embedded. The hearth was much tilted towards the east, the difference in the level of the east and west margins being 6 inches.

Floors II. and III., which were composed of yellow clay, had no hearths. A layer of peat and timber, 1 foot in maximum thickness, separated Floors III. and IV. in the east half of the dwelling.

Floor IV. was composed of grey clay, and at the south-west margin was continuous with the clay of Floor I. of Mound 83. Towards the north and east aspects of the mound the clay extended as far as the palisading. No hearth was discovered on this floor.

Mound 68.—This dwelling-mound was of small size, situated near the north-west border of the village, south-east of Mound 69, east of Mound 70 and north-west of Mound 83. It was protected along the north and north-east sides by the border-palisading and was somewhat quadrangular in outline. It was composed of three floors, the greatest diameter of the mound being 24 feet east and west, and the greatest thickness of clay 17 inches.

Floor I. was a small area of clay, 9 feet in diameter east and west, with a central hearth composed of a raised patch of clay with waterworn sandstone pebbles embedded in the surface. The diameter east and west of the stoned area measured 18 inches, and that of the clay portion was 4 feet at the floor-level. Floors II. and III. were of greater extent, with no indications of having had hearths. This mound contained an average quantity of pottery. Several pieces of thin grey Romano-British pottery were found on the surface of the mound, immediately under the flood soil, and one piece in the black earth belonging jointly to Floors I. and II.

Mound 71.—The greater part of this dwelling was examined and described in the 1905 report. The small section of the mound remaining along the east side was completed. The diameter of the clay floors was 22 feet east and west; the east margin of the clay overlapped Mound 83 to the extent of 8 feet. The well-preserved and arranged timber substructure noticed last year did not reach the east margin of the mound. No additions were made to the list of objects enumerated last year.

Mound 72.—This dwelling was partially excavated in 1905. It was composed of three floors and situated near the west border of the village. Nothing particularly noteworthy was found in the construction of the mound beyond that described last year.

Mound 73.—This was a large-sized mound, quadrangular in outline, with the greatest diameter lying north-west and south-east. It was situated south-west of Mound 74, south of Mound 71 and north-east of Mound 76. It was composed of two layers of clay, the upper being 18 inches thick at the centre and continuous at the east margin with Mound 74, and along the west side with Mound 76. Indications of a baked-clay hearth were noticed on the surface of the clay towards the south part of the mound. The second layer of clay was of small extent, the greatest diameter measuring 11 feet east and west. Time did not permit of the southern part of this mound being excavated this year, but it will in all probability be completed next season. The substructure under the north and west aspects of the mound was not important, but under the east side, adjoining Mound 74, it was composed of timber and brushwood placed in an east-south-east and west-north-west direction.

Mound 74.—This was the largest mound in the north-west portion of the village, situated south-east of Mound 71, north-east of Mound 73 and north-west of Mound 75. It was composed of five floors, the greatest diameter being 34 feet east and west, and the greatest depth of clay near the centre of the mound 4 feet 2 inches. The floors throughout the mound were uniformly composed of yellow clay. Floors I. and II. were the largest in extent, measuring 32 feet in diameter east and west. Floors III. and IV. averaged 25 feet east and west. Floor V. measured 11 feet east and west. The hearth belonging to Floor I. was composed of an oval area of gravel measuring 2.9 by 2.3 feet, and placed excentrically to the south-south-west of the central picket, or highest part of the mound. Floor II. had two superimposed hearths; the upper, a raised area of red clay measuring 3 feet 3 inches in diameter, of a deep convex outline in section, with thirty small sandstone pebbles embedded in the centre and arranged over a space 2 feet 3 inches in diameter. The diameter of the hearth through the base was 6 feet. The lower hearth was made of grey clay. Floor III. had two superimposed hearths; the upper, a small area of blue clay with an unusually distinct bevelled edge; the lower, an area of baked clay with irregular surface. Floor IV. had a remarkable series of four hearths. The first was made of gravel with a well-defined bevelled edge of circular outline, with a diameter of 3 feet 6 inches. The second made of grey clay, circular in outline, surface flat, and tilted towards the east. The third made of gravel, resting on a substratum of grey clay; the surface of the hearth was flat, the outline quadrangular, with the corners rounded off and the margin finely bevelled. The fourth made of clay; the surface was hard-baked and uneven, the greatest depression 3 inches deep; the hearth had a circular outline, surrounded by a moulded rim 6 inches

wide at the base and raised $1\frac{1}{2}$ inch above the level of the enclosed baked clay area, which measured 3 feet 3 inches in diameter. Floor V. was a small area of clay which only partially covered the timber substructure. It had two superimposed hearths of baked clay arranged eccentrically west of the central picket, or highest point of the mound.

The timber substructure was remarkably complete and well preserved. The timber formed a circular platform 19 feet in diameter east and west, the pieces being placed lengthways in an east-north-east and west-south-west direction, and measured from 6 to 12 feet long and from 5 to 9 inches in diameter. These were resting on other logs placed at right angles. The platform sank towards the centre, forming a shallow, saucer-shaped concavity, the difference in the level of the circumference and the centre of the depression being 15 inches. The platform was surrounded by several concentric rings of small piles or wall-posts. The posts were driven in at intervals of 9 to 15 inches. The inner circle of posts was placed at an average distance of 9 feet 6 inches from the centre, the second at 10 feet 6 inches and the third at 12 feet. Besides the piles arranged in line, several hundred more were found driven in indiscriminately, without apparent arrangement, within a distance of 12 to 16 feet from the centre of the dwelling. At the west-south-west aspect of the platform the continuity in the lines of the wall-posts was broken for a space of 6 feet. Where the concentric circles of wall-posts terminated two lines of three large piles were found, radiating from the centre to the circumference of the dwelling. The piles in each line were placed at 12 inches apart, and the middle post in each instance formed the terminal post of the inner circle of wall-posts. Between the two lines of posts the arrangement of timber differed completely from other parts of the substructure, and distinctly marked the entrance to the dwelling. Immediately outside the timber threshold was a large slab of lias, in the position we should have expected to find an entrance pavement. On either side of the entrance the timber of the platform was arranged triangularly; the base of the triangle, roughly measuring 5 feet, faced towards the circumference, and the apex towards the centre of the dwelling. The pieces of timber were placed parallel with the line of wall-posts, and gradually diminished in length towards the apex.

Mound 75.—The north-west quarter of this dwelling-mound was partly explored, and found to be composed of four floors. The mound awaits further examination next season.

Mound 76.—This dwelling-mound was situated near the west border of the village, and was protected along the south-west and west aspects by the border-palisading. It was placed south-east of Mound 72 and south-west of Mound 73, being continuous with the floors of both the adjacent mounds. The mound was composed of three floors, the greatest diameter east and west being 32 feet. The greatest depth of clay near the centre of the dwelling was 2 feet.

Floor I.—The hearth was incomplete, being within a few inches of the surface of the field. It was composed of a circular area of red marl 3 feet 6 inches in diameter. **Floor II.**—The hearth belonging to this floor was made of a raised area of clay 3 feet 3 inches in diameter, with thin slabs of lias embedded at the centre. The diameter of the stonework measured 2 feet. **Floor III.** was made of a mixture of grey marl, yellow clay and fireash, having quite a different appearance from the floors above made of yellow clay. The hearths belonging to this floor were composed of grey marl, and arranged in three superimposed layers. The centre of the upper hearth was hollowed out in the shape of a shallow basin with irregular outline, the depression in section being bordered by a raised moulded rim averaging 7 inches in width across the base and 2½ inches in depth. The depression was filled with fireash and several fragments of slag. Pieces of slag were also found on the floor around, together with portions of two crucibles and fragments of bronze and iron.

The substructure was strong and well preserved along the south-west and west aspects of the mound, the timber being chiefly arranged in a north by north-west and south by south-east direction, with occasional planks placed at right angles. Under other parts of the mound the woodwork was of less importance.

Mound 83.—This dwelling-mound covered a large area, measuring 28 feet east and west. It was situated near the north-west corner of the village, lying south-west of Mound 67, east of Mound 61 and south of Mound 68. It

was composed of four floors, the margins of which were considerably overlapped by the three adjacent mounds. Floors I, II. and III. were made of pale yellowish-grey clay; Floor IV. of yellow clay, in which quantities of hard orange-coloured ochreous nodules and gravel were uniformly mixed. The greatest thickness of clay at the centre of the mound measured 3 feet 6 inches.

Floor I. was a thin layer of clay with an average thickness of 6 inches; there were distinct traces of a baked-clay hearth extending over a circular area 5 feet in diameter.

Floor II. was 8 inches thick at its greatest depth and near the centre there were indications of a baked-clay hearth.

Floor III.—The clay averaged 6 inches thick; the hearth was made of baked clay and measured 2 feet 11 inches east and west across the top.

Floor IV.—The clay of this floor was 1 foot 10 inches thick at its greatest depth. The hearth was a circular area of baked clay, having a well-preserved and finely-moulded bevelled edge averaging 2 inches in depth. The average diameter across the top was 3 feet 7½ inches; the centre was raised 2 inches above the periphery of the edge and from 3 to 5 inches above the marginal line of the base.

The substructure was not strong or well arranged. Lying parallel with the east margin of Floor IV. a large mortised oak beam with three perforations was unearthed, measuring 8 feet long and 15 inches wide; it did not appear to be in its original position. Along the north-east margin of the mound a line of hurdlework was found, lying in a north-north-west and south-south-east direction. An alder-tree stump with roots *in situ* was found in the peat under the north-west quarter of the mound.

Among the objects found were a small piece of baked clay with three arms, perhaps a toy, a small fibula with spring of coiled wire, a solid bronze link-shaped object, a harness ornament, a spiral finger-ring, an unusually long weaving-comb, a large armet, ornamental pottery, upper and lower stones of a quern, red colouring matter, a wooden mallet, portion of hub of a wheel, &c.

EXCAVATIONS ON ROMAN SITES IN BRITAIN.

THE report of the committee, consisting of Professor W. Boyd Dawkins (chairman), Mr. J. L. Myres (secretary), Sir Edward Brabrook, Professor W. Ridgeway and Mr. T. Ashby, appointed to co-operate with local committees in excavations on Roman sites in Britain, was presented at the meeting of the British Association.

The committee has made itself acquainted, as in former years, with the course of the excavations which have been in progress on Roman sites in Britain during the past year, and has been favoured in certain cases with summary reports of the work done. After full discussion of the circumstances thus brought to its notice, the committee has decided to offer grants in aid of special researches on certain sites as follows:—

At Caerwent, as in 1904 and 1905, for the following special objects:—(a) To examine the contents of wells found in the course of excavation, with special reference to the stratification of their contents, and to the identification of the remains of animals and plants which may be found therein. (b) To determine the age and construction of the mound and ditch by cutting a complete section, or otherwise.

At Melandra Castle, for special investigation of non-Roman and pre-Roman remains. At Newstead, near Melrose, for special investigation of the contents of wells, in the same manner as at Caerwent.

In the case of Silchester, to which the committee made a small grant in 1904, no formal report has been received, but the contents of wells found in the course of the excavation have been examined as before. The report from Silchester, which is appended, merely records the general progress of the excavation, in continuation of the series of summaries communicated to the British Association in years in which grants of money have been made.

Excavations at Caerwent, 1904-5.

(a) *Report upon the Investigation of the Mound.*—Upon the south, west and north sides of the city traces have been found, within the city wall, of an earlier defence, in the form of a mound of very hard red clay—the local clay, but more compact and binding than this clay in its natural state; it can be recognised by its hardness when excavated,

though there is but little difference in colour, and, further, by the existence on its surface of small pieces of charred twigs, which occur in less amount all through it. Just below it, too, there is also a layer of charred stuff—as if the brushwood on the site had first been set on fire, and as if that which grew on the top of the mound had also been burnt once or more.

After the necessary profile measurements had been taken, the mound was cut into in several places. The first section to be described was that to the S. of Room of "House XII." The material was here, as elsewhere, very hard red clay, with pebbles in it; 13 feet below grass level, at 10 feet from the wall of the courtyard (which interrupts its backward slope), a pocket of charred stuff and burnt bones was found, with some pottery, including figured *terra sigillata*, and the bottom of one *terra sigillata* vase, with inscription, OF. APRO (C.I.L. vii. 1336. 78). Under the mound itself one small piece of bronze, one bit of *terra sigillata*, one bit of pottery with rough black paste and some grey pottery were found.

Another partial section was made a little further west, to the south of Room 15 of "House XII." Here the crest of the mound was found to have been 5 feet only below ground. The hard clay layer was only 4 feet 7 inches thick at the crest and 3 feet on each side; it consisted mostly of dark clay, with a lighter layer between. Under it were found several bones and a flake of flint, also a bone pin and several pieces of pottery. The earth below it is gravelly, with chips of limestone in it. Below this again comes natural hard red clay. Immediately to the west of the south gate the mound was found to slope away in all directions, showing clearly that there was a break in it to let the road out. A good photograph of this portion was obtained. To the east of the south gate it was not found at first,* but eventually a limekiln was found cutting into the mound, which was perhaps used by the builders of the wall.

A similar section on the west side of the city, west of "House VII.," a little way south of the west gate, is published in the Caerwent Excavation Committee's Report for 1901.† Here there was a road at the bottom of the backward slope of the mound, on the further edge of which was the west wall of the house. When the wall was constructed the house was extended over part of the road and the level slightly raised, inasmuch as the space between the mound and the city wall was naturally filled up.

On the west side of the city the mound has been traced, and its profile ascertained a little way east of the north gate.‡ It is intended to make investigations at other points further east.

Two sections have so far been taken of the city ditch, one just outside the north gate, the other some way further east,§ but it has not yet been ascertained whether the ditch originally belonged to the mound, the wall having thus been constructed on a shelf cut in the mound, and using the same ditch. This can probably be found out at the point indicated to the north of the amphitheatre, and it would be in this work, in taking another section of the city ditch and in working any wells that may come to light, that the balance of the British Association's grant for last year and the grant for the present year would be expended.

(b) *Sundry Animal Remains found at Caerwent, 1904.*—The following animal remains have been identified in the course of the excavations:—

(1) From a pot found upright in "House XII.," Room 39: Shrew, "Sorex vulgaris;" bird (egg-shell); toad, "Bufo vulgaris;" molluscs, "Helix pomatia" (fragment), "Helix aspersa," "Helix rotundata," "Helix pulchella," "Cochlicopa lubrica," "Limax agrestis" (?).

(2) From a drain by the side of the wall on south side of south gate (later extension of XIII.), 10 feet 4 inches below grass: Pig, "Sus scrofa;" teal, "Querquedula crecca" (?); fowl (?); fish-bone; iron nail.

(3) From "House XII.," Room 20, 6 feet down: "Achatina acicula" and "Microtus sp."

(4) From the westernmost of two V-shaped drains between "Houses XI. and XII.," 5 feet down: Much Roman pottery; "Mus sylvaticus" (?); Dunlin, "Tringa alpina" (beak); teal.

(c) *Report on Wells and their Contents, 1905.*—Well A

lies E. of "House VI." N. (see "Caerw. Comm. Rep.," 1901-3, p. 26); it is 25 feet 6 inches deep; its width varies: at mouth, 2 feet 3 inches by 2 feet 5 inches; at 18 feet down, 2 feet 9 inches by 3 feet; at 21½ feet down, 2 feet 8 inches by 3 feet; and at the bottom 2 feet 3 inches by 2 feet 5 inches, as at the mouth. The masonry is good throughout; the bottom is sandy rock. There is a spring at 18 feet, and here one stone is displaced. This well had already been cleared to 18 feet in 1903.

On clearing from 18 feet to 22 feet the finds were as follows:—Skulls of cows and other bones of cows and sheep (all cows were poleaxed), part of the skull of a dog and three fragments of stag-horn. From 22 feet to the bottom the finds were—more fragments of stag-horn, more skulls of cows ("B. longifrons"), oyster-shells, a scallop-shell, fragments of wood and hoops from buckets, small twigs, an acorn, fragments of human skull (23½ feet to 24½ feet down), much Roman pottery of ordinary types, and many old shoes (not of the open-work type) with hob-nails on the soles.*

Well B lies W. of "House XIII." N. It is 19½ feet deep; its width varies: at mouth, 2 feet 6 inches; at 15 feet down, 3 feet by 3 feet 3 inches; at bottom, 2 feet 4 inches by 2 feet 8 inches. The masonry is good, but the last 2 feet have no masonry, the sides being of clay. The bottom is of hard gravel.

The contents were as follows:—(a) From 4½ feet to 10½ feet: cow-bones, a fragment of wall-plaster, much concrete and a little ordinary Roman pottery; (b) from 10½ feet to the bottom, cow-bones, and (at 12 feet) sheep-bones, a few oyster-shells, fragments of ordinary pottery and roof-tiles, and a few fragments of shoe-leather.

Samples of earth from both wells have been sent to Mr. Lyell for examination for seeds.

(d) *Report on the Plant Remains for 1904.*—Mr. Clement Reid, who has kindly examined the samples of earth submitted to him, reports generally as follows †:—"Wheat is abundant mixed with tares. We find also the celery. A single badly-preserved seed of parsnip may belong to the same peculiar variety which occurs at Silchester. The remaining plants are weeds, such as elder, dock and stinging-nettle, with traces of willow and cottongrass, suggesting wetter places. No cultivated fruits have yet been found, the only edible species being the blackberry."

Excavations on the Site of the Roman Fort known as Melandra Castle, Derbyshire, 1905.

The excavations carried out at Melandra during 1905 have had as their main results:—(1) The uncovering of the foundations of the northern and southern gateways. (2) The uncovering of the greater part of the stone rampart surrounding the fort. (3) (As one result of the above) The determination of the exact dimensions of the fort. (4) A more careful examination of the rampart.

As the outcome of the work done:—(a) Measured plans have been obtained of all the gateways except one (which is more injured than the others). (b) A measured plan of the whole fort (including all the stone buildings discovered) has been drawn. (c) The pottery discovered on the site has been examined in detail with great care, and its bearing on the date of occupation of the camp fully brought out.

The following results of the year's work have a special bearing on the question of the occupation of the district in pre-Roman times:—

(a) In the course of the excavations, in addition to a number of Roman mill-stones, there were discovered within the area of the Roman fort a number of the earlier (beehive-shaped) querns. At least three patterns of these have been identified by Professor Boyd Dawkins, both upper and nether stones being present.

(b) An examination of the ancient roads in the immediate vicinity (by Professor Boyd Dawkins) led to the conclusion that prehistoric routes leading along Ridgeways in the direction of at least two prehistoric sites had been superseded by point-to-point Roman roads taking an easier gradient.

(c) An examination (by Professor Conway) of the set of leaden weights discovered on the site has led to a distinct confirmation of the theory (already laid down by Mr. Thomas May) that a number of these weights conform to a

* The excavations here were, owing to the presence of a walnut-tree (since removed), carried on under difficulties.

† *Archæologia*, vol. lviii. pl. ix.

‡ See *Caerw. Comm. Report* for 1901-3. *Archæologia*, vol. lix.

§ See *Caerw. Comm. Report* for 1901-3.

* The mud from the last 4 feet of the well was very difficult to examine carefully when it was actually excavated; but after it had dried, when it was used for filling in, in July of the present year (1906), five coins were found.

† The list is singularly like that of Silchester.

Celtic standard, while others are without doubt multiples of Roman units.

(d) A quantity of slag—showing the working of iron—has been found on the site. While this may not be pre-Roman, it is at least similar to what has been found on a number of prehistoric sites.

(e) A number of blunt chips and splinters, similar to those found near Rochdale and elsewhere in the Pennine Chain on Neolithic and Bronze Age sites, proves that the site was occupied in one or other or in both those ages.

Full and detailed reports of the work are contained in the volume entitled "*Melandra Castle*," published in June 1906 by the Manchester University Press.

Excavations at Newstead, near Melrose, 1905-6.

So far no remains of native pre-Roman civilisation have been found which require separate investigation, but there have been considerable opportunities for the examination of animal and plant remains. The animal remains, including a very large number of horse-bones, are being examined by Professor Ewart, of Edinburgh, and by Dr. Bryce, of Glasgow. Specimens of the plant remains have been sent to the Professor of Botany at Edinburgh, and it is to further investigation of similar plant remains that the grant now made is to be applied.

Excavations at Silchester, 1905.

No detailed report has as yet been received from the excavators as to the results obtained from the expenditure of the British Association's grant of 10*l.*, which was made in 1904 for work on the contents of wells and for trial trenches to ascertain the relation of the town well to the rectangular street plan. But the general character of the season's work at Silchester may be gathered from the summary which follows.

The excavations of 1905 extended over the six months from May 22 to November 18, under the constant supervision and direction of Mr. Mill Stephenson.

It was proposed to complete the investigation, which was begun so long ago as 1892, of the portions of Insulae V. and VI., and of the unnumbered insula south of them, which underlie the grass field. So far as Insulae V. and VI. are concerned, this investigation has been completed, but owing to the unexpected depth of soil which was found overlying the buildings in Insula VI. time did not allow of the ground to the south being even trenched. The excavation of the two insulae brought to light quite a number of interesting buildings.

In Insula V. the north-west corner was filled by a structure of regular plan but uncertain use, the main feature of which was a large pillared hall or workshop, with store-rooms at the end and a corridor or portico in front. In late times the building seems to have been degraded to other purposes. South of, but detached from it, was another structure of similar plan. The chambers behind this, however, were apparently living-rooms, and give a more domestic character to the building. From this second building there extends southwards a somewhat puzzling series of chambers of several dates as far as a large edifice that occupied the south-west corner of the insula. The main features of this were a great hall (?) with long and short corridors facing the streets, and a narrower corridor at the further end, beyond which again was a square building subdivided into small rooms. The nature and object of this extensive group of buildings is under investigation. The rest of the insula was devoid of buildings except along the northern margin, where there were laid open the foundations of a nice little house of the corridor type, with some interesting remains of mosaic pavements.

The western margin of Insula VI. is mostly occupied by the major part of an L-shaped building at the north-west corner which was examined in 1892. This has now been fully traced, and proved to consist of, apparently, a series of shops covered by a corridor or colonnade along the street fronts. At the south end there has been subsequently built on a second row of chambers, apparently as a series of drying-rooms, though the hypocausts have been destroyed. The northern wing of the block is noteworthy for having been built over an extensive layer of jaw-bones of oxen.

The remainder of the north side of the insula is almost entirely filled with the foundations of a large mansion of somewhat interesting character. It originally consisted of a fair-sized corridor house, standing north and south, with mosaic floors. To the east of this was afterwards added a courtyard enclosed by corridors, beyond which was built a second house on a somewhat larger scale, with fine mosaic pavements, &c. A room at the south-east angle is remark-

able for the remains of a wooden steeping tank sunk in the floor. In a corridor of one of the main chambers a human skeleton was found, laid in a rudely made grave against the wall. To the east of the house just described was a narrow courtyard with a wide entrance gateway on the north, and shut off from the street on the east by a strong wall.

On the southern margin of the insula are the remains of another interesting house, L-shaped in plan, and forming another example of the transition from the corridor to the courtyard type. Most of its floors were of plain or patterned mosaic. Under part of this house is a wood-lined well, associated with which were a number of pieces of sawn and cut timber of various sizes and uncertain use. Another large wood-lined well was found west of the building, and a third to the north-east. From this last there led southward, apparently to carry off the overflow of the well, a carefully constructed wooden conduit made of unusually fine oaken boards; two of them were no less than 25 feet long and 3 inches thick.

Owing to the nearness of the water to the surface, comparatively few pits and wells were met with, but the contents of these have nevertheless yielded further interesting remains of plants, &c., to the patient investigations of Mr. A. H. Lyell, Mr. Clement Reid and Professor Newton.

Several important architectural remains were brought to light, including some pieces of turned pillars, an unfinished "winged" altar, and a figure of a dormant lion, probably from the gable of some building.

A detailed account of all the discoveries was laid before the Society of Antiquaries on May 31, and will be duly published in "*Archæologia*."

A special exhibition of the antiquities, &c., found was also held, as in former years, at Burlington House.

It is proposed during the current year to continue, and, if possible, complete the investigation of the grass field, other parts of which have already been dealt with in 1902 and 1904. There will then remain only one other season's work to finish the examination of the whole of the 100 acres within the town wall.

No special report has yet been received from the excavators as to the results obtained by the expenditure of the British Association's grant.

PROTECTION OF ANCIENT MONUMENTS.

THE following letter has been forwarded to the Prime Minister by Mr. Ralph Nevill, F.S.A., hon. secretary of the Congress of Archæological Societies:—"By direction of the Congress of Archæological Societies in union with the Society of Antiquaries of London, I have the honour to send you the following resolution unanimously passed at their meeting held on July 4, 1906, under the presidency of Lord Avebury:—"That this Congress regrets that the Government has not carried out the provisions of the Ancient Monuments Protection Act for the appointment of an inspector. Various monuments have been placed under the Act on the faith that the provisions of the Bill would be observed; the Congress, therefore, urges that an inspector of ancient monuments should be appointed in accordance with the Act." I have been requested to say further that the Congress quite recognises the desire of the Government, in the arrangements that have been made, to protect the ancient monuments that have already been handed over to the care of the nation, and it has no intention of questioning either the zeal or ability of the official entrusted with the duties. I am instructed, however, to point out that it was intended by the Bill that the inspector should be a man of independent position, able to devote much attention to the duties of the office, and that these were intended to include, not merely the care of such monuments as were named in the Act, but an official status which would enable him to intervene for the preservation from destruction of other similar monuments. The experience of the committee of the Congress formed for recording earthworks shows that such an inspector might be of the greatest service in preserving from destruction those important relics of the past. It is obvious that duties of this description cannot be adequately discharged by an official in Government employ who has other important duties to fulfil and who does not possess the status contemplated in the Act. A salary is provided by the Act for the office of inspector, and I am to submit that this sum which is annually voted by Parliament should not be diverted by repayment to the Treasury as has been done for some years. The Congress wishes to call your

attention to the statement made by the First Commissioner of Works (Hansard, August 3, 1900):—"It has been thought advisable not to make any appointment immediately, so that some indication may first be gathered of the probable effect of this year's resolution for the extension of the Ancient Monuments Protection Act." On behalf of the Congress, which represents forty of the principal archaeological societies in England, Ireland and Wales, and some 12,000 members, I am to respectfully pray that you will see fit to revert to the original practice of appointing an independent inspector."

EXCAVATIONS AT CAERWENT.

THE present excavations at Caerwent, Monmouthshire, began in 1899, and have been carried on every summer since then for a period of about three months. The results obtained up to August, 1904, were described in a paper read at the Cambridge meeting. The rest of the season of 1904 was devoted to the exploration of a very large house on the west edge of the road leading to the south gate, in which three or four different periods of construction could be distinguished. An interesting mosaic pavement was discovered here, which has been removed to the Newport Museum. The house has been filled in again, but a full account has been published in "Archæologia," lix. 2.

The beginning of the season of 1905 was devoted to clearing the inner side of the south gate, which was found to have been filled in the same way as the north gate, but with greater care; the inner arch is to a considerable extent still preserved. The rest of the time was spent in work in the northern half of the city. Five buildings were excavated, one of which, containing an octagonal bath, is probably part of a building situated further north, which may be the public baths of the city. Of the others, one is remarkable for possessing a colonnade, another for having one of its walls preserved to a height of over 10 feet, the lower part retaining considerable remains of painted plaster. Two wells were excavated and yielded a considerable quantity of plant remains. The president of the fund, Lord Tredegar, has generously acquired, for purposes of excavation, a considerable area in the north-east portion of the city, and the campaign of 1906 will probably be devoted to the further examination of several buildings of which portions only have up till now been accessible.

GENERAL.

His Majesty King Edward VII. has ordered forty copies to be made of Sir Luke Fildes's portrait of Queen Alexandra, which was exhibited in the Academy. He considers it the best likeness of Her Majesty in existence, and he intends to present one to each of the Colonial Parliaments and to the British Embassies abroad.

Mr. John Lavery, R.S.A., has been elected Associate of the Royal Hibernian Academy, and the election has since received the approval of His Excellency the Lord-Lieutenant.

The Northamptonshire Education Committee have agreed that the appointment of Mr. A. F. Watson, as consulting architect at a salary of 100*l.* per annum, the appointment to be terminable by three months' notice in writing, and to be subject to the conditions laid down in the minute of appointment of September 30, 1905, be continued.

The Salisbury and District isolation hospital committee have agreed that architects be invited by advertisement to send in plans for the proposed, new hospital and that premiums of 20 guineas and 10 guineas be offered to the first and second in order of merit. The amount of the first premium to be merged in the ordinary commission should the architect be employed for the work.

The Duke of Devonshire, as well as his tenant, will allow excavations to be undertaken in the outer court of Pevensey Castle. The work will be under the direction of a committee of the experts formed by the staff of the Victoria Histories, acting in co-operation with the Sussex Archaeological Society, and there is every reason to hope that the results will prove of great interest and value, as it seems probable that the remains of the Roman settlement of the Anderida, which was sacked by the Saxons in 491, have not been disturbed during the last 1,400 years.

Mr. Robert Henry Middleton, borough surveyor of Walsall, with which town he had been connected in an official capacity for a period of about twenty years, died on the 4th inst.

Mr. F. W. Oxberry has been selected out of the 216 candidates for the position of borough engineer to the Kendal Town Council. Mr. Oxberry will therefore resign his post of assistant engineer at York.

Messrs. D. H. Burnham & Co., architects, Chicago, are said to be about to enter the European field. Mr. E. R. Graham of the firm has left Chicago for London, where, it is said, he will draw preliminary plans for a great mercantile structure.

At Caerphilly, near Cardiff, a bronze tablet has been erected to the memory of William Edwards, a bridge builder towards the close of the eighteenth century. Edwards was for forty years pastor of the chapel where the tablet was unveiled. During that time he erected several bridges in South Wales.

A Memorial Cross has been unveiled on the site of Douglas Old Chapel, in Parbold, near Wigan, which was demolished thirty years ago. This was the oldest ecclesiastical edifice in the county, having been built according to tradition to commemorate a victory of the Saxons over the Danes.

Mr. James Thomson, the interim Dundee burgh engineer, has been appointed burgh engineer at a salary of 500*l.* per annum, after having worked for the Council during thirty-three years. The terms of the appointment are that the salary proposed to be given shall cover all duties undertaken by Mr. Thomson, including those attaching to the office of city architect, which he has for some time held, Parliamentary work, &c.

Mr. W. Hale, R.S.A., has completed another panel in the banqueting-hall of the new City Chambers, Edinburgh. The subject is King Robert the Bruce granting at Cardross a charter to Edinburgh in 1329.

Mr. Lloyd Edward, county surveyor for Glamorganshire, died at Bridgend on Tuesday at the age of sixty-three.

Mr. Burns, M.P., was asked in the House of Commons on the 4th inst. whether his attention had been called to a statement of Sir Alexander Binnie that the rivers Thames and Lee, from which the drinking water of London is drawn, receive above the waterworks intakes the more or less clarified sewage of 1,000,000 persons in the case of the Thames and about 250,000 in the case of the Lee, and that the late Sir George Buchanan, principal medical officer of the Local Government Board, stated that the drinking of such contaminated water ultimately results in death and disease to the consumers; and whether it was proposed to take any steps to secure a purer water supply for London. The President of the Local Government Board replied:—"I have seen the statement made by Sir Alexander Binnie. I am informed that the whole question of the adequacy of the works of the Water Board and existing sources to deal with the present and future population of the water area is now under the consideration of a committee of that Board."

Sir Henry Campbell-Bannerman having been asked whether, in view of the fact that over 150,000,000*l.* has now been deposited by the working classes in the Post Office Savings Bank, he could see his way to introduce legislation to enable a proportion of the sum, say one-third, to be devoted to the erection of model freehold dwelling-houses for the working-classes, thus helping the poor with their own capital, said he was not prepared to introduce legislation for this purpose. He did not think that working-class dwellings are the most appropriate form of security in which to invest Savings Bank deposits. But a considerable portion of the Savings Bank funds is already applied, through the Local Loans Fund, in providing advances to local authorities for their expenditure on housing and other purposes.

Birse Castle, Aberdeenshire, which formerly belonged to the Marquis of Huntly, has been restored under the direction of Mr. G. B. Mitchell, architect, Aberdeen.

Mr. Walter Emden, J.P., the well-known West-end architect, who has now retired from business, has presented his business to his four principal assistants, namely, Mr. S. H. Egan, Mr. W. S. Emden, Mr. A. J. Croughton and Mr. T. C. Ovenston, who will now carry on the practice at the same address under the style of Messrs. Emden, Egan & Co. We inserted a paragraph on July 27 which would give an incorrect impression, as through an oversight the name of Mr. S. H. Egan was alone mentioned, whereas the practice has been presented to the four gentlemen referred to.

The Architect.

THE WEEK.

THERE has been silence about the measures to be taken for the preservation or removal of the Auld Brig at Ayr since January, and it would be pardonable if people in the South concluded that arrangements were made which were favourable to the preservation of the structure. A sum of 10,000*l.* was required to carry out the works necessary if the bridge could be utilised for public traffic while still retaining its present character. The Town Council agreed to delay their decision until August 1. At a meeting on Monday Mr. OSWALD, who has been endeavouring to raise the money, was compelled to inform the Provost that he had only received promises amounting to 4,000*l.* He considers, however, that inasmuch as so much money was raised through the efforts of one individual, the public will come to the rescue of the bridge by subscribing the remainder of the money. Meanwhile, he appealed for a further delay of two months, which the Town Council of Ayr have agreed to allow. There is consequently some hope for preserving an interesting structure.

It is announced that students matriculating in September at the University of London can enter on the courses for architectural students in October. There are two courses—the degree course of three years and the certificate course of two years. The degree course has been established in order to provide architectural students with an opportunity to continue their general studies while commencing their professional work. University College has the advantage of possessing a large engineering laboratory, the Slade School of Art, and comprehensive courses of arts and science. Arrangements have been made with the Carpenters' Company for a series of demonstrations in each year in the practical working of materials at the Trades Technical School, Great Titchfield Street. These are supplementary to the lectures and classes on building construction at the College. In addition visits are paid to workshops and to buildings in course of erection. There is a course by the professor of mechanical engineering on steel and iron construction and the testing of materials. There are, besides, for the convenience of some students evening classes in design, construction, measuring and quantities. Professor F. M. SIMPSON directs the day and evening classes, and he has the advantage of skilled assistants. The prospectus is deserving of the attention of students.

MEN in Birmingham have been distinguished by shrewdness, and that that quality still prevails was shown by proceedings at a meeting of the Birmingham Trades Council on Saturday last. The following resolution was proposed:—"That this Council regrets that in the large number of contracts let of late by the various committees of the City Council no clause or proviso was inserted to prevent the ever-increasing importation of quarry-worked stone; also that the continual subletting and re-subletting of this branch of the building trade is, we believe, detrimental to the ratepayers and workmen concerned, and this Council do urge upon our city councillors the necessity, while such prevailing lack of employment continues, to restrict as much as possible this importation of quarry-worked stone in future contracts, believing that thereby great assistance will be rendered to the solution of the unemployed problem." The preparation of stones in a quarry is a subject which masons in towns may with reason be supposed to question. In the first place, machinery may be used to a larger extent than masons would consider as fair to themselves. The American masons have in one place organised

a strike as the only way to assert their grievances. The Birmingham Trades Council might therefore be excused if they treated the subject academically and voted on it as a simple subject of political economy. But thirty-five were opposed to the resolution as against twelve in its favour, or, we may say, three to one. One member said there was no use in trying to prevent work being done at any place where the expenses were the most economical. Another speaker asserted that cheapness was not alone to be considered, but quality of work. At the quarry it was known how the stone was bedded, and men on the spot were therefore better able to dress it than those living at a distance. It was also pointed out that the resolution was suggestive of selfishness, for according to it the interest of the Birmingham stonemasons was alone deserving of consideration.

ST. BOTOLPH'S Church in Boston has so fine a tower that the other parts of the building become rather diminished in interest. The building was commenced in 1309, and it is one of the best examples of its class in the country. In 1857 it was restored, mainly by donations from Boston in the United States, whose people claimed an interest in the church. As a property it is somewhat peculiar, for the Corporation are the lay impropiators, having purchased the tithes in the sixteenth century. We suppose it was expected that New England would again intervene, for the chancel roof has been allowed to fall into so bad a state that a gale of wind or heavy snow might drive it in and a serious catastrophe ensue. The borough engineer, Mr. G. A. CLARKE, has called in Mr. W. S. WEATHERLEY, architect, and they have prepared a report on the decay which no doubt has long been apparent to worshippers. According to Mr. WEATHERLEY, the time has passed for repairs and the roof must be reconstructed. Mr. CLARKE estimates that the cost will be about 1,000*l.*

THERE is not as yet any street in Paris which bears the name of the late M. ALPHAND, although there is a public memorial of him. One reason for the omission is the circumstance that he was the chief lieutenant of Baron HAUSSMANN. But after the passing of the Empire he rendered services to the Municipal Council of Paris which should be remembered. An opportunity to make amends will soon be presented. The final arrangements have been sanctioned for the continuation of the Boulevard Raspail to the Rue de Sèvres, which will make a direct thoroughfare from the Boulevard Saint-Germain to the crossway where the Lion de Belfort is placed, thus connecting the Champs-Élysées with the less-known Parc de Montsouris. The line was originally projected by M. ALPHAND, and it would be equitable if when completed it bore his name.

COMMEMORATIONS are now in favour, and therefore it is allowable for the Liverpool Corporation to consider the possibility of celebrating the 700th anniversary of their charter next year. That precious document is still in existence. It was signed at Winchester on August 28, 1207, and is inscribed "King JOHN's Charter of Liberty and Protection for the Burgagors of Liverpool." Professor RAMSAY MUIR, of the local university, some time ago prepared a scheme with the assistance of the Town Clerk. One essential feature would be an imitation of the port and town as it existed seven centuries ago. There was also an ancient castle which might be reconstructed and used for an exhibition of historic documents and pictures. Views exist also of the old tower which stood in Water Street. So long a period as seven centuries affords numerous incidents which might serve as subjects for pageants. Indeed, if the architects and archæologists of Liverpool can be induced to co-operate in the project it would be possible to have spectacles which would surpass all others of that character seen during late years in England.

THE KHAN.

IN a paper which was read by Professor W. M. RAMSAY before the British Association on "Past and Present in Asia Minor," the advantages which were likely to arise from the construction of the Bagdad Railway were anticipated. Although at one time the connection between commerce and civilisation was not accepted, and the dependence of commerce on good roads over which people could travel in safety, few theorists and fewer practical men would nowadays doubt those facts. We may therefore agree with the Professor when he says:—"The chief cause of the destruction of the ancient industries of Asia Minor was the difficulty of communication over the country. While the cities at first retained their old standard of civilisation, they were divided from each other by the sea of barbarism and nomadism. In earlier Turkish time trade passed with difficulty from city to city by aid of the large and splendid khans, which the Seljuk sultans built at intervals along the chief roads. These khans, though often very beautiful as buildings, were not a proof of civilisation, but of the submergence of civilisation. They were fortresses in which caravans might rest safe from the nomads at night; tiny islets in the sea of nomadism."

It is easy for political economists and statisticians to become imaginative when they are dealing with the future. The khans or caravanseries, which we may call refuges, or havens of rest, in one of the most disturbed parts of the world, are not likely to be entirely superseded by railways for some centuries at least. If we believe such histories as have come down to us, khans were introduced in Persia by CHOSROËS as early as the sixth century. Persia was then comparatively civilised. But the immense tracts which could not be cultivated with profit, and which therefore were uninhabited, gave facilities to land thieves of a more dangerous class than those imagined by SHYLOCK. The East is not so disposed to changes as the West, for it was only a couple of years ago that Lord CROMER announced he had to expend money on similar buildings for the protection of caravans. The departure of the Mahmal, or Sacred Carpet, to Mecca is a sight which is familiar to all of us who have lived for a time in Egypt. The pilgrims who accompany the symbol are entitled to some respect from Bedouins. But it is necessary to furnish an escort of the Egyptian army to safeguard them. Henceforth it is proposed to have from 200 to 400 men, including cavalry and artillery, with two Krupp guns and a Maxim. Previous to 1904 the average number of pilgrims from Egypt to Mecca was less than 6,000. With the guarantee of security which the presence of the troops offered the number at once rose to 10,000, and last year the total was 14,366. We must take the world as we find it, and it is evident that in the twentieth century khans for travellers and their escort are as necessary as when they were first set up.

The establishment of them must be credited mainly to sultans and other men who held high office. But there are enough traditions which testify that some of the grandest khans were due to individuals who held no offices. The necessity of protecting pilgrims made the erection of a khan appear as a religious duty. But as the trade guilds in London were occasionally endowed with valuable property for charitable use by ordinary members, it is also likely that some of the khans were erected by traders who had become acquainted through personal experience with the dangers of the routes. There are, no doubt, buildings called khans which correspond with ordinary inns or hotels. But the true caravanseries are open to all who care for temporary shelter in them, and the only expense entailed is a gratuity to the man in charge and which is not compulsory.

In arrangement they correspond, varying mainly in size. But there is a vast difference in the modes of construction. The beautiful ruined building of KAIT BEY,

in Cairo, which is familiar to all tourists, is not to be taken as an example of those which greet the eye in spite of their plainness after a day's journey through a desolate region. Some, indeed, appear at a distance to resemble the mud-built fortresses which are found in various parts of Egypt. Although the individual Arab may be hospitable to a stranger, especially when he possesses the magnetic force of a scarred swordsman like BURTON, yet when the same Arab is in partnership with some of his companions he is not above commonplace burglary. The outer enclosure of a khan is therefore usually made very thick with sun-dried bricks, and with only a few slits in the walls. In the days when nobody could dream of defence by Krupp and Maxim guns it was considered desirable to make the exterior appear as solid as a pyramid. FER-GUSSON says of the Persian khans:—"Externally they present only a high plain wall, surmounted by battlements and flanked by towers at each angle, and sometimes also by additional towers in the longer faces. The principal architectural ornament is lavished on the gateways, which are almost always higher than the contiguous walls, and often display great beauty of design combined with considerable elaboration of detail." FER-GUSSON must have been fortunate in either seeing or obtaining drawings of some peculiar example. As a rule there is only one gateway to a khan which is outside a town. It has to be sufficiently high to enable a tall camel to pass through it, but far greater care was usually bestowed on the means of barricading the doors than on ornamentation. A wealthy man might expend money on carving, but the ordinary official khans cannot be considered a decorated class of structures.

Generally speaking, beasts as well as men find shelter within the enclosure; but occasions arise when the camels have to remain outside. The khan might be considered as a small cattle market by a stranger, for the camels and mules are all in the centre, where there is usually a fountain, for water alone is supplied. There is an arcade around with arches which bear some resemblance to Western Gothic, and in the recesses the travellers and their goods remain. There is an upper storey where there are likewise a number of recesses. Here and there in some of the more expensive khans texts from the Koran are found carved on the walls. The travellers, if they are not too fatigued, collect in parties, and story-telling is a common manner of passing away the time.

Asia Minor has been for many years in too disturbed a state to allow of the expenditure of public money on the preservation of the buildings. Many are now in a ruinous state, and it is doubtful, however much he might desire to do so, whether Lord CROMER could bring the khans under the control of his archaeological department. There is nothing to prevent him taking care of the rude relics found in the Sudan. But the pilgrims and traders who take part in caravan journeys are a touchy lot and suspicious of kindness.

Although the khans are a necessity they are evidence of the misgovernment which afflicts so large a portion of western Asia. Indeed, it might be said that time and neglect will do more to cause their overthrow than any railways which are likely to be constructed during the present century at least. According to report Persia has set up a Parliament; and who knows but it may find patriots who will look after the preservation of the old khans without receiving any salary for their labour?

With all their defects the sultans and nobles who erected the khans were inspired by a better spirit than prevailed in Europe while feudal castles were erected. The latter were, no doubt, sometimes used for the defence of retainers, but for many years the castles served only as a shelter for those who lived by committing depredations on traders. At one time CHARLES LE CHAUVÉ issued an order that the castles in France should be demolished because the people in the localities suffered so much from the depredations of the owners, but the

nobles were too powerful and resisted his decrees. For a time the history of civilisation appears to be nothing more than a contest between traders and the owners of castles. Eventually freedom was secured, but it was only by the payment of immense sums and the loss of many human lives.

THE PERSONAL EQUATION IN ARCHITECTURE.

THE phrase "personal equation" first arose, we believe, from a comparison between the observations of ordinary eyes, and those made by eyes which were aided by elaborate instruments. The latter are, no doubt, likely to be more exact as they are more minute. But it is doubtful whether they offer equal interest when compared with the former. The astronomy of the Chaldean shepherds could be expressed by very simple mathematics, and it related only to a limited number of stars and phenomena. But it served the purposes of the watchers, and excited their wonder and admiration more than would be possible with returns from an observatory of the modern class.

Not only astronomy but most varieties of modern science require aids and appliances of a kind which was unattainable in an early age. It is not possible, for instance, to determine "the proportions in which isodynamic compounds are in equilibrium in solution," or "the state of solution of proteids," or the hundreds of modern puzzles in physics, without apparatus which men were incompetent to make during many centuries. In fact, the difference between science and the fine arts, including literature, may be said to consist in the absolute necessity of appliances, or, let us say, machinery, to help the human faculties for work in any of the sciences and the uselessness of such help in the arts. If, for instance, the world were endowed with a genuine epic-poet in our times he would set about his mission in the same simple way that HOMER did. If unable to write he could dictate. Chemistry, with all its marvellous progress, has not afforded much aid to painting, nor geology to sculpture. The modern studio does not differ from those of old in Athens or Florence. We have, no doubt, a great many artificial but valuable materials which can be used in building, and we can obtain marbles and other beautiful stones more readily than the ancients. Thanks to science, an ordinary building can now be more healthy and more comfortable than one built in Classic or Mediæval times.

But with all these improvements can it be supposed that the designs for an important building like the new offices for the London County Council will present any extraordinary features? We do not mean, of course, that there will be no novelties introduced for facilitating the transaction of business, for we know a great many devices are in the market which claim to achieve that end. We may expect to see in it the latest constructional, sanitary and illuminating improvements. It may be possible by the planning aided by machinery and varied apparatus to avoid the complaints which are every year heard in connection with BARRY'S building on the opposite side of the Thames. We may, in fact, expect to see an embodiment in the structure of all that science can produce for the service of the occupants.

While so much is certain, it would be interesting to know whether the assessors anticipate a pleasing task in the examination of the designs which all parts of the world are eligible to furnish. It is no easy work to glance at a large number of architectural drawings. But the toil is increased when it is found that the greater number of the designers have supposed there are only a very limited number of forms which can be employed. That is likely to be the case with the schemes for the County Council hall. After all the aspersions on the Houses of Parliament he would be a courageous man who would submit a design in Early or Late Gothic or the "Elizabethan" of the original

committee. St. Thomas's Hospital, which will inevitably form a pendant to the new building, must further circumscribe the efforts of those who would adopt one class of Italian; and the buildings on the other side of the Thames, to the east of Westminster Bridge, will also have restrictive power.

This mode of speculation may appear to be unworthy of the occasion. If a sculptural group were proposed, or a great painting as a memorial of the prowess of the London County Council, it would be absurd to limit the powers of the artist even in theory. But it is the misfortune of architecture that under the best of circumstances it can only now be exercised within a very narrow range. The personal equation of the painter or the sculptor can be unfettered. He need not trouble himself about prior examples. But the architect's personal power must be accompanied by a real or assumed reverence for a particular manner of treatment. He is not allowed equal liberty with the painters and sculptors. For the first question put to him recalls ANCIENT PISTOL'S "Under which king, Bezonian? Speak or die." He is supposed to have sworn fealty to a style which, for the time being, is sovereign to him, and to which he is expected to be loyal regardless of all sacrifices on his part. An architectural design is, in England at least, supposed to resemble the conveyance which has been drawn up for the site. Not only phrases but large parts must correspond with approved forms which have been repeated again and again, and which could be expressed at least as satisfactorily in a less stereotyped manner.

Is it too much to expect that, in a great international competition like that which is being arranged, some architect should be found to insist on his rights to design the London County Council hall with a freedom which would in some measure correspond with that allowed to the painter or the sculptor if they were called on to compete for some public memorial in London? Surely there are foreign architects who would display greater vigour of treatment than is to be seen in some of the recent public buildings in this country. It might easily be imagined that many of them were designed by women, from the peculiar femininity which characterises not only the details but the composition as a whole. That kind of treatment is often supposed to express refinement, but with more truth it might be considered as weakness. Efforts are occasionally made to compensate for thinness in one part of a building by an excessive massiveness in another part. But such a co-existence of extremes merely marks a nearer approach to feminine peculiarities. It is to be feared that habit in designing or the contemplation of works of the kind we have described will have an effect on the English projects at least. It is therefore desirable that some of the foreigners will be true to themselves and will not seek to curry favour by preparing designs in the English manner, in which unfortunate defects are sure to be magnified.

It is a misfortune in England that whenever a style is practised or is the temporary vogue, facility of production makes one variety gain the ascendancy. Among a collection of photographs of nineteenth-century churches BURGESS'S Cork Cathedral stands out with almost as much effect as if it were printed in relief. His was a personal equation which could not fail to assert itself. But his manner was difficult to imitate, and it was not satisfactory in the eyes of the weaklings who directed the disposal of commissions for church buildings. The consequence was that a treatment was adopted which seemed to exemplify the advantages of stone-working machinery, and was therefore adapted for a land in which factories abound.

Gothic was abandoned, and, indeed, owing to the way in which it was being manufactured in its later examples, there was not much of a loss. Old examples of other styles were subsequently experimented with, and experience has shown that there is really not much

difficulty in adapting Renaissance examples to the modern system of production. But under the circumstances it is not to be supposed that the personal equation will count for much in the adaptations. When one takes a number of elements, alters them slightly, and arranges them somewhat differently from the way they are found in some admired building, individuality of any kind becomes difficult to discover. Yet it is admitted, even at the present time, that what is most sought after in painting, sculpture and literature is something or other which will give us a clue to the mind of the beings that are known as authors or artists. Impressionism is only an exaggerated yet partial manner of expressing the personal equation. Few writers have been more often condemned of late than CHARLES DICKENS. His beings are said to be not faithful to life, his pathos and humour mere efforts to please the gallery, and so on. Yet it is recognised that all the shortcomings of his books have a personal character, and are suggestive of a man who was true to himself in all he did, and preferred his own resources to the canons of the rhetoricians. If we could only have an architectural DICKENS who would resist all temptations to adopt Pecksniffian ways he might be the means of causing a revolution that would lead to the production of works which would at least be suggestive of individual designers.

UNFAIR COMPETITION.

IN these days of world-wide businesses and international trade it is always satisfactory to find that the laws of two civilised States are absolutely identical. It is convenient to traders, and it gives a welcome testimony to the fundamental fairness of the law. Such a testimony, of particular interest to all who are concerned with specialised manufactures, we get upon reading in the *Journal des Tribunaux* of May 3, 1906, the report of the case of the E. C. Powder Co., Ltd., v. La Société Coopall et Cie of Wetteren, which was decided in Belgium in April last. The plaintiff company in this case are the inventors and manufacturers of the E. C. smokeless powder. Sportsmen all over the world know the excellence of this powder. They know, too, that its quality is maintained and is constantly being improved by reason of the fact that the managing director is recognised by all chemists and by the British Government to be one of the first authorities upon explosives in this country. That being so, E. C. powder is a well-known article of commerce.

The defendants mixed their powder with the E. C. powder, and sold the mixture as E. C. powder at a reduced price. The Court held the defendants liable to pay as damages to the plaintiffs the sum of 5,000 francs, authorised the plaintiffs to publish the judgment in ten Belgian papers at the expense of the defendants, and further authorised them to spend the whole or part of the damages in giving such further publicity to the judgment as they wished. The important point to note is that the reasons underlying the decision are identical with principles which have many times been laid down in the House of Lords. The Belgian Court laid it down as a principle that "a special sign which indicates the origin of certain products can become the object of an exclusive right; that is, a name or appellation, a distinctive mark, figures or initial notations, not guaranteed by any registration, but which may be equivalent in reality to the name of the producer, are protected by the ordinary principles of civil responsibility for the profit of whoever was the first to make the prior usage for commercial or public purposes." They found also that "the identity of appearance of the powders of plaintiffs and defendants, the use of labels for deceiving purchasers, the employment of the title 'E. C. 3,' which gave to the imitation the appearance of the renowned manufactory, the methods of abuse towards the original makers which were revealed in the course of the inquiries, justify all the charges of the

Powder Company and establish the unfair conduct of the Coopall Company." Now compare this with some of the opinions of the Law Lords in *REDDAWAY v. BANHAM*, the case in which the defendant tried to appropriate the name "camel hair" for his belting, though in the trade the term "camel-hair belting" was well known to be REDDAWAY'S. "The fundamental rule is," it was said, "that one man has no right to put off his goods for sale as the goods of a rival trader, and he cannot therefore be allowed to use names, marks, letters or other indicia by which he may induce purchasers to believe that the goods which he is selling are the manufacture of another person;" and "no man is permitted to use any mark, sign or symbol, device or other means, whereby, without making a direct false representation himself to a purchaser who purchases from him, he enables such purchaser to tell a lie, or to make false representations to somebody else who is the ultimate customer."

In the Middle Ages the dealings between merchants were ruled by the Law Merchant, which was a body of customary rules observed throughout Western Europe. At the present day most European nations have Codes de Commerce. We have not yet completely codified our commercial law, but we have made movements in that direction. We have such codifying acts as the Sale of Goods Act, the Bills of Exchange Act, the Partnership Act. When more work has been done in this direction it would be not only interesting to the scientific student of the law, but also practically useful to the merchant, to collect and state the principles of commercial morality which all codes alike endeavour to enforce. The case which we have commented on would seem to show that the editor of such a work would find a large mass of principles not only essentially the same, but expressed in almost identical language. We should find that there is a modern as well as a Mediæval Law Merchant.

ST. DAVIDS CATHEDRAL.*

THE peculiar position of St. Davids Cathedral necessarily hinders it from being at all a prominent object in any distant view. Lying in a deep hollow immediately below the town, from most points of view the body of the church is hardly visible, the upper part of the tower alone indicating its existence. And, consequently, even the tower itself is not seen to the same distance, nor does it form the same central point in the landscape as is the case with those churches which possess a greater advantage of position. Yet the situation of the cathedral can hardly be esteemed a disadvantage. It seems almost essential to the general idea of the place that the church and its surrounding buildings should be hardly discernible until the spectator has approached quite close to them. This circumstance certainly tends to increase the general feeling of wonder which the whole aspect of the place excites.

The character of St. Davids is altogether unique, unless Llandaff may be allowed to approach it in an inferior degree. Both agree in being cathedral churches whose surrounding cities claim no higher rank than that of mere villages. But Llandaff, a fabric on the whole far less striking than St. Davids, and still more deficient in the vast extent of episcopal and collegiate buildings which go so far to produce the general effect of the latter, has nothing of the strangely awful character derived from the position of St. Davids. The richer character of the country round, the neighbourhood of a large and busy town, take off much from the wild majesty which is so distinctive of St. Davids. Without the utter desolation of the surrounding country, and the entire separation from all traces of man besides its own narrow world, a large portion of the stern charm of "ancient Minevia" would be completely lost. The effect of Llandaff is a mixture of that of a ruined abbey and that of an ordinary parish church. St. Davids, standing erect amid desolation, alike in its fabric and its establishment, decayed but not dead, neglected but never entirely forsaken, still remaining in a corner of the world with its services

* From the *History and Antiquities of St. Davids*. Architectural Description of the Cathedral, by W. S. Jones, M.A., and E. A. Freeman, M.A.

uninterrupted in the coldest times, its ecclesiastical establishment comparatively untouched, is more than any other spot a link between the present and the past; nowhere has the present so firm and true a hold upon the past. Ruin and desolation speak of what has been, but not ruin and desolation alone; it still lives its old life, however feebly; all is uninterrupted retention, without change or restoration; the light first kindled by its original patriarch may have often shone but feebly in the darkness, may even now glimmer in the socket, but it still remains one and unextinguished; it has never at any moment required to be rekindled from any new or extraneous source.

Perhaps there is no church of the same size which exhibits the genuine cathedral type so thoroughly developed in every respect except one, which has no influence on its external appearance. In point of complication of ground-plan it ranks with—perhaps surpasses—Winchester or St. Albans; and the profusion of chapels and surrounding buildings has the advantage of restoring that varied and picturesque effect which might otherwise have been lost by the absence of any high-pitched roof. Besides the ordinary parts of a cruciform church, a succession of three chapels of inferior height is added to the east end of the choir, and the aisles of the latter are continued along them during a great portion of their extent. To the east face of the north transept is attached a lofty building of three stages containing the chapter-house and other apartments. This erection, which is, excepting of course the tower, the highest portion of the whole pile, naturally forms the most prominent feature in the eastern view, and imparts much variety and singularity to the outline. And as this same transept, at present at least, is connected with the ruined chapel of St. Mary's College, another extensive range is added to the main fabric, from which it can hardly be considered as architecturally distinct.

On proceeding to a more detailed examination of the several portions of this church we are met at starting by a sad deficiency in what usually forms the most striking and attractive external portion of a cathedral or other great church. The west front is modern, in what would have been called the worst form of the modern antique, had not that of Hereford exhibited an example of a still lower depth. To describe and criticise minutely a structure which combines Romanesque, Decorated and Perpendicular in one mass of hopeless confusion can hardly be required of an historian of St. Davids, but it is only just to mention that this front has escaped, in appearance at least, the great vice of such erections, flimsiness; even the quasi-flying buttresses which prop the ends of the nave walls are great solid masses, and the turrets from which they spring, as well as those at the angles of the aisles, are by no means contemptible for the end of the last century. The stone also, already weather-beaten, takes off from the effect of newness, and harmonises fairly with the general appearance of the church, though ragged ashlar is a far less pleasing object than the honest rubble of which the rest of the building is chiefly composed.

The nave and aisles viewed externally do not present much that calls for minute remark. They form a long, low, regular structure, broken only on the south, which is at once the part best preserved, and withal the original show side, by the necessary addition of a porch, and on the north by the vast props which the precarious condition of the fabric has rendered necessary in later times. The general appearance of this portion of the church has certainly suffered much more than the rest from the lowering of the roofs, which has not only caused a deprivation of positive height, but has introduced a real want of proportion. The aisles in their present form are lofty and the clerestory low; a high roof to the latter is therefore especially necessary in order to preserve the general importance of the nave.

The nave and aisles consist of six bays of unusual width; the aisles are lighted by a series of large three-light windows, interrupted only by the doorways in the second bay from the west. These windows were originally Decorated, and on the north side, at least, of the intersecting pattern, but the tracery remains untouched in one window only, on the north side. In three others on that side the Decorated tracery without being entirely removed has been converted into a strange and most unsightly kind of Perpendicular. In the rest the tracery is modern Decorated, which in all but the western window on each side supplants a Perpendicular insertion in the original jambs. The western pair previously to the late repair were blocked, with debased loopholes inserted. The jambs are somewhat

richer on the south side than the north. In the south aisle the bays are divided by rather weak buttresses terminating in plain octagonal pinnacles; in the north by flat pilasters, whose breadth diminishes at about half their height, with the exception of the western one, which is of the smaller breadth throughout.

In the clerestory we are struck by the fact that the north side is faced externally with ashlar, the rest of the external walls being, as we have said, chiefly composed of rubble. This, in fact, is the case with the south side also, but here the ashlar is concealed by plaster, this being the stormy as well as the show side. There is a corbel-table on the south side, but only extends along a small portion at the east end of the north. This difference, however, may be owing to later alterations of the parapet. Here in the clerestory the bays are not marked, and, there being two windows in each bay, they present a series of twelve windows—short, broad and perfectly Romanesque specimens—with a flat pilaster between each. But, unfortunately, the effect is very much marred by two windows on the north side and the alternate ones on the south being completely blocked. Those, moreover, which remain open have a wooden mullion awkwardly thrust in, while the eastern pair on the north side have at an earlier period suffered the insertion of exceeding poor tracery.

On the north side, as has been already mentioned, the aisle wall has had to be supported by enormous masses of masonry in the form of vast flying buttresses which would ordinarily be considered a disfigurement; but here, in connection with the general ruggedness of the external architecture, and especially from their close proximity to the ruins of St. Mary's College, they serve to add considerably to the strange and imposing effect of magnificent desolation produced by the whole scene.

The two doorways at present in use are, as was implied above, opposite to each other. The northern one is Norman, one of the very few examples of anything approaching to richness in external work throughout the church, and this exhibits no very great amount of decoration. Its arch is slightly segmental, of two orders with shafts, and an inner one with a large bowtell of hardly any projection, a form which we shall find in several other portions of the building. The mouldings of the arch begin to approximate to Early English, exhibiting specimens of those forms intermediate between the chevron and the tooth ornament, of which we shall find so rich a store within. On the label is an ornament representing lilies and the keystone is marked by a head.

The southern entrance is through a porch of two storeys, one of the least attractive features of the church, partly owing to its modern gable and unsightly external staircase, but quite as much to the poverty and coarseness of its original detail. The external doorway and the window over it in the parvise (now occupied as the chapter-house of the vicars choral) are Perpendicular of a poor kind. The former has a very slightly segmental arch, and its principal moulding is an enormous shallow cavetto. The window has a depressed arch and unfoliated intersecting tracery. On the east side there is a small circular aperture, with a label which appears to be of the same date. The original entrance to the parvise was from the interior of the church by a staircase turret, attached to the adjoining buttress, which is now much disfigured by the modern flight of steps.

The inner doorway, however, though much defaced, has clearly been, as in so many other cases, one of the most magnificent displays of ornament in the whole building; and we may observe that, contrary to the common rule, the original Norman doorway has given way to a later successor. From its plinths, portions of which still remain, it would appear to have been of unusually small size, which may possibly account for the change. The present doorway is Decorated, without shafts, but with a superb display of sculptured decoration, besides crockets and the ordinary four-leaved flower. The arch is adorned with a series of sculptures which are sadly mutilated, but in which we may still trace the familiar representation of the Root of Jesse. The position, however, necessarily involves some singularities, and, as in the better-known example of the Dorchester window, the genealogy is by no means easy to follow. The western impost is occupied by what appears to be a figure of Adam with Eve issuing from his side; the other supports the recumbent figure of Jesse, from whom springs the branch along which the figures are introduced, somewhat after the manner of the Norman medallions in one of the doorways

at Ifley. Some of the figures may be still discerned reading at desks; David with his harp may also be plainly seen, as well as a representation of the Crucifixion. Over the apex is an effigy of the Holy Trinity, with angels on each side bearing censers. The doorway has pinnacles at the sides, but they are cut off by the vaulting of the porch, which is plain quadripartite springing from the corbels, among which we may observe the ornament called the mask, the only example of that form to be found in the cathedral.

That the principal internal features of the nave are entirely Romanesque may have been already inferred from the clerestory; but the external appearance of that portion of the building would never suggest either the extreme richness of the internal architecture or the fact that the style is therein exhibited in its latest form. It would, in truth, be more accurately called Transitional; for although the employment of the round form in the main constructive arches produces the general impression of the former style, yet the details are very far advanced towards Gothic—much more so, indeed, than those of many structures in which the pointed arch is extensively employed. In fact, there is but very little difference in detail between the Romanesque of the nave and the Transitional work of the choir, and we shall find that the pointed arch is by no means excluded from the former either as a constructive or a decorative form.

Its general effect is extremely striking from the remarkable richness of the architecture and especially from its great multiplicity of parts, characters sufficiently marked to have been conspicuous anywhere, but which are the more strongly forced on the eye from their utter contrast with the rugged and weather-beaten aspect of the church without. Possibly the circumstances which conduced to the lack of external ornament may have led its designers to counterbalance this deficiency by a superabundance of internal decoration. Certain it is that very few structures of the same size equal this cathedral in the richness and elaborateness of execution lavished upon this portion of the interior. In fact, much of the solemnity of a Romanesque nave is lost, an effect which is certainly far better produced by more massive proportions and a greater extent of unadorned surface.

The deficiency of height which appears without is fully as perceptible in an internal view. Several circumstances, indeed, combine to render it especially conspicuous. The positive breadth is great; the span of the pier arches is immense; there is an entire absence of any vertical lines, and the character of the upper stages, where the whole extent of wall is filled up far more completely than is usual in such cases, conduces to the same result. Notwithstanding the width of the pier arches the real bulk of the piers hinders any great effect of lightness, while much of Romanesque solidity is lost. The piers are of no great height, consisting of masses alternately round and octagonal, with shafts attached to the cardinal points, those towards the aisles, which were designed as vaulting shafts, being themselves clustered. The capitals afford an interesting study. The prevalent type is a degenerate though by no means uncommon variety of the cushion form, though some are of other kinds, several being floriated, while two of the shafts attached to the first pair of piers from the east are remarkable for the exquisite grace of their foliage, which approaches much nearer to classical models than is at all usual in this country. A single capital on the north side retains vestiges of a small figure or statue which has been broken off. It is perhaps to be regretted that so many of the attached shafts, both here and throughout the church, are without a neck moulding, which detracts much from the completeness of their appearance.

A San Francisco family named Crocker have united in a plan to devote the whole block on which their homes formerly stood as a site for the new cathedral of the diocese of California.

The Report of the Council of the Manchester Whitworth Institute for the year 1905 refers in detail to the extension of the galleries now in progress. At present, for want of room, "a very large number of works of art and other objects of various kinds are stored in the dry and well-aired basement galleries." The buildings which have been recently commenced will complete the original design of the galleries, and will provide a façade, with a frontage about 210 feet long, facing Oxford Road.

IMPERIAL INSTITUTE.

THE report to the Board of Trade on the work of the Imperial Institute by Dr. Dunstan, the director, will enlighten many people about the services which are rendered by the staff. Since it was fully established in 1896 the work of the scientific and technical department has increased. In 1905 the staff consisted of 26 members, all of whom were qualified by scientific training to assist in the conduct of researches, and to supply scientific and technical information concerning the occurrence and production of economic products, their industrial uses and commercial value. In connection with the department a sample-room has been maintained for purposes of reference. It includes samples of all the important products which have been examined in and valued through the department, as to which full information is available. The reference sample-room has proved of great value in supplying information to manufacturers and others who have inquired about new sources of raw materials, and also to agricultural and other officials in the Colonies who have visited the Institute. A very large number of minerals have been examined and their chemical composition ascertained as the first step towards determining their commercial value. The resources of many of the colonies and protectorates being little known, it is important, with a view to development, that an inventory or catalogue *raisonné* of their products should be prepared and a decision arrived at as to those materials which are likely to repay collection or cultivation. The Imperial Institute has devoted special attention to the examination of colonial timbers, and in conjunction with Professor W. C. Unwin and Mr. Herbert Stone, who have respectively undertaken the determination of the mechanical properties and working qualities of the woods, a large number of specimens have been examined. During 1905 a collection of twenty-one timbers from Southern Nigeria was received, and the investigation of these was in progress at the close of the year. Samples of timbers derived from species of *Podocarpus* and *Juniperus* in the East Africa Protectorate have been examined. The latter wood, probably obtained from *Juniperus procera*, was found to be very suitable for use as "pencil cedar," and arrangements are being made for its commercial exploitation.

Three mineral surveys of British Possessions are at present being conducted by officers specially appointed by the Colonial Office, and who work under the supervision of the director of the Imperial Institute.

Thorianite, which is found in Ceylon, contains nearly 80 per cent. of the rare earth thoria, which is the principal constituent of the mantles used for incandescent gas-lighting. The new mineral is now being largely employed both in this country and in Germany for the manufacture of thorium nitrate, the form in which the thoria is applied in the preparation of mantles, and consignments of the mineral have been sold at the rate of 22*l.* 10*s.* per unit per cent. of thoria per ton, equivalent to over 1,600*l.* per ton for the crude mineral. The discovery of thorianite is therefore a matter of commercial importance to Ceylon, and, in addition, it has enabled at least two firms in this country to commence the manufacture of thorium nitrate, a branch of industry which British firms were previously prevented from carrying on owing to the fact that the available supplies of monazite, the mineral from which thoria has been, and is still, principally obtained, were controlled by a syndicate having its headquarters in Berlin. Thorium-bearing minerals appear to be widely distributed in Ceylon, and in addition to thorianite, thorite and a number of other minerals containing various proportions of thoria, several of them worth working commercially for this oxide, have been discovered. These are still under investigation, but it may be mentioned that monazite containing as much as 10 per cent. of thoria, as against the 5 or 6 per cent. of thoria found in Brazilian and Carolina monazites, has been discovered recently among the minerals forwarded for examination to the Imperial Institute by the officers of the survey.

Recently a careful examination of the sands and gravels of the river beds in Ceylon has been made, and as a result a large collection of concentrates containing small quantities of gold have been sent to the Imperial Institute, and is at present under investigation. Other subjects which have engaged the attention of the survey have been mica, graphite, kaolin and molybdenite, and the value of all these minerals has been reported on or they are at present under investigation.

As a result of the operations of the mineral survey in

Ceylon, great interest has been stimulated in the mineral deposits of the island, and during the year over 158 samples of Ceylon minerals were submitted, at the instance of the Government, by private individuals in Ceylon and commercial firms for identification and valuation. Among these were many samples of thorianite, thorite and other minerals of economic value, and in several cases it was found possible to place Ceylon firms who had secured supplies of these minerals of commercial value into communication with firms using these products in this country.

The survey of Southern Nigeria was commenced in 1903. Since the commencement of the survey the deposits of lignite at Asaba have been systematically surveyed, and a number of typical specimens of this material have been fully examined at the Imperial Institute. The lignite proved to be of good quality, burns well, has a high calorific value and yields a good quality of illuminating gas. The discovery of these considerable deposits of good lignite is of great importance in West Africa, where the scarcity of fuel other than timber is a serious impediment to development.

The officers of the survey have also discovered that the valuable minerals, monazite and cassiterite (tinstone), are widely distributed in Southern Nigeria, and a large number of concentrates containing these minerals have been sent to the Imperial Institute and have been examined. It is not yet certain whether the crude gravels are rich enough to warrant exploitation for these minerals, and further investigations on this point are required. Recently the officers of the survey have made a systematic examination of the asphaltic or natural pitch deposits at Ijebu in Lagos, and a large number of samples of this material have been sent to the Imperial Institute and are at present undergoing investigation.

When completely reorganised the collections will, it is hoped, attract visitors in increasing numbers on a scale corresponding with those who now resort to the neighbouring Victoria and Albert Museum and the Natural History Museum. Some steps are, however, needed to make the public collections more widely known, and among these may be mentioned the provision of better and more conspicuous public entrances. The central stand, which serves as a general inquiry office in the public galleries and a means of regulating the distribution of literature relating to India and the Colonies, has proved to be a useful feature; 7,510 publications were distributed to inquirers during the year, and over 150 special inquiries, chiefly relating to emigration, settlement, planting, climate, agriculture and forestry, were dealt with by the expert staff.

GERMAN ART.

A LECTURE was delivered by Professor Hoetzsch in the University of Edinburgh on "German Literature and Art since 1871." In the course of it he said that in Germany there was not one great centre of life and culture, as in France and England, but a number of such centres. That prevented in the case of literature and art one metropolitan taste from tyrannising over others. Literary and artistic life were thus decentralised in Berlin, in Dresden, in Munich and several other towns, and was all the richer for that variety. After 1871 it was expected in Germany that a great national art would arise. This expectation was, however, only realised in the case of music, in the genius of Richard Wagner. In painting, brilliant colour was the dominant feature, then realism, at last impressionism and symbolism. Turner and Whistler both exercised influence upon German painting. At last the pre-Raphaelites, *e.g.* Burne-Jones and Dante Gabriel Rossetti, became names very familiar to German painters. The greatest painters in the last thirty years were Menzel, Böcklin and Klinger, the only one of the trio who is still living. English art industry had an ever-increasing influence on the German one. Morris and Walter Crane had found many admirers in Germany. Germany had to-day a national art industry, and visitors of the Dresden exhibition this year could not help seeing its development, and also noticing how house architecture and furniture were affected by English models. For proof of that, he said, one might also refer to the fact that John Ruskin's works were widely read in Germany. Ruskin's ideals were exactly the same as Wagner's; both regarded the productions of art as one form in which the entire life of a nation manifested itself. Both could not regard a work of art as a mere object of enjoyment, but

said that art had a moral task and a moral significance. Like Ruskin the German painters enunciate that painting was not an intellectual art or an abstraction, but one of observation, which depended upon the impressions received by the soul and not alone by the senses.

THE CITY OF GUAYAQUIL.

A REPORT by the British Consul on the trade of Ecuador and the progress of Guayaquil between 1899 and 1905 has been issued. It says that the general progress of Guayaquil during six years has been considerable. The fires of 1896 had destroyed the northern part of the city, including the four banks, the artillery barracks, the Customs House, the Girls' Conventual College, five of the principal churches, and in value more than two-thirds of the whole city. Of these buildings the churches of San Francisco, the Merced, San Augustine, Concepcion and Parroquia have been rebuilt. The four banks have erected buildings for their own service on their own lands. The Customs House has been reconstructed, although only in the commonest and cheapest form of cane buildings, yet sufficient for the storage of all the imports to Guayaquil. About one-half to two-thirds of the house property destroyed in these and subsequent fires has been rebuilt, with wide streets and better precautions against fire risk, and the city has resumed its ordinary business-like appearance.

During the last two years a very complete and well-planned system of protection against fire has been adopted throughout all the most valuable portions of the city, extending even to the less valuable outskirts. It consists of a system of pipes for the supply of water, the principal line being of 16 inches in diameter, the medium of 12 inches and the smallest of 8 inches. These pipes are supplied—first, by tanks with a capacity of 880,000 gallons, erected on a hill at a height of 275 feet, kept constantly full; second, by three Worthington pumps (one always ready for service, the two others in a condition to be at work within one hour or less after the first alarm of fire), capable of supplying each 1,500,000 gallons per minute. In consequence of this the conflagration risk has entirely disappeared from Guayaquil, and none of the recent fires, even though threatening severe consequences, has extended (when met by the water system) beyond the original district in which it started. The adoption of this system has caused a reduction in Guayaquil of 25 per cent. in the tariff of fire insurance companies; but it is generally considered, and personally the Consul is of the same view, that this reduction is entirely inadequate, and that if the present rates are insisted upon, we shall see fire insurance business with the United Kingdom, which to-day presents an annual premium of nearly 400,000 sucres (40,000*l.*), diminishing or even disappearing through the discontinuance of the insurances. A national insurance company has been started, with 300,000 sucres (30,000*l.*) capital, which does business at about 20 per cent. below the foreign companies. The competition is, however, so far not a serious one, as the total amount of insurance effected by the new company has been only 300,000 sucres, or say 30,000*l.* in eight months, which equals 45,000*l.* per annum, as against a total of 6,000,000 sucres (600,000*l.*) per year insured by the foreign companies. The fire of 1902 destroyed the Guayaquil hospital, which had till then been situated almost in the centre of the town.

During the period many charitable establishments have been built. Apart from the two fine hospitals there have been established the Asilo Galecio for children, the Providencia residence school for orphans, &c.; an infant asylum for children in the western suburbs of the city and the Instituto Ayulardo at the Terrasana, on the outskirts of the city. All of these establishments are self-supporting, from bequests of philanthropic persons or otherwise. The Beneficencia Municipal (Municipal Beneficence Council) has improved and extended the cemetery. The Board of Health has built a small but airy and isolated lazaretto for yellow fever patients and a floating quarantine station for incoming passengers—small, but so far adequate for nearly all arrivals; and has also obtained, through subscriptions received from the commercial community, a floating Clayton apparatus for fumigating suspected or infected ships arriving at the port, thus avoiding all necessity of refusing admittance to vessels calling at Guayaquil from infected ports or with sickness on board. The Government has rebuilt, at a heavy cost, the San Vicente College (now styled the Colegio San Vicente).

NOTES AND COMMENTS.

THE County Council of Wiltshire have evidently resolved to take advantage of the number of candidates in the market when making arrangements for the appointment of a county surveyor. The county is an important one and offers a variety of work to an official engineer. But the salary to be given is only 500*l.* a year. The usual custom of allowing the county surveyor to add to his salary by the fees of pupils will not be tolerated. Nor must the official look forward to any superannuation or compensation when his employment ceases. For the small salary of 500*l.* a man who is to be competent to undertake engineering, surveying and architectural duties will be expected to give his whole time. The extent of the responsibility may be judged from an amendment which proposed that for roadwork there should be four surveyors each with a salary of 300*l.* a year, and that for buildings a county architect with a salary of 400*l.* a year should be appointed. The amendment was, however, lost, and the original report adopted. Last year, it appears, the county surveyor had to carry out work to the extent of 63,000*l.* It is therefore expected that the new officer will supervise what will probably cost a much larger sum for a salary which does not amount to 1 per cent. on the outlay.

THE cathedral church of St. Stephen in Vienna has been so thoroughly examined from time to time it might be supposed that every part of it was well known to archæologists. Quite recently, however, four oil-paintings have been discovered in what is known as the Upper Sacristy. They were covered with dust, but it shows great carelessness that they should have been allowed to fall into a state in which they appear to be characterless. They have at length been carefully cleaned, and it is found that one represents St. STEPHEN preaching and the other his stoning. The other pair likewise deal with the preaching and death of an apostle; but at present the subject cannot be identified. The discovery caused further searches to be made, and in the Under Sacristy a large painting was found representing ELIAS. The pictures are believed to have been executed in the early part of the eighteenth century by the Brothers ALTOMONTE, whose other works are forgotten. It is not unlikely they are the works of STEPHEN and JOSEPH DANEDI, who were sometimes called MONTALTI.

ACCORDING to the *Architects and Builders' Journal* of Baltimore, the committee having in charge the laws which will govern the erection of new buildings in San Francisco have decided that the height of skyscrapers, class A, steel-brick buildings, will be limited to two and one-half times the width of the street on which they may be located. This will permit the erection of buildings more than 200 feet high on Market Street and limit them to 155 feet on Montgomery Street. The heights of other than class A buildings have been fixed as follows:—Class B, fireproof buildings, 102 feet; class C building, with metal lath, 70 feet, and with wooden lath, 55 feet; frame buildings, 45 feet. Class A and class B buildings are to be built of incombustible materials and allowed in any part of the city. Class A buildings are to have steel frames carrying all wall and floor loads. Class B buildings are to be built either with steel or reinforced concrete walls supporting a part of the floor loads, or with walls self-supporting only, the floor being carried on the steel frame; all floors to be fireproof, and, except the frame, to be equal in all respects to class A. Class C buildings are to be built with brick or concrete walls and timber interior, to be in effect the same as class B. Class C buildings of this sort will be allowed in all parts of the city. It is evident that the hesitation, which was natural after the bewilderment caused by the fire, is now at an end.

During the month of July no less than 470 building permits were issued, the value of which amounted to 702,800*l.* One hundred and thirty-two building contracts were also arranged, and it was estimated that about 25,000 men were engaged in the reconstruction of the city. Another sign of business is found in the fact that more than fifty applications for certificates to practise architecture have been lodged with the State Board.

BEDDINGHAM Church is close to the town of Lewes. It is an old building with a tower which is considered so unsafe that the bells have had to be silent for many years. It is known that three of the bells were cast in 1639, while the fourth belongs to a still earlier period. It is anomalous to have bells which cannot be heard, and the parishioners and residents of the district have lately met to consider the subject. Mr. L. W. RIDGE, the diocesan surveyor, after an examination, said he found cracks in the tower which required immediate attention. As to the old bells, he advised that a founder should be consulted. That course was adopted, and it was estimated that the bells could be repaired for 152*l.* The cost of the reparation of the tower will have to be added to that sum. A previous effort to make the work a Jubilee memorial was not supported.

ALL visitors to Antwerp are acquainted with the exterior, at least, of RUBENS's house in the Place de Meir. It is at present private property, but the mansion will shortly be purchased by a committee who will restore it, and then it will be presented to Antwerp in order, if possible, to convert it into a Musée Rubens. The plans for restoration will be prepared by M. BLOMME. Enough drawings and documents exist to enable an architect to realise the original condition of the building. RUBENS was not only a painter, but an ambassador, and he lived in princely state. He erected a studio which was adorned with sculpture, but the greater part of it has disappeared. He had no admiration for the Gothic style, of which several examples survive in Antwerp, nor of the adaptations of it. He wished to set an example to the rich citizens by demonstrating what could be done in the Italian style. But it cannot be said that the façade of the building to the Place de Meir recalls the mansions to be found in Italy. It gives the impression of a very free adaptation of Italian work by a Fleming. The present owner of the building, the Baron PIERRE DE CATERS, is favourably disposed towards the project.

LECTURES and demonstrations in sanitary science as applied to buildings and public works will begin at the Royal Sanitary Institute on September 10, and will continue until November 9. In addition to demonstrations with the aid of objects in the Parkes Museum, there will be visits to several buildings in which sanitary works have been undertaken. The lectures and demonstrations will be preparatory to the examinations of the Institute held in December next. The fee for attending the twenty-five lectures and twenty inspections and demonstrations is 2*l.* 12*s.* 6*d.* But students who enter for examination can have 10*s.* 6*d.* carried towards their fees.

ILLUSTRATIONS.

FRITHCOTE, NORTHEWOOD.—GARDEN VIEW—FRONT VIEW.

NORTH-EASTERN RAILWAY CO.'S OFFICES, YORK.

NEW OFFICES FOR THE HEARTS OF OAK BENEFIT SOCIETY, EUSTON ROAD, N.W.—GENERAL VIEW OF PUBLIC OFFICES AND SECOND FLOOR.

CATHEDRAL SERIES.—ST. DAVIDS: FROM SOUTH-WEST, SHOWING SOUTH PORCH AND SOUTH TRANSEPT.—EXTERIOR, FROM SOUTH-EAST.

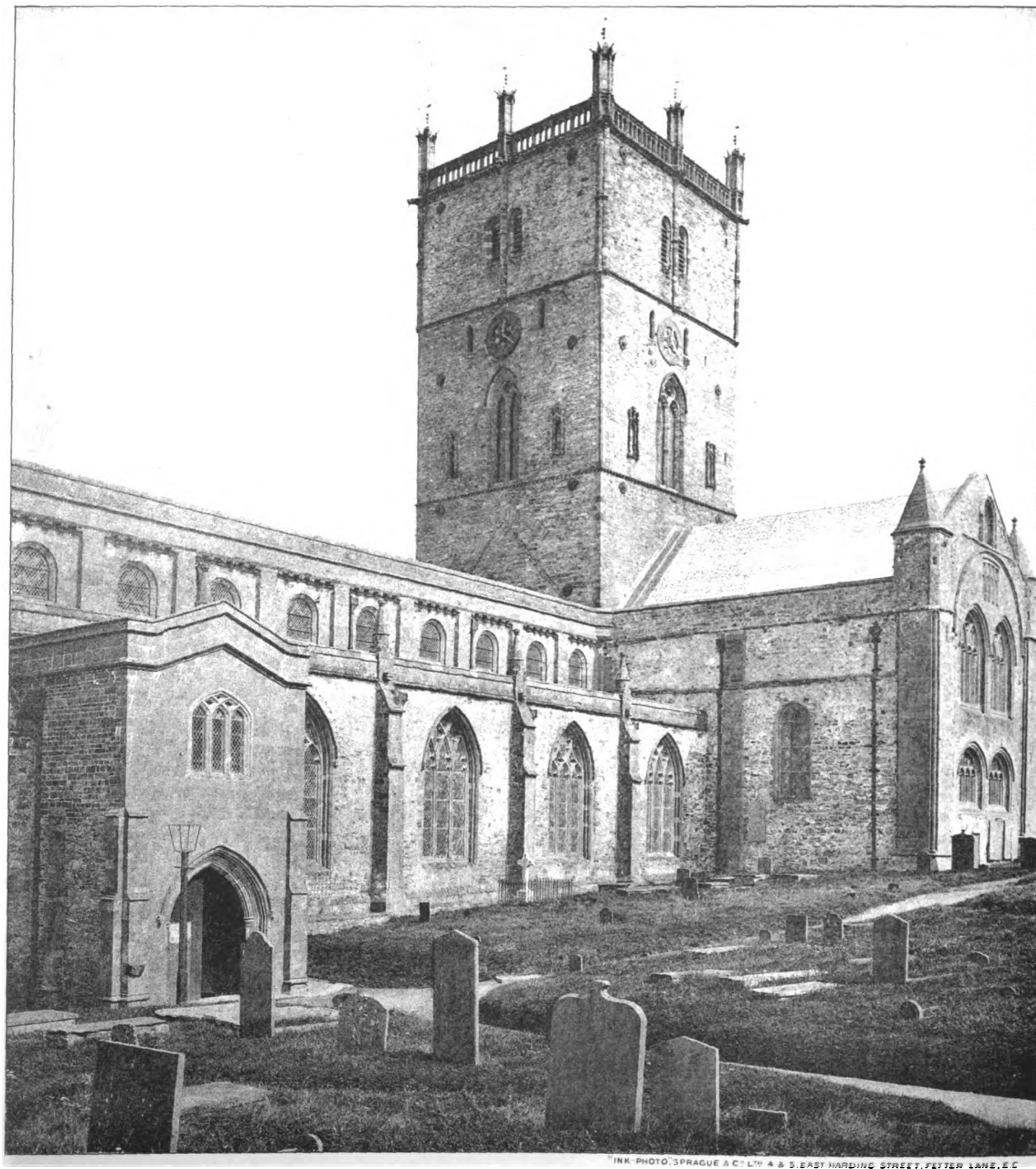
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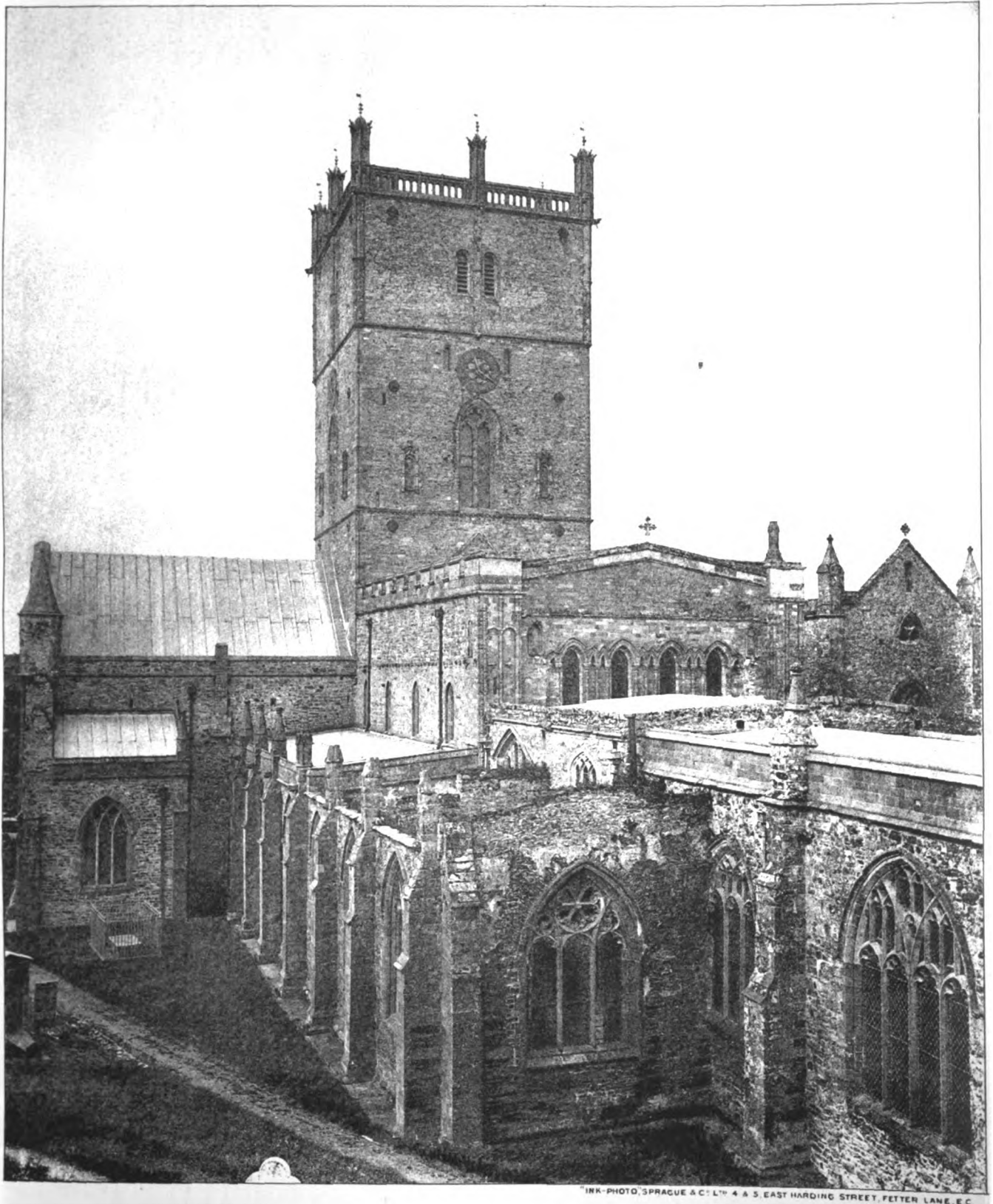
The Architect, Aug. 17th 1906.



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**CATHEDRAL SERIES, No. 572.—ST. DAVID'S: FROM SOUTH-WEST:
SHOWING SOUTH PORCH AND SOUTH TRANSEPT.**

The Architect, Aug. 17th 1906



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CATHEDRAL SERIES, No. 573.—ST. DAVID'S: EXTERIOR, FROM SOUTH-EAST.







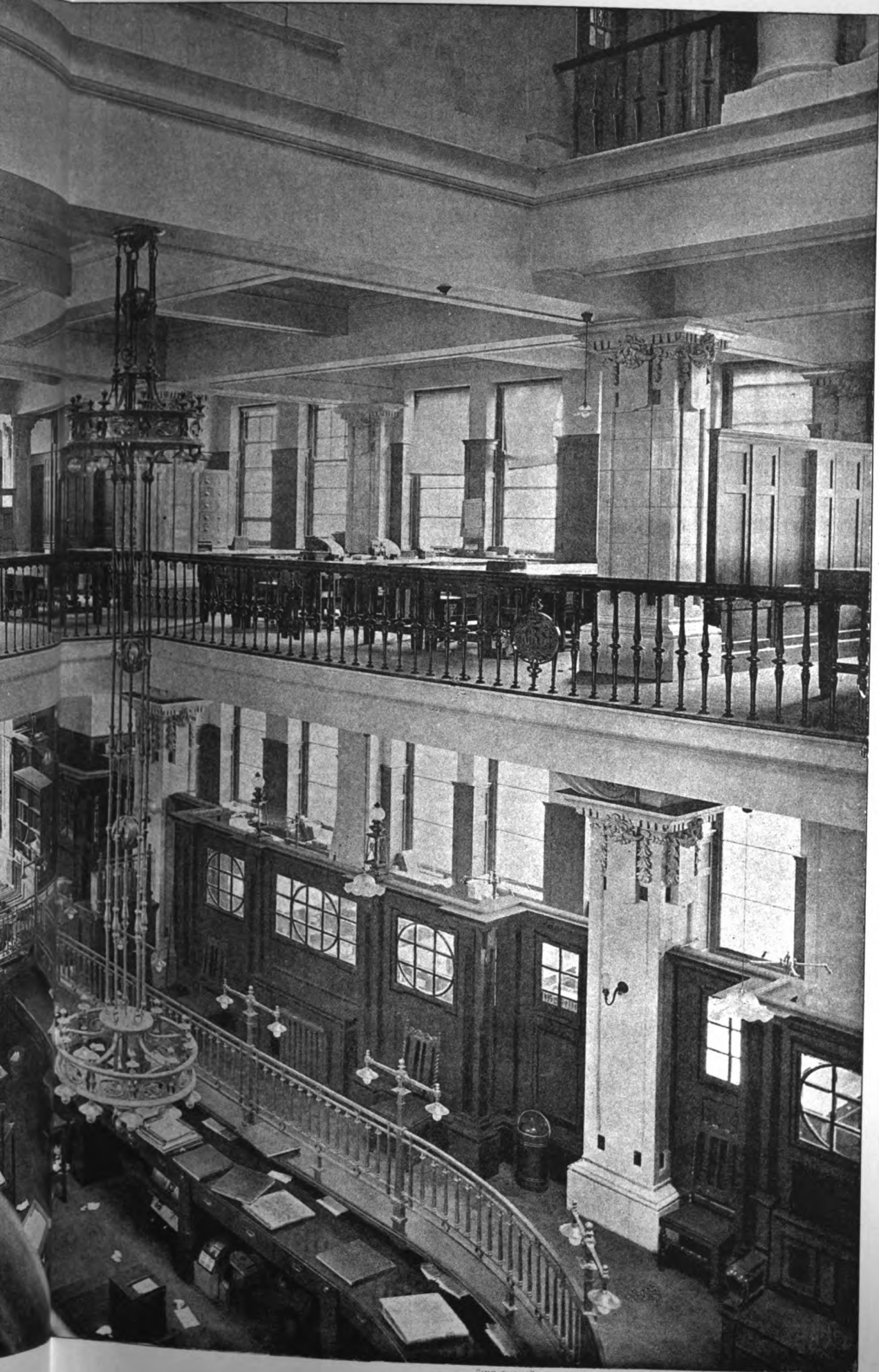
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NEW OFFICES FOR THE HEARTS OF OAK BENEFIT SOCIETY
GENERAL VIEW OF PUBLIC OFFICES AND RECORDS

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Messrs. ESSEX, NICOL & GODMAN

The Inquirer, Aug. 17th 1906.

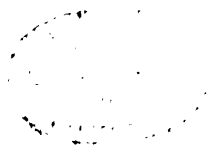


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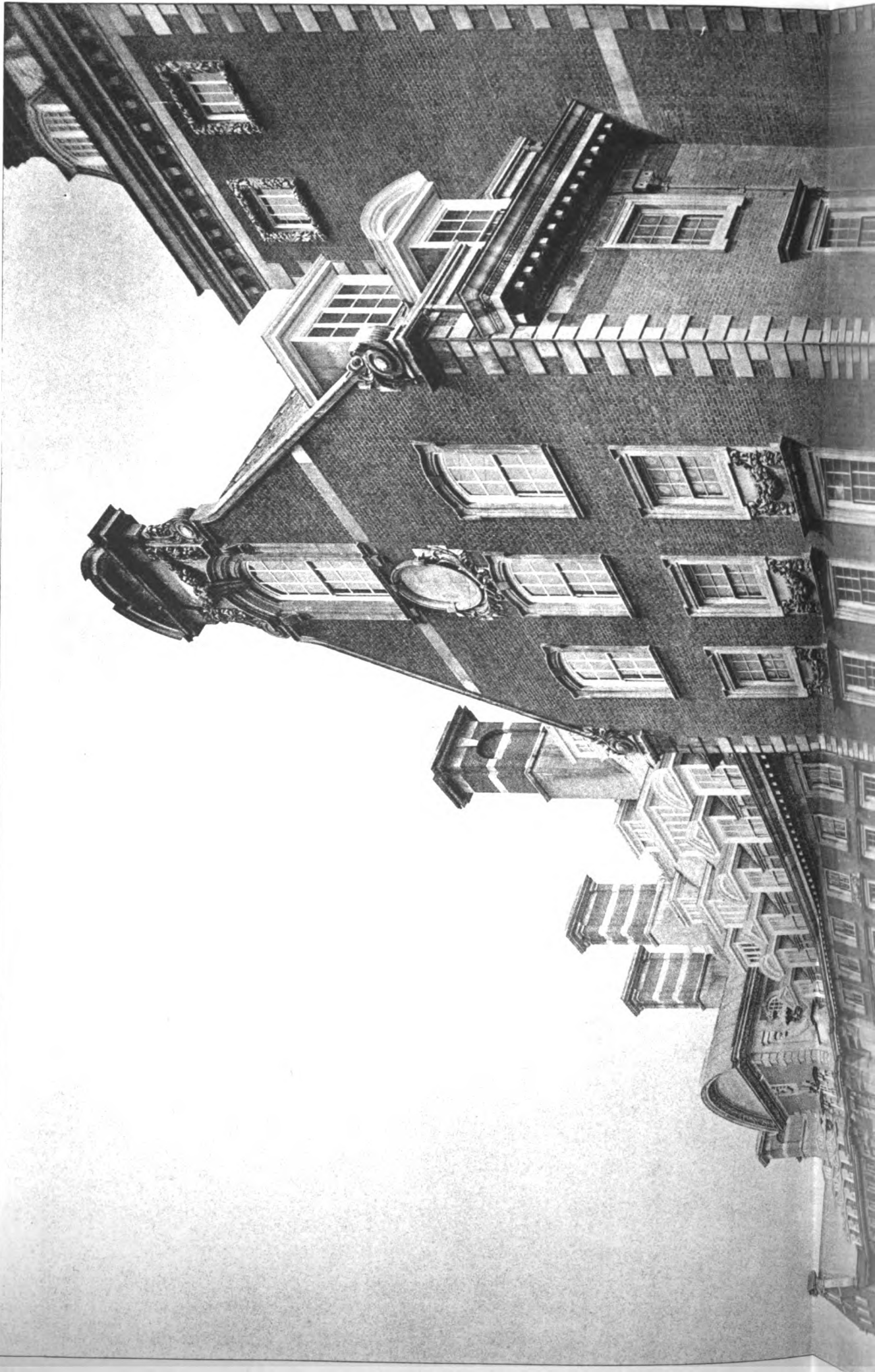
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OFFICES AND SECOND FLOOR.
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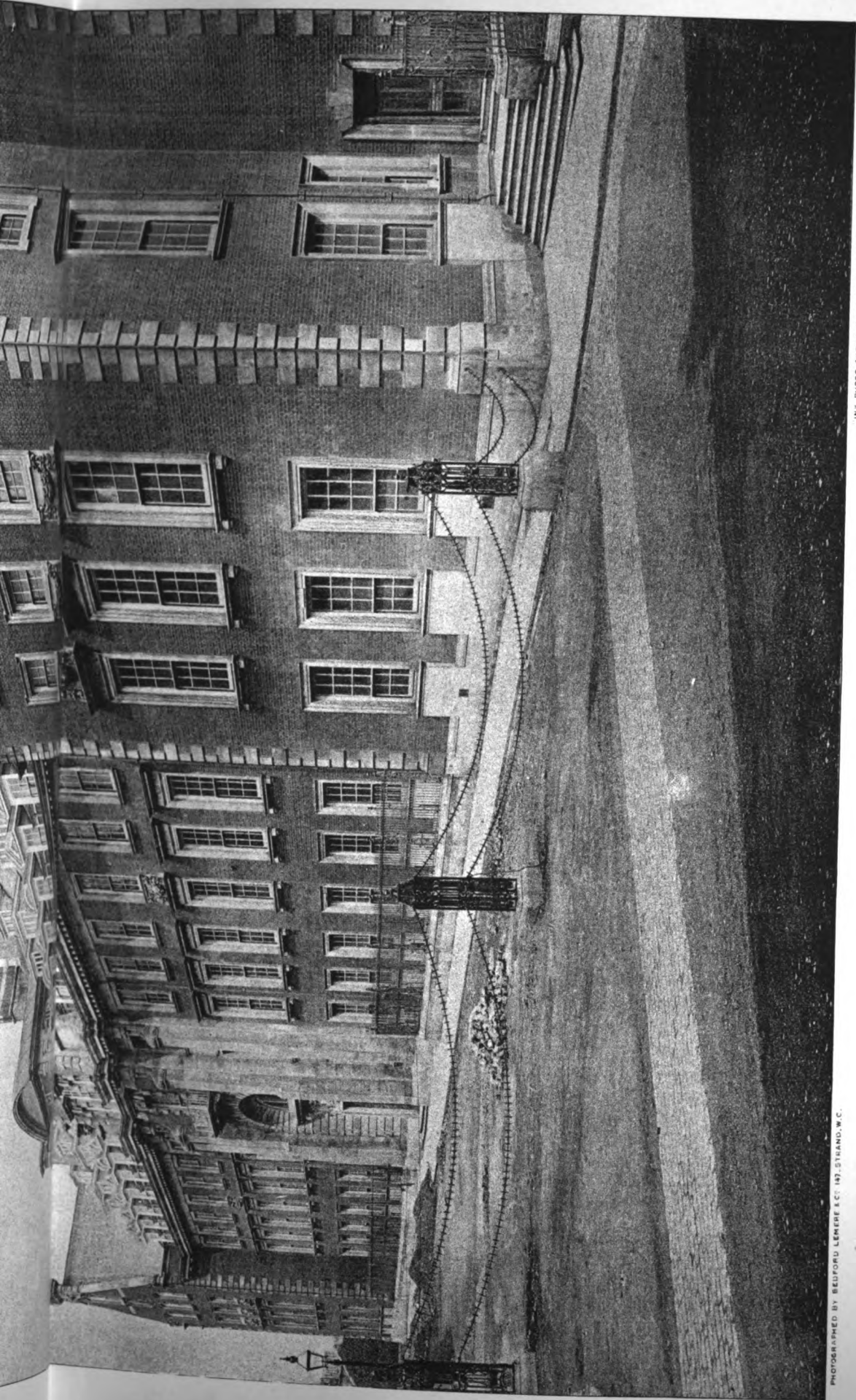
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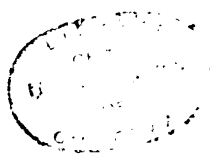
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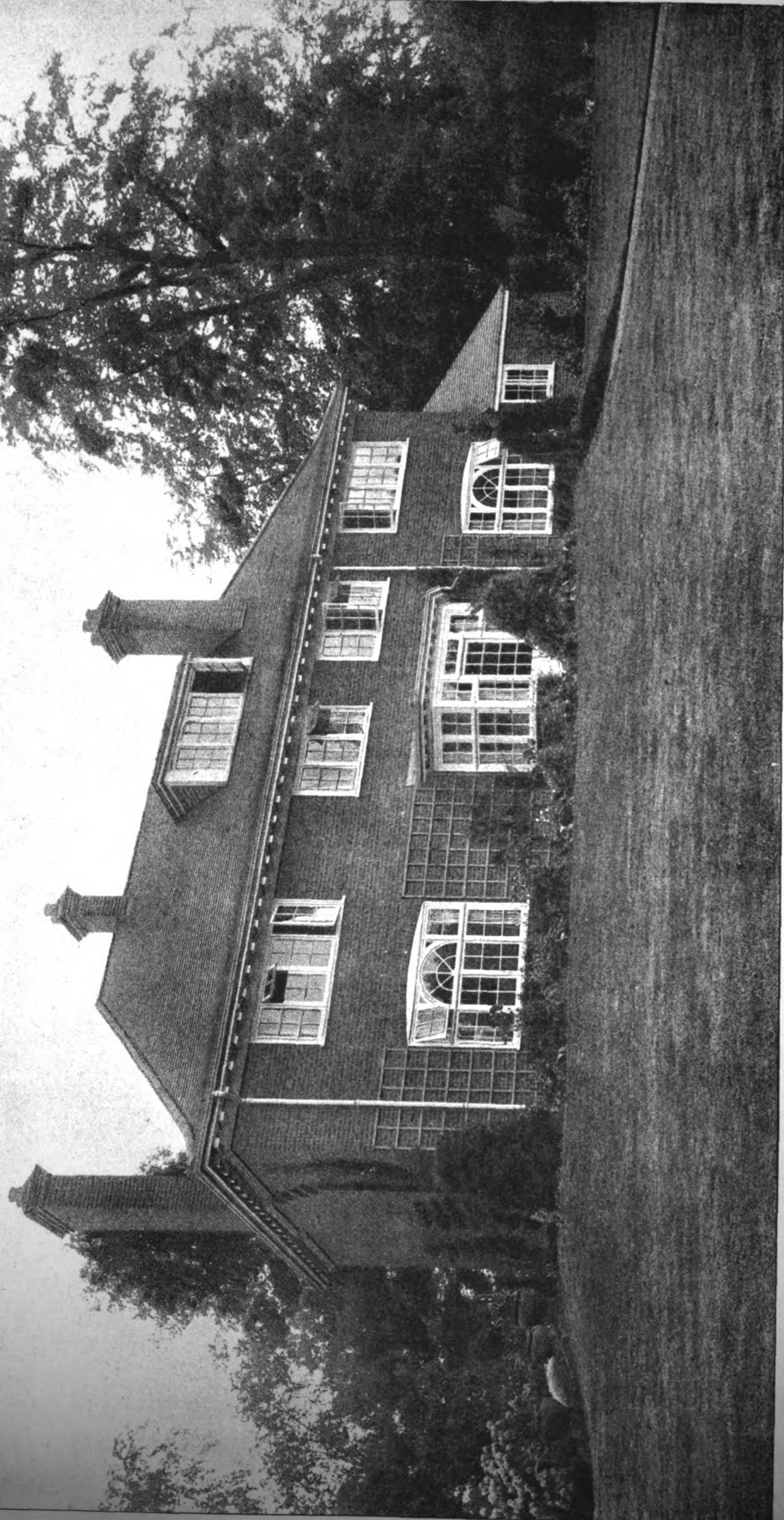
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NORTH-EASTERN RAILWAY CO.'S OFFICES, YORK.

Messrs. HORACE FIELD & SIMMONS, Architects.

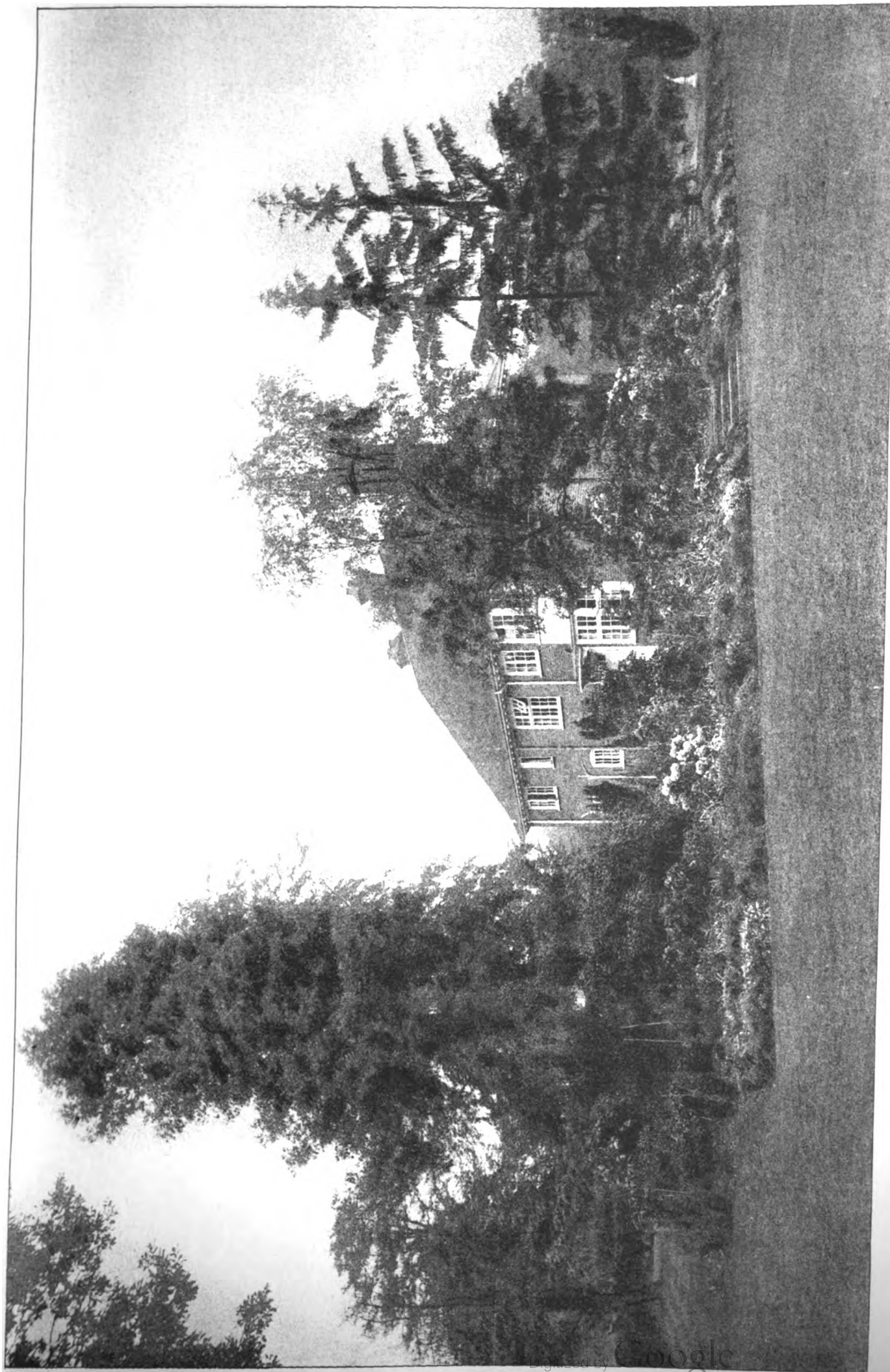






"FRITHCOOTE," NORTHWOOD: GARDEN VIEW.
WALTER E. HEWITT, F.R.I.B.A., Architect.

"INK" PHOTO: SPRAGUE & C^Y L^Y 4 & 5 EAST HARDING STREET, PETER LANE, E.C.



"FRITHCOTE," NORTHWOOD: FRONT VIEW.

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ARCHITECTURE IN MELBOURNE.

THE presidential address for 1906 of the Royal Victorian Institute of Architects was delivered by Mr. C. A. D'Ebro, A.M.I.C.E. He said:—

I cannot help thinking that there is a brighter outlook for architects than there has been for many years. The general progress of the Commonwealth in natural development must of necessity show in accumulation of capital. It is to be hoped that our political leaders will, by a more settled policy, encourage the expenditure of this accumulation by the erection of buildings for remunerative purposes, or what is one of the best evidences of the prosperity of any country—well-cared-for homes.

Our profession is, unfortunately, not sufficiently recognised in the State to bring its members under a scheme of registration, but I hope that in time this will come. I am pleased to say that there is far more enthusiasm among the young men who are entering into it, and it is only by exhibiting a high sense of honour that we shall gain the respect of the public. Unfortunately, there have been several cases which have been brought prominently into public notice, where this sense of honour has been lacking, and these have not done our profession any credit.

During the past session we have had many very good papers brought before the notice of the members at the meetings, but I frankly admit that there is very little encouragement given to the authors, as the meetings are not as well attended as they should be. It is to be hoped that, ere long, an amalgamation of kindred institutions will be obtained by meetings being held in more attractive surroundings, and if the scheme which is under consideration for the joint occupancy of some central building can be arranged, it may help in the right direction. The consideration of the federation of the various State Architectural Institutes has, unfortunately, been postponed, but I trust later on a move will be made to bring about this union, as the federation of interests and aims must be to the advantage of all concerned.

As has been reported by the Council, a readjustment of many of the clauses in our articles of association has been under consideration, and I hope that our efforts will ultimately—when approved by the members—give us power to deal with cases of unprofessional conduct which at present we do not possess. It must not be assumed that we are banded together only for our own benefit, but if we raise the standard of the Institute it will be to the advantage of the public, our employers, and through us the quality of work carried out by the builders, to whom we stand in the position of unprejudiced arbitrators, as well as the originators of the various schemes entrusted to us.

The success which has attended the recent exhibition of Australian manufactures proves the interest taken by the public in these matters, and apart from those features of natural productions of the soil, some of the exhibits possessed real interest to us, as being closely allied to architecture. There were many specimens of the cabinet-maker's art, which were very creditable both in design and execution, and it was a great advantage to inspect them whilst concentrated under one roof. There is no doubt that with encouragement our artisans can produce work which will favourably compare with the imported article, and the specimens of timber from Queensland were of great interest, as well as those from our own State. With regard to the possibility of getting these timbers in marketable quantities, I have no doubt that with the increased demand a regular supply will ensue, and here again a code of business morality will have to be maintained to enable us when specifying a class of material to anticipate getting what we order. This can only be obtained by the expenditure of capital and postponement of profit. There are immense stores of timber suitable for building requirements, but the natural characteristics of these necessitate their being cut at suitable times and proper seasoning.

I cannot help thinking that more encouragement should be given to the discovery and working of various deposits of stone and marble in the various States, but owing to their inaccessibility this must be a matter of time, depending on the opening up of, at present, unsettled country. I hope that even when our buildings are constructed as Edison stated, by pouring them out—i.e. by "concrete in moulds"—it will be found that the natural material will still have attractions to persons who have not lost all artistic feeling.

The report of the Council stated that the invitation to submit competitive designs for the Melbourne hospital (the conditions of which were generally approved by the

Council in 1904) was well responded to by the profession throughout Australia, a large number of designs being received. The hospital committee asked the Institute to nominate two assessors to advise the committee. Messrs. D'Ebro and Askew were nominated, and the nominations were accepted by the hospital committee. The assessors performed their duty and handed in their report. For reasons of its own, the hospital committee rejected the recommendations of the sub-committee, which included the assessors. When your late Council agreed to the nomination of assessors it was believed that the custom of adopting the views of such assessors would be followed. In this case the joint committee of architectural assessors and medical experts submitted a unanimous report, which the committee as a whole rejected. Although nominally within its rights, the result of the competition is a great disappointment.

Your Council are drafting various amendments in the articles of association. The first will permit a candidate to be elected as Associate after seven years practice, without passing the qualifying examination. The second will make it obligatory that before nomination as a Fellow the candidate shall have practised for ten years (in lieu of seven, as at present). A third amendment deals with the unprofessional conduct of any member, simplifying the procedure to be adopted in the first stages of the inquiry, and rendering it impossible for any member to resign after "misconduct" has been brought under the notice of the Council, or until the ultimate decision has been arrived at.

YORK MINSTER.

THE Dean of York, in his ninth "Occasional Paper," observes that the progress of the work at York Minster during the past twelve months has not been so apparent as heretofore, and therefore some have fancied that little or nothing has been done and others are disappointed that the great scaffolding is not yet entirely removed from the Minster. Nevertheless the large staff of masons, carvers and labourers has been kept in full occupation, and none of them relegated to the ranks of the "unemployed."

Two great works have rendered them very busy, one being the restoration of the great west window, the other the completion of two of the flying buttresses. As regards the former it has been not only a considerable work, but a work of great interest. As usual, it is difficult to estimate the size of anything which has to be done in the Minster, and few would imagine at first sight the vast proportions of the great west window, a grand specimen of the "Flamboyant" or latest development of the Decorated order of Gothic architecture, consisting of eight lights, together with a considerable amount of tracery, altogether measuring 54 feet 4 inches in height, 25 feet 4 inches in breadth, and containing 958 superficial feet of glass. At the beginning of the nineteenth century the whole of the west front had been practically refaced by Mr. Shout, the master mason, assisted by Mr. Taylor, a local sculptor. The external work seems to have been very carefully done, and is no doubt in some respects a fair restoration, but as the revival of the spirit of Gothic architecture was then only in its infancy the work lacks the spirit and tone of the Mediæval craftsmen, and is tame in comparison with the vigour of their productions. The internal and substantial part of the restoration was, however, not so successful, and the bonding of the stones had been so carelessly and imperfectly carried out that many had fallen, many were insecure, and nothing short of the thorough restoration of the whole, which is not yet completed, would be sufficient for the safety and beauty of the building.

In the west window large plates of "Hartley's rough-patent glass" had been inserted in order to protect the Mediæval painted glass, but these plates had been fastened into their position with iron bars, which had contracted and expanded according to the varying temperature to which they were exposed, breaking the rough plates of glass and splitting the stone mullions. These latter have now been thoroughly repaired, the rough glass removed and replaced by a complete skin of clear "crown glass" in diamond quarries, similar to the work done at the chapter-house. It will be impossible to fully judge of the effect produced until the scaffolding is finally removed, but it is possible already to see that the brilliancy and beauty of the window will be thoroughly restored. And it certainly deserves all the work and trouble that have been expended upon it, not only from

the intrinsic merit of the Mediæval art therein, but from its historical associations with one of the last, and certainly not the least, of the builders of the nave. For it is almost the only window in the Minster which can be authoritatively identified with its donor.

In Archbishop Melton's Register the following entry occurs:—"2a Non. Feb. 1338, Magistro Thomæ Sampson vel Thomæ de Ludham custodi fabricæ eccl. B. Petri, Ebor, 100 marcas pro opere vitreo fenestræ ex capite occidentali eccl. ejusdem de novo constructæ," which implies that the stonework of the window was carried out under his directions, and distinctly states that he gave the glass. The subject of the window, however, is not very clear. At the base there are eight full-length mitred figures, and above them a row of eight similar figures, one a woman, probably St. Catherine, each head surmounted with a coloured nimbus. The row above contains smaller figures, single and in groups, and above is a female figure, probably the Virgin Mary, with an angel saluting.

The value of the window has, however, been materially affected by the treatment of it which took place, Mr. Brown tells us, in 1757, when the stonework was "extensively repaired and the ornamental glass was at the same time repaired not very skilfully indeed by the glaziers of the church. The most important part of the work was performed by a young and ingenious artist, Mr. William Peckitt, of York, who was employed in restoring the heads of the bishops and other eminent persons represented in the window, which appear to have been wantonly injured and generally destroyed." The present window is therefore but a wreck of the original work; most of the faces of the figures are modern and there is a terrible admixture of eighteenth-century glass with the Mediæval glass throughout. Nevertheless, the general effect is very striking, and it is not unworthy of the position which it holds in the Minster. Archbishop Melton, under whose auspices it was erected and by whose munificence it was completed, filled the office of Archbishop of York from 1317-40. He was a native of a little hamlet called Melton, in the parish of Welton, near Howden, in this county, which was then a residence of the Bishops of Durham.

During his term of office Archbishop Melton devoted himself to accomplish if possible the great work which his four predecessors had striven so hard to carry on, the completion of the nave and west front of York Minster. It is impossible to say that he actually achieved this, and Brown assigns that honour to Archbishop Thoresby some six years after, but we are certainly indebted to him for the beautiful west window and possibly for the elaborate double doorway beneath, and his antecedents show that he was well qualified for such a task, for "he was, doubtless," says Chancellor Raine, "the builder of the noble church of Patrington, in Holderness. He helped to raise the glorious Minster of which Beverley may still be proud, and at Ripon and at Southwell he is not yet forgotten. He built also and endowed a chapel in the village of Melton, in which father, mother and son were to be commemorated." In 1329 he consecrated the parish church of Wakefield, rebuilt after the fall of its predecessor some years before, and now become a cathedral.

The following reports are appended:—

7 Gray's Inn Square, London, W.C.: May 1906.

Dear Mr. Dean,—I beg to report that I have inspected the works of repair that have been going on at the Minster. As was but too evident, the decay of the stone was such that important and beautiful features would have been irreparably lost. We were but in time to stay them. Much remains to be done. It should be carried out in a spirit as conservative as is possible. The work done has been well done. The new stone is of a durable nature. The improvement to the look of the north side of the nave and its aisle, by recalling the flying buttresses, is surprising. This was indeed but to be expected. The aisle wall as it was had a stunted and an altogether incomplete appearance, wholly out of proportion with the surrounding beautiful architecture. The clerestory wall was bare. The more distant view that one gets on the north side enables us to see the admirable design of the original fabric. For these flying buttresses are altogether part, an integral part, of the fourteenth-century intention. How much the design suffered from their destruction will, I hope, soon only be seen by the evidence of old prints. The artistic effect is to again lift that side of the Minster to its due proportion, and the constructional gain is the added strength for its longer continuance. I hope this good work may go on.—Faithfully yours, G. F. BODLEY, R.A.

Clerk of Works Office, York Minster: May 22, 1906.

Very Rev. Sir,—Since your last "Occasional Paper" was issued 6,396 cubic feet of stone have passed through the hands of the masons and carvers. This represents in weight about 490 tons.

The pinnacle over the west gable is completed. The east and north sides of the south-west tower are completed and the scaffold removed. On the west side the buttress gables on the fourth stage have been partly renewed and new pinnacles and finials fixed. On the south side the work on the fifth and sixth stages completed and these stages of scaffold removed.

The west window mullions and tracery have been restored and the outer glazing entirely renewed, lead glazing being substituted for the old plate glass, which was in a very bad state, only one panel of which remained whole. This window measures 54 feet wide. The glazing amounts to 958 superficial feet.

The Becket window in the south choir aisle was found to be in a very bad state. A scaffold was erected, the tracery taken out and almost renewed and reglazed.

On the north side of the nave two pinnacles and flying buttresses have been erected, the scaffold removed from these and erected to the next two buttresses. On these buttresses pinnacles are now in course of erection. All the stonework for these is worked and ready for fixing.

On the south side of the nave one flying buttress is completed, one in course of erection, and the whole of the stonework prepared for a third buttress.—I am, Very Rev. Sir, yours respectfully, R. GREEN, Clerk of the Works.

FYVIE CASTLE.

FYVIE Castle, the residence of Lord Leith, which is being visited by the King and Queen of Spain, occupies a pleasant seat in the fair and fertile district of Buchan, in Aberdeenshire. Situated on the left bank of the Ythan, says the *Scotsman*, it rises, a noble pile, with its mass of towers and turrets, its sharp gables, pointed roofs and canopied dormer windows, from an extensive natural plateau, encircled on two sides by the river and surrounded by beautiful woodlands. Dating from the fourteenth century, it has been added to and improved by its respective owners during these five hundred odd years, and its outstanding architectural features are the five towers, all in harmony with the original design, that mark the different periods. These towers are named respectively Preston (1390), Meldrum (1460), Seton (circa 1596), Gordon (1777) and Leith-Forbes (1890). The more ancient of these structures have both their historical memories and legendary lore. The Preston tower was enlarged and heightened by the Sir Henry to whom Robert III. assigned Fyvie for the redemption of Sir Robert Percy, brother of Hotspur, taken prisoner by him at Otterburne. The Seton tower, which forms the centre of the castle's south front, was the work of the first Lord Fyvie, who, a trusted friend of the sixth James, played a great part in the important politics of his time. He continued Chancellor of Scotland till his death, which occurred at Pinkie House, near Musselburgh, in 1622. The castle was to a large extent remodelled in his time, and to him also was due the artistic embellishment of the grand staircase, by the insertion of the heraldic devices. This great stair, by the way, is described by Billings, in his "Baronial Antiquities of Scotland," as an architectural triumph. It is arranged in corkscrew fashion round a massive pillar; and the ascent is so easy that it has been said that the laird's horse might walk up the steps without a stumble. Prior to the time of the present edifice there existed a castle or keep which is said to have been visited by Edward I. of England, and which was subsequently one of the hunting seats of Robert the Bruce. The ancient stronghold was once the scene of a siege, in which it was defended, and that successfully, by the Lady Lindsay against her nephew, Robert de Keith; and, coming to later times, an engagement lasting three days took place near it between the forces of Montrose and Argyll. Some legends cluster round the place, and that touching tale of the love of the trumpeter of Fyvie for Tifty's Annie has a national reputation. Behind the Preston tower is a stone figure representing Andrew Lammie blowing his horn towards the home of the beloved one, whose parents, deeming a miller's daughter a match much too good for a humble instrumentalist like the individual in question, ruthlessly withheld their consent to a marriage.

There cling also about the old place traditions of a picturesque curse by that master of magic and spells, Thomas the Rhymer, and of the presence of a "green ladie," who appears only when calamity is impending, so that Fyvie is furnished with the orthodox supernatural appurtenances without which no ancient castle of the first rank can be considered complete. Since he purchased the property in 1889, Lord Leith has effected several improvements which have added greatly to the beauty of both the exterior and interior of the noble building.

STOKE POGES.*

WE have just visited the church which has been immortalised, as no other church in England has been immortalised, by the supreme effort of the genius of one poet. Gray's *Elegy* is famous wherever the English language is spoken and English literature loved, and here flock hundreds of our brethren from across the seas to see the country churchyard where that *Elegy* was written. Perhaps it is unnecessary to state that other churches have laid claim to the honour of being the church of the *Elegy*. The only serious rival to Stoke Poges is Upton. But the circumstances of the poet's life, his connection with this village, the different points in the description, the "ivy-mantled tower," "the rugged elms," "the yew tree's shade," "yon wood," "the heath," all seem to unite to indicate that it was here Gray mused and wrote, and to-day we cannot allow any rival claims to disturb our reflections. About this place there lingers the personal note of undisturbed calm, of the peace found "far from the madding crowd's ignoble strife." Gray was a man whom melancholy marked for her own. He told the keynote of his life in these words:—"Low spirits are my true and faithful companions; they get up with me, go to bed with me, make journeys and return as I do, nay, and pay visits, but most commonly we sit alone altogether." He was a man of many friendships, who, as Johnson said of him, "was likely to love much when he loved at all," and who proved this true by his deep absorbing attachment to his mother. You have to-day that touching epitaph to "the careful tender mother of many children, of whom one alone had his misfortune to survive her." Gray's mother did not come to live at Stoke Poges until he was twenty-five years old, but before the place became his home he was in the habit of often spending his college vacations at his aunt's house. This lady was Mrs. Rogers, who lived in a house then called West End Cottage—now Stoke Court—which he described as a "compact box of red brick with sash windows." It has since his day been much enlarged and beautified. The poet's room is still preserved. His memorial, too, stands in the park, erected in the execrable taste of the late years of the eighteenth century. It is a sort of sarcophagus, more nearly resembling an enlarged tea-caddy, with some lines of the poet inscribed on each face.

The old manor-house in which we are assembled is also connected with Gray, as it was described by him in his poem called "The Long Story." They would recognise the place by the following verse in the poem:—

In Britain's isle, no matter where,
An ancient pile of building stands,
The Huntingdons and Hattons there
Employed the power of fairy hands
To raise the ceiling's fretted height,
Each panel in achievements clothing,
Rich windows that exclude the light,
And passages that lead to nothing.

The present building is only a fragment, a dilapidated fragment, of the great house that once stood here. In 1789 the house needed some repairs, and in the usual barbarous fashion of those days the difficulty of repairing it was solved by pulling it down. Only one wing was spared, the beautiful and picturesque building in which we are now assembled. The manor is mentioned in Domesday, and was formerly held by a family which took its name from the place. At length Amicia de Stoke (I am quoting from the latest edition of Murray's "Bucks" which I revised a few years ago, and it is allowed, I think, for an author to quote from his own work) married Robert Poges, and thus

Stoke became Stoke Poges. Their granddaughter Egidia married Sir John Moleyns, who became lord of the manor in 1340. He was at one time rather unfortunate, as he had all his lands, goods and chattels seized by the king. However, five years later he was restored to royal favour, and obtained restitution of all his lands. He was Treasurer of the Chamber to Edward III., and obtained the grant "by charter of a fair yearly on the eve-day and morrow of the Feast of St. Barnabas." From this Sir John the manor descended through heiresses to Hastings, Earl of Huntingdon, who rebuilt the house in the reign of Elizabeth, the wing of which they now saw. And now came the queen herself, as was her wont to visit the houses of her chief subjects, and to half ruin them by the extent of the hospitality she demanded. She was the guest here in 1601 of a remarkable man, Sir Edward Coke, who entertained her with great magnificence. In this hall Queen Elizabeth was entertained. Over the fireplace are the arms of Hastings, Earl of Huntingdon, who must have married into the family of the Earls of Warwick, as their badge, the bear and ragged staff, appears. There are also the arms of the Montagues and the Moleyns impaling Hungerford. The fireplace has been altered. There are figures of Queen Elizabeth and Sir Walter Raleigh, and the initials E.L. These stand for Edwin Landseer, who in that room painted most of his famous pictures. The hall is now double the size of what it was in Elizabeth's time. In this house Sir Edward Coke, the author of the great legal work, "Commentary on Littleton," the entertainer of Queen Elizabeth, passed many sad days. He was very unfortunate in his second marriage, and had terrible experiences of matrimonial martyrdom. His wife was the daughter of Lord Burleigh, and widow of Sir William Newport, who was a nephew of Sir Christopher Hatton. These walls have heard many angry quarrels, and the lady hated her old husband, deserted him and went off to London. One day she heard he was dead, and hurried here to take possession of the house and property. The report of her husband's death was false, and when she arrived at Colnbrook on her way here and discovered that her husband had wronged her so much as to be still alive, she returned, most indignant at his base conduct, to London. Other troubles befell the old man. He was accused of favouring the Parliament in 1629 against King Charles I., and Sir Francis Windebank with a posse of troopers came here and ransacked the house and seized all his papers. This was too much for the old man—"alone on earth, suspected by his king, deserted by his wife," he ended his miserable life. His daughter, Lady Villiers, the wife of John Villiers, brother of the Duke of Buckingham, came to him on his death-bed. This Villiers was created Baron Villiers of Stoke Poges and Viscount Purbeck. The lady was not remarkable for her virtue, and was condemned to do public penance for her crimes.

A few words must be said about Gray's "Long Story" connected with that house. The story concerns Sir Christopher Hatton, Lord Chancellor in the time of Elizabeth. He is said to have lived there, and Gray tells—

Full oft within these spacious walls
When he had fifty winters o'er him,
The grave Lord Keeper led the brawls,
The seals and maces danced before him.

It is extremely doubtful whether Sir Christopher ever lived there, because the unhappy Sir Edward Coke resided here. The only connection between the Hattons and this place is that Sir Edward Coke's second wife, who treated him so badly, was the widow of Sir William Newport, who was nephew and heir of Sir Christopher, and took the name of Hatton. In this house Charles I. was confined a prisoner of the Parliament in 1647. In a small room they would see some paintings on the wall said to have been made by the Royalist prisoners who were with him. There is a figure of an ostrich, the arms of Warwick (bear and ragged staff), and some excellent mottoes—"Fear the Lord—Obey thy prince—Love thy neighbour—Beware of pride—Speak the truth—Bear no mallis." The spelling of some of the words would commend itself to Mr. Carnegie and others who were trying to reform the spelling of our English words.

When Baron Villiers, or Lord Purbeck, died, the husband of the daughter of Sir Edward Coke, his heirs sold this house and property to Sir John Gayer, Lord Mayor of London, some two centuries and a half ago. He founded the "Lion sermon," which is still preached every year on October 16 at St. Catherine Cree Church in Leadenhall Street. This Sir John was a merchant venturer, and

* A paper read by the Rev. P. H. Ditchfield after the visit of the Berks County Archaeological Society, and reprinted from the *Reading Mercury*.

accompanied an expedition to the East. On the evening of October 16 he was separated from his caravan and confronted by lions, and then prayed the prayer of Daniel for deliverance, and his life was saved. In thankfulness for his escape he left money for the maintenance of "his Lion sermon," which records his memory and his wonderful deliverance. During the Commonwealth period, in 1647, he was Lord Mayor, and with four Aldermen was committed as a prisoner to the Tower for refusing to comply with a demand for a subsidy for the Parliamentary troops. That incarceration hastened his death. His brother Robert George succeeded him, and was a stout supporter of the House of Stuart, refusing to allow William III. to enter this dwelling. The estate was purchased by the Halseys, and then by Thomas Penn, second son of William Penn, the founder of Pennsylvania. Across the park might be seen a large mansion, built in 1789 by John Penn, the son of Thomas. The architect of the house was Wyatt, the arch-destroyer of our cathedrals, whose handiwork could be traced in many a noble building, and whose vandalism all antiquarians and architects had continually to mourn.

Two other literary characters were connected with this historic village. Lord Chesterfield lived at Baylis House, built by Dr. Godolphin, provost of Eton in 1695. It is now a Roman Catholic school. There Lord Chesterfield wrote some of his famous "Letters to his Son," which display such studied relaxation of all principle, although marked by scholarship and style. Happily the son did not live long enough to carry out the instructions of his unworthy sire, and his death embittered the few remaining years of Lord Chesterfield's life with an ever-enduring despondency. George Grote, the historian, once lived at Stoke Place.

Then we have in this small parish some literary associations which are indeed remarkable. But our chief thoughts to-day will be concerned with the memory of Thomas Gray. You have seen the vault in which his body lies, the inscription placed by him on his mother's tomb, and the few lines that record his name; but his real memorial is that sad and touching poem wherein he describes his reflections on the short and simple annals of the poor and on this quiet and remote God's acre:—

Where heaves the turf in many a mould'ring heap
Each in his narrow cell for ever laid
The rude forefathers of the hamlet sleep.

And he sleeps with them

Who gave to Mis'ry all he had, a tear
And gained from Heaven ('twas all he wish'd) a friend.

FRESCOES IN HOUSES OF PARLIAMENT.

A MEMORANDUM on frescoes in the Houses of Parliament has appeared. The First Commissioner of Works has prefixed to it the following note:—

After an interval of eight years Professor Church has favoured me with a further memorandum, the eighth of the series, and in continuation of Paper C. 8893 (1898), giving details of the progress of his work in connection with the care of various works of art in the Houses of Parliament, and copies of the document are herewith laid before Parliament.

The gravity of the danger mentioned in the concluding paragraph of the memorandum has not escaped the attention of the Board, and among other steps taken to deal with the evils arising from the products of combustion, a memorandum, Paper C. 2930 (1906) has been brought to the notice of Parliament.

During the present year arrangements have been made for the examination and treatment of the frescoes under glass in the Peers' and the Commons' corridors.

I am glad to take the present opportunity of endorsing all that has been said by my predecessors as to the skill and ability which Professor Church has bestowed upon the work of preserving these paintings from decay. He has ungrudgingly devoted much time and labour quite gratuitously to the task, and His Majesty's Government is under great obligations to him in the matter.—L. HARCOURT.

July 26, 1906.

Professor Church has sent the following explanatory note:—

Shelsley, Kew Gardens: December 1905.

Sir,—Eight years had passed since any of the wall-paintings in the Palace of Westminster had been cleaned and repaired when, in October last, the work was resumed under my direction. The five true frescoes by the late W. Dyce, R.A., in the King's Robing-Room were sub-

jected to a treatment similar to that adopted in 1897, and fully described in the annexed Memorandum (VIII.), which continues the series to be found in the Parliamentary papers, C. 7651 (1895); C. 805A (1896); C. 8893 (1898).

After the work in the King's Robing-Room was completed I directed Mr. Redhead to deal with one of the central features in Maclise's "Wellington," the great water-glass painting on the south wall of the Royal Gallery. The light grey patches on the charger on which the duke is mounted had again become unpleasantly conspicuous since the last cleansing of the surface in 1897. Some slight touches of colour and the application of a little diluted spirit-fresco medium have greatly improved this important part of the painting.

Although I remain of the opinion expressed in 1897 that four of the paintings in the Peers' and Commons' corridors need attention, I now confine myself to the recommendation that during the late summer of 1906 the frescoes in the House of Peers should be again cleaned and repaired under my guidance, ten years having elapsed since they were treated.

I must renew my acknowledgment of the scrupulous care and marked skill which Mr. Redhead, of the firm of Shrigley & Hunt, has again shown in carrying out my instructions.—Yours faithfully,

(Signed) A. H. CHURCH.

To the First Commissioner of Works, &c.

MEMORANDUM VIII.

CONCERNING THE WALL-PAINTINGS IN THE PALACE OF WESTMINSTER.

The King's Robing-Room.

Although the history, condition and treatment down to the close of the year 1897 have been discussed in Memorandum III. (C. 7651, 1895), and again in Memorandum VII. (C. 8893, 1898), it seems expedient to repeat in the present report the chief data previously recorded.

Of the five wall-paintings in this room—all executed by the late Mr. W. Dyce, R.A.—four were completed between the years 1851 and 1854, while the fifth picture, the largest of the series, was not finished until ten years later. The central panel of the west wall, representing "Religion, the Vision of Sir Perceval," is the earliest of the set. Like all the others it is 11 feet 2½ inches in height, but 14 feet 6 inches in breadth. In the year 1868 the late Mr. Charles West Cope, R.A., repaired this picture, cutting out the decayed parts and cleaning the surface with bread. Moreover he repainted some of the heads and hands of the figures in water-glass and the smaller defects in tempera, coated the whole with parchment-size, and finally treated it with a solution of paraffin-wax in benzol. The two side panels, "Courtesy, or Sir Tristram," which is 5 feet 10½ inches wide, and "Generosity, or King Arthur Spared," 5 feet 9¾ inches wide, were treated in exactly the same manner. The two panels of the north wall, respectively 22 feet and 10 feet 2½ inches wide, being in a much sounder condition, needed no repainting; both, however, received a coating of the paraffin solution, the smaller picture having been sized as well. So much as regards the treatment carried out by Mr. Cope in 1868.

Now I may recall the nature of the operations which I conducted in October and November 1894. All the frescoes were cleaned with bread, some with distilled water as well. Places where the paint had peeled off were touched up with tempera colours, while the weak areas of the ground or of the original paint received several applications of a solution of paraffin wax in toluol to which had been added a small proportion of copal varnish free from lead. This medium, which closely resembles that of spirit-fresco, was found to be particularly useful, not only in strengthening the rotten part of the plaster ground, but also in rendering less conspicuous the grey film which obscured many parts of the paintings and which no mechanical treatment proved competent to remove. As all the paintings now being considered had already been paraffined, the similar treatment which I adopted in 1894 was, in point of fact, the only one open to me.

It is time to consider the work carried out in October of the present year. Before doing so I should like to refer to the words of my brief Memorandum (VII.) of December 14, 1897. Three years had passed since the frescoes in question had been touched, but they had "hardly deteriorated at all. The surface was cleansed with bread, a few necessary but quite insignificant touches were given, and the same preservative solution as before was applied, the application being repeated twice or thrice on those places where

the ground or the pigment was friable. With reference to the future treatment of these paintings, I recommend that they should be cleansed, and, if necessary, paraffined at intervals of three or four years. I believe that by continual care and attention they may be maintained for a long time pretty nearly in their present condition."

My attention having been called by an officer of the Board to some conspicuous white patches in the fresco of "Courtesy," I undertook, in September 1904, to examine the condition of this picture and to effect personally all such repairs as were immediately necessary. The complete treatment of this panel was deferred until after the close of the Parliamentary session in 1905. It was soon found that the upper part of the panel, including especially the foliage of the tree and the hair of the figures, required many repairs and a good deal of repainting. A few patches due to the exposure of the white ground occurred also in the lower half of this fresco; these were similarly dealt with, the pigments which were scaling off being secured, so far as possible, by the application of diluted spirit-fresco medium, no paint except what was absolutely necessary being added. These repairs and repaints were begun on the morning of Monday, September 19, and completed on the 22nd of the same month, 1904. Rather more than twelve months afterwards Mr. Redhead, with an assistant, both employes of Messrs. Shrigley & Hunt, of Lancaster, began their treatment of the frescoes in the King's Robing-Room by dealing with this panel "Courtesy." It was found that my work of the preceding year remained firm and sound, but that the parts which I had neither cleaned nor restored required attention. Consequently the whole picture was carefully cleansed with bread-crumbs, a few slight repairs and repaints executed, and the entire surface treated with diluted spirit-fresco medium until all tender places in the ground or in the pigment had been made secure. Here it may be mentioned that the weakest places in the plaster-ground of this picture and of the other wall-paintings in this room were strengthened by the application of a mixture of which ceresin (a kind of paraffin) was the chief ingredient. Two ounces of a hard ceresin (with a melting-point of 156 deg. Fahr.) were melted and then thoroughly mixed with half an ounce of oil of spike lavender and five ounces of toluol—both of these liquids being measured, not weighed. The mixture was warmed till complete solution ensued; on cooling it forms a soft ointment-like paste which admits of being spread upon any surface by means of a brush or palette-knife. When, after the lapse of an hour or two, the toluol has evaporated, a spirit flame or smokeless gas-jet is brought near the treated surface, the residual ceresin melts and is driven into the soft or decayed plaster or paint.

Directly this is done, repainting may be commenced upon the plaster, which will be found to be hardened and to be capable of firmly retaining fresh pigment.

Besides the defects already noted in this picture it showed, as did most of the other paintings of the series, certain areas of discoloration. These occurred mainly in the lighter parts of the draperies, and being yellowish or foxy in hue were particularly conspicuous and disfiguring on the blue and cool colours of some of the robes. On a previous occasion I contented myself with the temporary expedient of concealing the discordant patches by means of a few touches of pastel or coloured chalk. But during the recent operations, after bread-crumbs, spirits of wine and peroxide of hydrogen had been tried with very partial success, the discoloured patches were covered up by the application of the smallest possible amount of fresh colour mingled with spirit-fresco medium.

Next to the panel "Courtesy" comes the large picture "Religion." The upper part of this work, especially on the (spectator's) left, was found to need much attention, the ground and pigments in several places being in a friable state. The robe of the female figure on the right exhibited the yellowish discoloration previously mentioned. In all respects this fresco received the same treatment as the "Courtesy."

The small panel "Generosity" next to the door of the room had shown a few conspicuous weak places when examined by me in September 1904. At that time I had touched with colour some white spots in the figure of King Arthur, but the picture required further repairs and a thorough cleansing with bread during the recent operations. It was treated in the same way as the other panels on this west wall.

The defects in the large fresco on the north wall occurred mainly in that part of the painting which extends from the

spectator's left to the centre, while the upper and the lower birds of the panel were fairly sound. Much dirt, however, had to be removed from the whole surface. The robe of the central female figure afforded another instance of the partial yellowish discoloration before mentioned; it consequently received some delicate touches of fresh colour, as did also the lower part of the jerkin of the standing figure on the extreme left of the foreground.

One more panel, "Mercy," remains for discussion. This picture showed weak places on either side of the two window openings represented near the top, in the lowest part of the figure on the extreme right, in the lowest central area and in the upper parts of the two figures near the extreme right. The skirt of the stooping figure which occupies the most prominent position in the left centre of the picture, although quite sound and firm, needed in some parts slight additions of colour to conceal patches of discoloration.

The operations on these wall-paintings in the King's Robing-Room were begun on Monday, October 2, and were completed on Saturday, October 28. Between these dates I paid seventeen visits to the room to control and watch the progress of the work.

The three small photographs* ("Courtesy," "Hospitality" and "Mercy") annexed to the present memorandum were taken before the recent operations; they have been so marked as to show the chief defective areas of each picture. Large photographs on a scale varying from 1-14 to 1-24 of the dimensions of the original paintings were taken on November 7, 1905. They comprise the whole series of five, and constitute a record of the condition of these frescoes just after their recent restoration.

The advisability of cleaning and repairing these and the other wall-paintings in the Palace of Westminster at intervals of three or four years has become more evident to me than ever before after my recent experience. The increased and increasing consumption of coal in London and the greater license allowed to the gas companies in the matter of freeing their gas from sulphur compounds, must result in a serious augmentation of the amount of sulphuric acid in the air of the Metropolis. This acid it is which constitutes the chief destructive agency at work on pictorial and other artistic productions.

Shelsley, Kew Gardens: December 11, 1905.

CONCERNING BRICKS AND BRICKWORK.

THE material commonly employed for building throughout Eastern countries is mud brick. In rainless Egypt this is a perfect substance for walls, and the great defences of towns and sanctuaries were immensely massive walls of dried mud up to 80 feet in thickness. In Babylonia as wide a use of mud brick is found, walls, ramparts, &c., being entirely made of it. In Palestine mud brick was largely used in Amorite times and it was employed for thick fortifications. The form was more like the Babylonian, being a square tile, whereas the Egyptians used a brick of our present shape. Throughout the Jewish period mud brick was generally used, faced with stone jambs and lintels at the doorways and plastered white all over. Such was the Egyptian method.

Brick-making in Egypt was a common occupation for captives. The black Nile soil of the country was dug down into a hole near water, mixed with sufficient sand and chopped straw. It was trampled into a paste, which was placed into a wooden mould and pressed down, the mould lifted and the brick left to dry, the frame placed close to it, another brick moulded, and so on, until the ground was covered with bricks in regular rows.

Straw was not by any means universally used; often plain mud and sand, or mud and pebbles. It was far more important to get the tale of bricks than to be too particular about the straw. Straw was valuable cattle food, and the main support of animals during the inundations, as it is more sweet and grassy than English straw; hence stubble was quite customary, and many more bricks are to be seen made with waste than those containing good food.

Bricks of Nineveh.

Botta, in the narrative of his researches at Nineveh, states "that all that exists of the ruins of the ancient city, boundary walls and mounds, is formed of bricks which were merely baked in the sun; these bricks have been re-

* These photographs have not been reproduced.

duced by age into an earthy state, and consequently cannot be used again." There can be no doubt but that in the construction of buildings kiln-burnt bricks were sometimes employed, but the mass of the walls was composed of unburnt bricks.

The inhabitants, on learning that Botta was in quest of stones bearing inscriptions, in 1842, at Khorsabad, two large bricks with cuneiform inscriptions were brought to him which had been found near the village. The man offered to procure him as many more as he wished. This man was a dyer, and built his oven of the bricks obtained from the mound on which the village was built; this led to the discovery of an immense monument. Excavations showed a mass of bricks baked in the sun and placed in regular layers. These bricks, unlike those baked in kilns, bear no inscriptions, nor are there any signs of chopped straw visible in their composition; the layers are nowhere separated, nor are they united by any cement, either bituminous or calcareous; the bricks seem to be united merely with the same clay which was used to make them.

Painted Bricks.

In Ezekiel xxiii. 14, 15, we read:—"She saw men portrayed upon the wall, the images of the Chaldeans portrayed with vermillion, girded with girdles upon their loins, exceeding in dyed attire upon their heads, all of them princes to look to, after the manner of the Babylonians of Chaldea, the land of their nativity." This remarkable piece of evidence, added to the traces of colour still subsisting, proves without doubt that the Assyrians were accustomed to paint their bas-reliefs. On the sculptures of Khorsabad the colours found were red, blue and black, but on the bricks there are other tints than red, blue and black, such as yellow, white, green, &c., and there is no reason why the Assyrians should have used these later colours on their bricks, and not have employed them to paint their sculptures. In noticing the mode of building pursued at Khorsabad, Bonomi says it was evident that above the coating of gypsum slabs there had been several rows of kiln-burnt bricks, the united surface of which must have represented subjects analogous to those which were sculptured on the lower part of the wall.

Prehistoric Brickwork.

The Seille is a little river at Metz in Germany, which swiftly rushes round some of the stupendous walls and gates of that town. It springs from a small lake not far from the little town of Dieuze, which lies a short distance to the north of Avricourt, and it flows on through a valley oftentimes marshy but fertile. Five Roman villas have been discovered there in a distance of 12 miles, but what appeared no less remarkable were the immense masses of brickwork thrown into the marshes to create a solid foundation. These bricks or tiles, to which the name of "briquetage" has been given, are of various forms, size and colour. The different degrees of baking have given to some colours varying from clayey brown to bright red, while time and the marshy soil have imparted to others a green or black coating. Some bear the impress of the hands of their maker—the marks of the fingers—and upon some are even the markings of the skin. Others have a rough surface, as though from the straw upon which they were probably laid before baking.

These curious bricks differ in size, form and colour; the largest vary from 10 to 30 centimetres long and 3 to 7 centimetres thick. The smallest may be compared to the bones of the finger, and many are extremely small. All these morsels, great and small, have been kneaded and moulded by the hand, baked, and then thrown pell-mell into the marsh, without order or arrangement, exactly as we now throw stones to form foundations for breakwaters. The bricks thus thrown together, without any cement, now form a substance so hard that it is difficult to separate the parts with a pick-axe.

At Marsal this kind of substructure covers the whole of the site of the town and nearly the whole of the fortifications; towards the west it stretches beyond them for nearly a thousand feet. The question arises, Who laid down this foundation and at what period in the world's history? The fact that beneath the "briquetage" no traces of Celtic or Roman remains have been discovered, whilst above it numerous relics of both races are frequent, goes to support the theory that this brickwork is to be ascribed to the primitive inhabitants of the district, and that it was executed for two purposes, viz. foundations, and for the formation of salines for the manufacture of salt. Works are about to be carried out in the valley of the Upper Seille which may yield proofs of the antiquity and uses of this strange work.

Stock Bricks and Place Bricks.

In a paper read before the Architectural Association of Ireland on "Architectural Customs Two Hundred Years Ago," by Mr. T. E. Hudman, the author gives the following explanation of the origin of the terms "stock brick" and "place brick":—"You will notice that I have mentioned stock bricks and place bricks were by law to be kept distinctly separate in the kiln. This seemed to me peculiar, because nowadays we understand place bricks to be a soft and defective stock brick. After searching I discovered the meaning of it. Stock bricks and place bricks were in the days of King George I. two distinct classes of brick made in different ways and of different clays. The stock bricks were made of a stiff marly clay and on a board called a stock, which gave it its name; the place brick was made of a softer clay, and being much more delicate to handle and dry, it was necessary to prepare a place close to the moulding-board to place the bricks upon to dry and prevent their being damaged by too long carriage or much handling, and for this reason they were called place bricks."

Taxes on Bricks.

The *Spectator*, in a recent article by Sir William Laird Clowes on a manuscript diary kept at one time by a secretary of the East India Company, remarks with regard to an evasion of taxation on certain articles, that "there was a tax on bricks, but the size of the brick was not specified. The result was that the builders used bricks of huge proportions, and the lower walls of the cellars of some of the houses on the south side of Brunswick Square are constructed of these larger bricks. The upper walls, built after the tax had been taken off, are of the ordinary dimensions." This is inaccurate; it was not till the close of the eighteenth century that bricks were subject to taxation.

By the Act 24 George III. c. 21, a duty of 2s. 6d. a thousand was imposed upon bricks. By 43 George III. c. 29 bricks were divided for fiscal purposes into common and dressed bricks, and separate rates of duty were imposed on each kind. These duties were as follows:—"For every thousand bricks which shall be made in Great Britain, not exceeding any of the following dimensions, that is to say, 10 inches long, 3 inches thick and 5 inches wide, 5s.; for every thousand bricks which shall be made in Great Britain exceeding any of the foregoing dimensions, 10s." The duty on the larger brick was double that imposed upon the ordinary kind. By 3 William IV. c. 11, the duty on tiles was wholly repealed, and the duty on common bricks was raised to 5s. 10d. per thousand. The duty on bricks was removed in 1850.

Dated Brick.

In March, 1896, the White Hart Hotel, Romford, was pulled down for the purpose of rebuilding; a brick was found with the date 1602 upon it. This had not been cut upon a burnt brick, as is frequently done when bricks are laid as memorials, but it had evidently been inscribed when the clay was in a moist state and had afterwards been burnt.

According to Mr. St. John Tyrwhitt, Roman bricks are often historical documents, on which dates and questions and other issues may depend. Every tetradoron or pentadoron had its date and the mark of its maker down to the time of Justinian. The monogram of Our Lord is often found on bricks used in church building. For secular architecture the names of the consuls or emperors were used. We have seen how this settles a really interesting question of date in the Catacombs. A German scholar, Mr. P. G. Weiner, has traced the Twenty-second Legion in its movements through a great part of Germany by the bricks which bear its name; and Roman bricks have been found among the Silures, our friends of Shropshire and the Welsh Marches, with the inscription "Leg. II. A.V.G." stamped upon them.

The first matter on which letters were received was stone and bricks, whence Josephus tells us of the pillars of stone and brick. Pliny remarks that the Babylonians preserved their customs, laws and institutes on bricks; the Phœnicians on stone.

Size of Bricks.

By 27 George III. c. 27 the size of bricks was not to be less than 8½ inches by 2½ by 4 inches. The preamble to this Act recites "that the laws heretofore made for regulating the dimensions of brick for sale have expired." The Order of Charles I. first fixed the size of bricks.

The following entry occurs in the churchwardens' accounts of St. Giles, Reading, under the date of 1519:—"Paid for brykes, breke batts, lyme ed sand for a reredosse

ed a Oryn, for workmanship of the same vij'." A brick-bat strictly is a portion of a brick with one end entire, and less than half the length of a brick; but in popular language, and most particularly when a brick-bat is used as a missile, the term seems to be employed for almost any fragment of one.

Brickwork in Bond.

In Manchester in the last century, as may be seen by examination of dates attached to old buildings in Marsden Square, St. James's Square, Cannon Street, &c., the buildings were formed by laying the first course with whole bricks; the next course the bricks are cut across for the outside brick, and the remainder filled with bricks laid at random. The third course as first, and so on. The walls are generally three to four bricks in breadth thick.

Sussex Brickmaking Terms.

Breeze.—French brasier, coarse ashes or cinders.

Clamp.—A collection of dried bricks, arranged for burning.

Crowd.—To place bricks in a clamp.

Frog.—The raised part of a brick mould, which forms the hollow of the brick.

Hack.—A flat bank or ridge of earth on which bricks are placed for drying.

Lew.—A species of wattle formed of faggots and straw, and placed at the sides of the hacks to shelter unburnt bricks.

Lew Rods.—Those used in making lews.

Off-bearing.—Carrying bricks from the moulder to the hacks.

Pug.—Soft clay mixed with soil, from which the bricks are moulded.

Pug Mill.—A mill for grinding and mixing clay and soil.

Skinlle.—To shift bricks edgewise when in the clamp to complete drying.

Soil.—The finer ashes sifted out from the breeze and mixed with clay for making bricks.

Bricks and Sand.

Bricks, when shaped, are wheeled away to the drying ground, and are piled on one another in long rows about 3 feet high, so arranged that the air may pass freely among them, and protected from the rain by a roofing of tarred wood—tarred because black attracts the heat. During the drying process many bricks crack and so are rendered useless, a strong wind being as destructive to them as excessive and unequal heat. With regard to cracking, very much depends upon the nature of the material. In some parts of the country the bricks can be carried almost straight to the kiln, while in others they require to be dried for a long time, and even then are not to be relied on.

In order to counteract this destructive tendency a fine yellow sand is often mixed with the clay, always, we believe, in the case of hand-made bricks. This not only imparts firmness and strength, but also gives the bright red colour which builders are so fond of. A story is told of the owner of a large brickfield who was fortunate enough to have both sand and clay on his property, and so turned out excellent wares. Anxious to become rich in a hurry he sold all the sand and devoted himself to making bricks with clay alone, but found to his mortification that they were so rotten as to be unsaleable.

MYSTERIOUS LAW CASES.

ON Saturday last Mr. Justice Walton, in the King's Bench Division, gave judgment in two cases which had been tried before him at the last Leicester Assizes.

His Lordship said in one case Mr. James Chapman sued Mr. John Henry Burley for 465*l.* 13*s.* 9*d.*, the balance due under a contract for certain building work. The plaintiff was a contractor and the defendant the building owner. The main defence was that plaintiff had been paid for the work, and had given receipts for various sums so received. The case was a very remarkable one. The owner's architect was a Mr. Goodacre, and he acted for Mr. Burley in and about the negotiations for the execution of the contract, and also in carrying out the work. The contract was signed on March 27, 1903, and by it the contractor agreed to build on land belonging to Mr. Burley in High Street and Carts Lane, Leicester, five shops for 3,990*l.* The plaintiff was a bricklayer, and the only part of the work he was going to execute was the bricklaying work, which came to a little less than 800*l.* The other work was to be done by sub-contractors. The plaintiff signed the contract, and with regard to the other tradesmen, as far as his Lordship could

make out, Mr. Chapman left the arrangements to be made with them by Mr. Goodacre, in whom he had considerable confidence, as had Mr. Burley also. According to the contract, unless the architect decided otherwise, the contractor was not entitled to call upon the building owner for any payment on account until the value of the work executed amounted to 650*l.* The work began at once, and very strange things happened. On May 8 the architect, without any request from Mr. Chapman or anybody, certified that the sum of 500*l.* was due to Mr. Chapman on account of work executed and materials supplied in the construction of the shops. This was submitted to Mr. Burley, not by Mr. Chapman—he knew nothing whatever about it—but one must presume by the architect, Mr. Goodacre. Mr. Burley, upon that certificate, drew a cheque for 500*l.* in favour of and payable to James Chapman on order. That cheque was never handed to Mr. Chapman, and was never endorsed by him. It was endorsed with his name, but such endorsement was a forgery. Moreover, the name of Mr. Chapman was forged to the receipt on the lower part of the certificate. The same thing happened again on June 11, when another certificate for 500*l.* signed by Mr. Goodacre was presented, and another cheque drawn by Mr. Burley payable to Mr. James Chapman on order. The name of Mr. Chapman was again forged. The same thing happened on July 25, the amount of the certificate in that case being 750*l.*, and the cheque drawn for the amount. So that up to July 25 Mr. Burley had paid 1,750*l.* by cheques drawn in favour of Mr. Chapman, and upon certificates signed by Mr. Goodacre. Of these payments, certificates and cheques plaintiff knew nothing at all. Indeed, up to that time the value of the work executed had not amounted to 650*l.* On August 15 the value of the work executed was about 600*l.*, and on that date Mr. Chapman applied for payment and asked for a certificate. Mr. Goodacre gave him a cheque for 200*l.* Mr. Chapman said that would not go very far among all the people engaged on the work, and Mr. Goodacre replied that was for him, he (Mr. Goodacre) would pay the others. Mr. Chapman received the 200*l.*, and was willing that the payments to the sub-contractors should be made direct to them by Mr. Goodacre, and he assumed that was being done. Meantime the forgeries continued. While Mr. Goodacre was, in fact, paying comparatively small sums to Mr. Chapman and some of the other tradesmen, he was certifying for large amounts, and receiving the cheques just in the same way. Up to August 9 he had obtained in that way from Mr. Burley 2,300*l.*, and a further sum of 320*l.* 3*s.* 4*d.* Of these forgeries Mr. Chapman knew nothing at any time material for the purposes of the present action. The result was that the defendant, Mr. Burley, had in fact paid his architect, Mr. Goodacre, for the whole of the work upon certificates given by him by cheques that never reached Mr. Chapman, although intended for him, and on receipts never signed by Mr. Chapman, though purporting to be so signed. Mr. Chapman and the other tradesmen had received various sums amounting altogether to 2,691*l.* 7*s.* 1*d.*, and according to plaintiff's account the total amount payable in respect of the work was 3,167*l.* 4*s.* 10*d.*, leaving the balance now sued for. The question which he (the learned Judge) had to decide was whether Mr. Chapman was bound by the payments which had been made by Mr. Burley to Mr. Goodacre. In other words, it came to this, Was Mr. Goodacre Mr. Chapman's agent to receive payment, or had Mr. Chapman acted in such a way that he was estopped from denying that the payments to Mr. Goodacre were payments to him? Upon the contract itself Mr. Goodacre undoubtedly was not the agent of Mr. Chapman to receive payment. It was clear that Mr. Burley intended the payments to Mr. Goodacre, not as the agent for Mr. Chapman, but to Chapman direct, the cheques being made payable to Mr. Chapman's order. This was one of those unfortunate cases in which a loss owing to the fraudulent conduct of a third person must fall on one of two innocent parties, and it was no doubt a hard case which ever way it was decided. But he thought the only conclusion he could arrive at was that there was no reason for throwing the loss on Mr. Chapman. The money had not been paid to Mr. Chapman, and he was entitled to sue for whatever was properly due for the work done.

The question of how judgment should be entered, the matter of costs and other points stood over for further consideration on October 24.

Mr. Justice Walton said the case *Pretty v. Worthington* was in a sense somewhat connected with the one he had just decided. It was a claim by Mr. Pretty, who was a painter, of Leicester, against Messrs. Worthington & Co.,

Ltd., to recover 103*l.* 12*s.* 9*d.*, which he said was due to him for certain painting work done on premises belonging to the defendants, the Albert Hotel, by their order. The order was given by Mr. Goodacre, the architect. What happened might be stated quite shortly. Mr. Goodacre applied to Mr. Pretty to send in a tender for painting the hotel which was about to be rebuilt. He sent in his tender for 82*l.* 5*s.* 8*d.* This was accepted by Mr. Goodacre, and the work was done. There was extra work amounting to 21*l.* 7*s.* 1*d.*, which, together, made up the claim. The defence was that Messrs. Worthington never ordered the work at all, that there had been no contract between them, and Mr. Pretty was introduced by Mr. Chapman. Mr. Chapman contracted for rebuilding the hotel, the total amount of the contract being 4,239*l.* Of this sum Mr. Chapman contracted for 1,175*l.* for bricklaying and 800*l.* for joiner's work. As to the remaining work, amounting to 2,150*l.*, to use the peculiar language of the quantities, "the work and materials were to be selected by the architect." That was not an uncommon form of arrangement in the Leicester district. He found that Messrs. Worthington accepted that. They must be taken to know all about the contract, and by it the painting work was to be selected by the architect. He was quite satisfied that the terms of the contract and the quantities gave ample authority to the architect to give the order which was given in this case. Therefore plaintiff was entitled to recover, and he gave judgment for him for the amount claimed, with costs.



The New County Hall, London.

SIR,—Should the present decision of the London County Council stand, a great wrong will be done to the overtaxed professional ratepayers of this great city. Why should the London County Council authorities go beyond London architects? Surely the members of the profession in London are capable of designing a worthy home for this important body. The pages of your Journal from week to week serve to show the feeling in other cities and towns, when we read "only architects practising in — (town or county) will be eligible to compete." Why, therefore, should the London County Council authorities go outside their own area? I would suggest that, in common justice to the architect ratepayers of the Metropolis, their present decision as announced should be reconsidered.—I am, yours truly,
F.R.I.B.A.

Nothing Like Free Trade.

SIR,—Hooray for Free Trade! nothing like it. The London County Council, bless them all, won't have Protection; certainly not. Hooray! Our German, French and Italian, to say nothing of dear Cousin Jonathan, architects are quite as good at architecture as we are, so let them all have a go for our new Council House. (Dear me, I nearly put Asylum.) Why not? Here you are, this is a brilliant suggestion. Why not give it to them entirely and leave out, yours truly,
A BRITISH ARCHITECT.

P.S.—A further brilliant idea. Why not employ a German architect, a French decorator, an Italian sculptor, and let Cousin Jonathan erect it and invite the President of the R.I.B.A. to open it?

The Motor-Car and Dust.

SIR,—To those residing on a main road the era of motor traction has become an intolerable nuisance. The noise, the smell, but, what is far more obnoxious, not to say dangerous, the dust, is beyond comprehension except by those who have to put up with it. There are many systems for dust-laying, I am informed, and surely one of these can be found to be successful; if not, then for health's sake alone the Government should be forced to take the matter up. I was talking to a prominent local doctor during the strawberry season, who informed me that he had never known so much illness from diarrhoea; this he put down to the fact of the dust and small particles of refuse which were blown about and caused by motor-cars passing the fruit fields. On the grounds of public health the matter should be promptly dealt with. Excuse my taking up your valuable space, but I know *The Architect* is taken by local authorities, and possibly my small effort might have some effect. Thanking you for publishing this letter, I am, yours truly,
BRIGHTON MAIN ROAD.

Street Noise Abatement.—Petition to the Home Secretary.

SIR,—The petition to the Home Secretary, requesting far more stringent regulations and restrictions concerning motor omnibuses and traction engines in the streets of the Metropolis, has been well started and bids fair to be one of the most influential petitions of modern times. The names of the principal signatories having been forwarded to the Home Secretary, I have pleasure in herewith enclosing a copy of the same. It is proposed to keep the petition open until the commencement of the autumn session.—I am, Sir, yours obediently,

THOS. BOWDEN GREEN,

Hon. Sec. Petition Committee.

2 Harrington Gardens, South Kensington, S.W. :

August 8, 1906.

GENERAL.

Mr. George Clausen, A.R.A., Mr. Frank Brangwyn, A.R.A., Mr. Walter Crane, R.W.S., and Mr. F. Derwent Wood will act as adjudicators in the competition for prizes that will be held this autumn by the members of the South Kensington Sketching Club (the Royal College of Art). Among the numerous extra prizes is one offered by Mr. T. G. Jackson, R.A., for the best design for a brass cased rim lock with finger plates, another by Professor W. R. Lethaby for the best piece of workmanship, designed and wrought by the same student, in any one of the artistic crafts, and one by Professor Beresford Pite.

The Sheldonian Theatre, Oxford, is being improved internally with a view to minimising the fire dangers. All the doors will be made to open outwards, and the wooden floors of the corridors running along the outside of the large hall are being taken away. They will be replaced by fireproof floors supported by iron girders. The four old approaches to the galleries have been pulled down, and staircases of modern design will be substituted for them.

The Société Artistique de Normandie have acquired for the permanent art collection in the Rouen Municipal Gallery an oil painting, *Winter*, by Mr. James Kay, R.S.W., Glasgow. The picture, which gives a glimpse of the Clyde on a bleak wintry day, was on exhibition at Rouen.

Mr. David Benzie, recently assistant resident engineer with the Aberdeen Corporation, has, after a stay of two months in Canada, been appointed city engineer in St. Catherine's, Ontario.

Mr. John Wills, architect, Derby, who died on June 20 last, left estate of the gross value of 15,975*l.*, of which the net personalty has been sworn at 6,355*l.*

The Section of Anthropology of the British Association at the final meeting of the general committee proposed that the Council of the Association be asked to impress upon the Government the desirability of appointing an inspector of ancient monuments fully qualified to perform the duties of his office, and with full powers under the Act for the preservation of ancient monuments, and with instructions to report periodically on his work with a view to publication.

Georges Haquette, the painter, died last week at Dieppe. His works, which were popularised by photography, were mostly marine subjects.

The Congress of the History of Art, which was to be held this year in Stockholm, has been postponed until next year.

The London County Council have introduced an explanatory brass plate in the restored room of Cardinal Wolsey's palace, 17 Fleet Street, which is now open free to the public. It bears the inscription:—"This house, of which this room forms a part, was built in the year 1610, and is, with the exception of Crosby Hall, probably the oldest house in the City of London. It is an almost unique specimen, of its kind, of the architecture of the period. Internally the chief interest in the building is centred in this room, the most noteworthy features of which are the moulded plaster ceiling and the oak panelling on the west side. The device in the centre of the ceiling refers to Henry, eldest son of James I., created Prince of Wales in the year in which the house was built. It seems probable that for some time the room was used as the council-chamber of the Duchy of Cornwall. In view of the interest attaching to the house, the London County Council, with the co-operation and assistance of the Corporation, purchased the building in the year 1900, when it was on the point of demolition, and restored the premises."

The Architect.

THE WEEK.

THERE is no difficulty in understanding why the information respecting the earthquake at Valparaiso and the loss of life and property which followed should be differently estimated. There can be no question, however, that both were on an astounding scale. Earthquakes so frequently occurred in recent times, both in Valparaiso and in neighbouring towns, the inhabitants could not have ignored the possibility of another catastrophe. The advantages offered by the situation were so profitable, the risks were accepted as if they resembled those of a commercial kind. ALEXANDER VON HUMBOLDT, who had lived for some years in that region studying earthquakes and other physical phenomena, found that the shocks followed the course of the shore and did not extend inland. He concluded that there was an intimate connection between the causes of earthquakes and volcanic eruptions. He considered that everything in earthquakes seems to indicate the action of elastic fluids seeking an outlet to diffuse themselves in the atmosphere. Often on the coasts of the Pacific the action, he found, was almost instantaneously communicated from Chili to the Gulf of Guayaquil, a distance of 600 leagues, and what was very remarkable, the shocks appeared to be the stronger in proportion as the country is distant from burning volcanoes. Whatever the cause, it is impossible for men to alter it. HUMBOLDT believed that if Chimborazo could be converted into a volcano there would be fewer disturbances in the region where it is found. He approved, therefore, of the Greek tradition that the shocks in the island of Eubœa totally ceased on the opening of a crevice in the Lelanon Plain. But nature alone can perform the works necessary for the relief of the Pacific coast.

THERE is no town in Ireland of equal size which possesses a larger number of ecclesiastical remains than Drogheda, co. Louth. A lofty tower, known as the Magdalen Tower, has survived. It is part of the Dominican abbey which was founded as far back as 1224 by LUCAS DE NETTERVILLE, Archbishop of Armagh. It was in that abbey that four Irish princes submitted to RICHARD II. in 1394. It was feared that the tower was likely to be destroyed and subscriptions were therefore obtained for enclosing the site with an iron railing. The work having been completed the tower was handed over to the Mayor and Corporation, who will, no doubt, secure its preservation. There is also the tower of the abbey of St. Mary, generally known as the Old Abbey, for it is believed that St. PATRICK founded it in the fifth century. The tower, although not so lofty as the Magdalen Tower, surmounts an archway which is used as a gateway.

THE costliness of arbitration and the risks incurred by contractors adopting it in preference to the ordinary proceedings in the Courts was exemplified in a bankruptcy case heard at Manchester. The bankrupt was a mining engineer and colliery manager. With his savings he was able to set up as an asphalter. He took a contract from Messrs. NAYLOR BROS. to lay asphalte and tar paving on eight bridges of the North-Eastern Railway. The contract amount was 900l. When about two-thirds of the work was executed one of the engineers varied the terms of the contract. At that time the bankrupt stated 470l. was due to him. He declined to complete the contract unless the original conditions were adhered to, and Messrs. NAYLOR had to carry out the work. The bankrupt's claim for 470l. was referred to arbitration, and after five days' hearing the arbitrator found that nothing was due from Messrs. NAYLOR. The bankrupt was ordered to pay 150l. to them,

with costs amounting to 420l. His own costs were 340l. In other words, there was a direct loss on his first contract of 1,350l. The Judge expressed his sympathy with the bankrupt, and granted his discharge, suspending it for the minimum period.

CHESTER at one time gained some renown by the performance of mystery plays, examples of which still exist. There is of late a desire to present scenes and pageants which will recall Mediæval life. It is therefore proposed to revive the performances of several of the Chester plays. The Archdeacon in supporting the project says:—"We are in a better position in this respect than those towns which have been reviving the memories of their past history by the production of pageants, for we have not to decide what scenes shall be represented, nor to supply words for the actors. We have the old plays themselves, which, with the needful revision, will furnish all the material that is necessary. The secretary of the English Drama Society promises that in treatment of costume and detail the Mediæval character of the plays will be preserved with the greatest care." The English Drama Society made the experiment of attempting three of the plays, and they met with a favourable reception. It is proposed to revive the whole series, which could be done in three days. The Chester Archæological Society consider the attempt as desirable. The necessary subscriptions would, no doubt, be forthcoming. So large a part of Chester has not been modernised, the performances would have an environment which could not be so well obtained in other places.

An inquiry which has been held by an inspector of the Local Government Board at Kinsale, co. Cork, throws some light on the question of labourers' cottages in Ireland. Many of the so-called labourers in that locality are fishermen who are rather brave, for they constantly venture their lives in very frail boats. The Council had already erected some cottages at the small sum of from 80l. to 90l. each. But the price of materials and labour having increased the average cost became 140l. It is now proposed to erect 105 cottages, each having an acre of ground attached. The estimated cost is nearly 240l. each, or about 70l. per house beyond the average stated by the Irish Secretary when introducing the new Labourers Act. It is proposed to borrow 25,000l., being at the rate of 235l. per cottage, at 3½ per cent. It is not to be supposed that superior materials and workmanship will be employed in the Kinsale cottages, yet the cost of erecting them is largely beyond the sum which imaginative people assign for the erection of cottages in England.

THE Glasgow School of Architecture, which is connected with the Technical College and the School of Art, offers an extensive programme for the coming session. The more technical side of the subject is treated in one division and the more strictly artistic in the other. Thus, in the School of Art there are classes for architectural design, drawing and painting from the life and from the antique, ornament, modelling and decorative design. In the Technical College instruction is given in history of architecture, architectural construction, mathematics, descriptive geometry, mechanics, mechanics of structures, natural philosophy, chemistry, geology. Some of the classes open on September 6, others on September 25. The fees for a diploma course are 10 guineas per annum for day classes and 2 guineas for evening classes. This course is particularly recommended by the Glasgow Institute of Architects. In the School of Art the subjects are remarkable, and comprise practical applications of art, including metalwork, enamels, printing in colours, lithography, house decoration, stained glass, stone-carving, &c. During the last session there were 136 architectural students attending the school.

THE ARC DE L'ETOILE: A CENTENARY.

AT the beginning of the year 1806 NAPOLEON could be considered as having attained the foremost position in Europe. He was not only Emperor of the French, but in the preceding year he was crowned King of Italy at Milan. In December 1805 he gained the great battle of Austerlitz. He had arranged for one brother to be King of the two Sicilies, another to be King of Holland, a third was to be King of Westphalia, and a fourth of Spain. He therefore was justified in assuming that he was the king of kings, and that the dynasty he founded would endure. As his arch-enemy, WILLIAM PITT, died on January 23, the year 1806 appeared destined to advance his triumphs.

Great as were his faults or crimes, it must be admitted that the son of the Corsican advocate was able to value architecture as if he belonged to one of the families of the CÆSARS. He was not satisfied with trusting to historians to record his victories. He desired to have also memorials in marble and bronze. It had been already arranged that a triumphal arch was to be raised on the Place du Carrousel in order to perpetuate the glory of the French armies. The platform was to have a quadriga by a French sculptor, to which were to be attached the four horses which originally adorned the Temple of the Sun at Corinth, but which afterwards were transported to Constantinople and then to Venice, from which city they were taken as spoils of war. NAPOLEON was, however, eager to have a still more imposing triumphal arch. He obtained designs from CHALGRIN for one which was to be set up on the boundary of Italy. Afterwards NAPOLEON contemplated its erection on the site whereon the Bastille stood before the Revolution, and to have it known as the Arc de Marengo. On February 18, 1806, it was decided to place the great work at the western extremity of the Champs Elysées, where the junction of different roads had made a *rond point* or *étoile*. It is needless to say that once the project assumed definiteness a great many architects sent in designs, and in consequence there was unusual delay in commencing operations, owing to the difficulty of discovering which of them was the best. Finally CHALGRIN was directed to prepare new designs in co-operation with RAYMOND. After a couple of years the latter retired, and the whole credit of the work is therefore accorded to CHALGRIN. He, however, died in 1811, and the carrying out of his designs devolved on other architects.

Work at the foundations was commenced in May 1806, although it is believed the plans were not at the time completed. The foundations extend to a depth of 25 feet beneath the soil and over an area of 56 metres by 28 metres. By another decree the Emperor had ordered that his birthday, August 15, which, according to the calendar, was the feast of the Assumption of the Blessed Virgin, was henceforth to be celebrated as the Feast of St. NAPOLEON and as the anniversary of the conclusion of the Concordat. It is right to say there was a martyr of the name of NAPOLEON who suffered under DIOCLETIAN. But his name did not reappear until 1803, when it supplanted that of St. ROCH in the almanacks. It may have been thought at the time that the Concordat would outlast the triumphal arch. But while the arch remains unaffected by time the Concordat has ceased to be recognised. It was anticipated that at the first celebration of the Feast the Emperor would have laid the foundation-stone of the great memorial. The Emperor and JOSEPHINE showed themselves in the Champs Elysées on that day, but it is not recorded that they made any stoppage at the site of the arch. The workmen, however, had cut a stone in the form of an hexagon, which they placed in the middle of the masonry already laid, with an inscription stating that it was the first stone which had been placed in the foundation of the monument.

The works proceeded slowly. This was partly owing

to a difference of opinion between the architects about the form which the superstructure should assume. CHALGRIN wished to introduce plain piers which would allow of sculptural decoration on a large scale. RAYMOND desired to have a columnar arrangement instead, and he was able to obtain the support of several architects. RAYMOND at length resigned, and CHALGRIN therefore obtained the whole control of the design. In 1810, four years after the works were undertaken, he was able to publish a series of engravings of the arch as it was to appear when completed. When the Emperor brought his new wife, MARIE LOUISE, to Paris, they passed beneath a full-sized imitation of the structure, which was formed of canvas and timber. CHALGRIN did not long continue the direction of the works, for he died, as we have already said, in 1811.

The Arc de Triomphe in the Place du Carrousel was advanced far more expeditiously than the larger work. The architects, FONTAINE and PERCIER, took the Arch of SEPTIMIUS SEVERUS as their model, and no time was therefore lost in debates over the design. Probably the war in Spain and other enterprises prevented sufficient funds from being assigned for the Arc de l'Etoile. GOUTY conducted the works for two or three years, and then in 1814 they had to be suspended. France was at bay, and every franc was required for the final struggle. After Waterloo many Englishmen visited Paris, but in the numerous accounts which were published no attention was given to the incomplete structure in the Champs Elysées. Sir WALTER SCOTT described the watch fires of the English camp and the effect at night among the alleys and parterres of the Champs Elysées. Naturally he was elated, for, as he said, in the sound of the bugles and drums there was pride and victory and honour, a part of which at least descended to the most retired and humblest fellow-subject of WELLINGTON. But, as he remarked, there was much around him to temper that elation. There were monuments on every hand to demonstrate the victories of NAPOLEON, yet the great man himself was an exile in the most solitary spot of the civilised world. Now, although SCOTT refers at some length to the arch of the Place du Carrousel, the column of the Place Vendôme, and other memorials, there is not one word about the Arc de l'Etoile.

The arch remained neglected until 1825. In 1823 France intervened in favour of an absolute monarchy in Spain. On the other side were undisciplined troops, and in the end French discipline prevailed. Trocadero was taken by assault and Cadiz capitulated. The victories were insignificant if compared with those of the Republic and the Empire. But the astute advisers of the moribund LOUIS XVIII. considered it would be politic to make capital out of them. It was therefore decided to complete the Arc de l'Etoile as a memorial of the Spanish triumphs. The works were entrusted to HUYOT. He proposed to adopt some of RAYMOND's ideas, whereupon the Minister dismissed him. A commission of four architects—MM. DE GISORS, FONTAINE, LABARRE and DEBRET—were appointed in his place; but in a short time HUYOT was restored and continued in office until 1833, when he was again dismissed. It was reserved for BLOUET to finish the structure on which so many architects had been engaged.

It cannot be said that the arch is complete so long as the platform is deprived of sculpture. The original idea appears to have been the ordinary one of having NAPOLEON or some representative figure in a quadriga drawn by several horses. A few years ago M. FALGUIÈRE, at his own expense, prepared a model of large size, which he was allowed to place on the summit. Although it was vigorous in design, it did not satisfy Parisian eyes, and it had to be removed. Huyot proposed to set up a series of single figures which would represent the principal cities of France. RUDE, whose *Departure of the Conscripts* is the noblest of all the decorative works connected with the memorial, suggested that the arch should be surmounted by a colossal figure

of France seated on a lion, holding the torch of civilisation in one hand, while the other rested on a sword. At the four angles were to be groups of kneeling figures representative of Russia, Prussia, Austria, and, notwithstanding Trafalgar and Waterloo and many other defeats which France had to endure, Great Britain was to appear as one of the tributary nations that owed its existence to the generosity of France. The scheme was only another instance of the insanity of genius.

BARYE proposed that a small hill should be constructed on which would stand a great eagle with its wings outspread. But French savants calculated that the force of the wind would be too strong for bronze feathers. The result is that the platform now only serves to enable visitors who have the courage to ascend about three hundred steps to enjoy one of the best views of Paris. It is worth noting that VICTOR HUGO in his long poem on the arch adopted BARYE'S idea; for, addressing the structure, he said:—

Toi qui lèves si haut ton front large et serein,
Fait pour changer sous lui la campagne en abîme,
Et pour servir de base à quelque aigle sublime
Qui viendra s'y poser et qui sera d'airain.

The poet, it may be mentioned, became an enemy to the Government of LOUIS PHILIPPE because, when the names of the generals were engraved on the masonry, his father's was omitted:—

Je ne regrette rien devant ton mur sublime
Que Phidias absent et mon père oublié!

It is now difficult to say whether the arch would not have been a memorial of the Spanish war if greater expedition had been used. There was dissatisfaction, but for some years the Monarchists could do as they pleased in France. Fortunately the structure was not completed in 1830, when LOUIS PHILIPPE was elected as king. From the character of the sculpture the arch became a memorial of the Republic and the Empire. For such a purpose it is admirably adapted. The Arc du Carrousel, although an adaptation of an ancient Roman work, has not the simplicity desirable in a national war memorial. As SIR WALTER SCOTT said, "The effect of this monument seems diminutive when compared to the buildings around; the columns, made of a mixed red and white marble, are rather gaudy." No such dispraise can be spoken when judging of the Arc de l'Etoile. The great groups suggest the Rising of France, the Triumph of NAPOLEON, the Invasion of 1814 and the Peace of 1815. The first, which is RUDE'S masterpiece, receives far greater attention than all the others. But the remainder, if considered merely as decorative groups, possess much interest. The bas-reliefs of the funeral of MARCEAU, the battle of Aboukir, the passage of the bridge of Arcole, the taking of Alexandria and other battle-scenes, and the frieze with its numerous figures representing the departure and return of the French armies, are too high to be adequately analysed. But, whatever may be the character of the detail, decorative effect is attained. The bucklers on the attic are engraved with the names of several of the battlefields.

If we may judge from engravings the triumphal arch soon after its completion must have appeared less satisfactory than at present. Some fifty years ago it was decided that the avenues in the neighbourhood of the structure should be treated with sufficient uniformity in order to suggest that there was a relation between them and the central ornament. The result is that in no part of Paris are the streets laid out in a more satisfactory manner. Whatever line is followed the arch is seen under favourable conditions, and it may be said without exaggeration that grandeur is gained by the arrangement of the avenues at small cost to the possessors of property. The principal view is from the Louvre to the triumphal arch, and it is unrivalled. It is difficult to say whether the existence of the Arc de l'Etoile obliges people to give a more favourable judgment of NAPOLEON and of the condition of affairs of which he was the

result. But it is at least undoubted that when he decided on the erection of the arch he was doing much towards the enhancement of the beauty of Paris and was giving a lesson to other cities on the disposal of open spaces.

MODERN FRESCO PAINTING.

ALL who care to see fresco painting employed in English buildings must consider the reports of Professor CHURCH with serious attention. He is the specialist who is now consulted by the Office of Works respecting the condition of the paintings in the Houses of Parliament. As professor of chemistry in the Royal Academy, the duty must have peculiar interest for him. If he could only discover some method to prevent the deterioration of the works, he would be rendering a service to art and the country which is not easily estimated. We know that one discovery in chemistry often leads to another of more importance, and by watching the effects of time and the London atmosphere upon the paintings in the Houses of Parliament the Professor might also hit upon some material which, added to the colours or plaster ground, would allow fresco paintings in this country to endure at least as long as ordinary oil paintings.

When it was proposed to employ fresco for the decoration of the Houses of Parliament reliance was placed on the fact that some relics of the paintings executed in the reign of HENRY III. on the walls of St. Stephen's Chapel had survived during six centuries. What was no less interesting, seventy-four out of the seventy-six painters employed on the work were Englishmen. There was consequently over-confidence as to the success of the great experiment. The artists accepted the commissions with alacrity and few preparatory experiments were made. Information respecting the methods employed by Italian artists when village churches were adorned with fresco was forthcoming; the process appeared to be very simple, especially to artists who could lay on their colours with decision. Unfortunately sufficient allowance was not made for the composite and artificial atmosphere which prevailed in London and which was unlike the clear and pure air of Italy.

It was not long before it was discovered that fresco painting was not enduring under all circumstances. If paintings by great masters on the exterior of Venetian buildings have vanished under the influence of the local air, what hope was there for paintings in the ill-ventilated Houses of Parliament? The colours fell off in flakes, exposing the plastering beneath, and thus making works appear as if they had been painted several centuries ago and were subjected to repeated acts of vandalism.

Science, which had been disregarded, was then invoked to save the pictures, and as a matter of course the authorities turned to German artists and German chemists for advice. The result was that when MACLISE began his immense *Meeting of Wellington and Blücher* in the Royal Gallery, he was crammed with a knowledge of chemical processes. There is no doubt his colours did not give immediate signs of decay, for they remained attached to the walls; but he had not completed the work when there was evidence that the figures were becoming more and more dull. Efforts were made to resist the transformation which threatened to make a brilliant picture little more than a monochrome. But none of them were as successful as the process suggested by GEORGE RICHMOND, R.A., which simply consisted of dabbing the surface with leather pads and silk handkerchiefs—a process which certainly was not scientific. MACLISE was not the kind of man to throw blame for his failure on others. When he said that the wall exhibited every variety of bad plastering and that owing to the unequal distribution of sand with the lime discoloration was too evident over the entire surface, we may be sure there was just ground for his allegations.

MACLISE had studied the water-glass or stereo-chrome process in Germany, and artists and chemists had given him the most ample details. Vitreous glass was not, however, able to withstand the air of London. Dr. PERCY recommended that the frescoes should be covered with a coating of paraffin dissolved in benzole. He believed that fresco proper as well as water-glass treated fresco would of necessity be injured by the atmosphere of London. Another chemist considered that besides the atmosphere, the colours employed, and especially the yellow ochre, were factors in the decay. It is difficult for science to atone for defects in the materials employed by artists. Some of the paintings in the Houses of Parliament had reached a state which was hopeless. But Professor CHURCH's report shows that the systematic efforts of the last thirty years have been advantageous, for some of the more important of the paintings continue to retain decorative value, although in a diminished degree if compared with their original condition.

"Slight touches of colour and the application of a little diluted spirit fresco" have improved MACLISE's *Wellington*. DYCE's *Sir Perceval*, from which decayed portions were cut out and others repainted in 1868, was again operated on in 1894. The report says that "places where the paint had peeled off were touched up with tempera colours, while the weak areas of the ground or of the original paint received several applications of a solution of paraffin wax in toluol, to which had been added a small proportion of copal varnish free from lead." Recently it was found that other parts of the same fresco required patching, and it was treated with ceresin, spike lavender and toluol, a mixture which Professor CHURCH has found to be enduring. But he considers that the wall-paintings should be cleaned and repaired at intervals of three or four years, owing to the increased amount of sulphuric acid in the atmosphere of London.

The paintings should be carefully preserved, not so much for their intrinsic merits, but as evidence of a spirit which existed in England about 1841. Then a Fine Arts Commission was appointed to consider the decoration of the Houses of Parliament. It was anticipated that if the history of England could be represented on the walls much would be done towards educating the people. It was also expected that the artists who received commissions would have to employ several assistants, and in that way a school of fresco painters would be formed. The public as well as the private buildings of the country were supposed to offer unlimited opportunities for the exercise of the art. The Commission was composed entirely of amateurs, and it is therefore easily understood why the aspirations should be of almost boundless extent. If the members had condescended to admit CHARLES BARRY, the architect of the building, among them, he was likely to give a practical turn to the subjects, and many of the errors might have been avoided. On his own account he had visited Munich in order to study the frescoes which were in progress. He came to the conclusion that they were not adapted for architectural decoration, and consequently did not enhance the beauty of the building in which they were to be found. He advocated the use of wall-painting in the Houses of Parliament, but he desired to have an arrangement by which painting, sculpture and architecture would form an effective union. BARRY wished to see his building decorated in a proper manner. The Commissioners wished to use the wall spaces in the most important building in the country for the display of subjects of historic interest, which would have some connection with the history of parliaments and law-making. We need not say that neither end was attained. The building is not properly decorated in an artistic sense, and it would require not only unifying power but imagination to make out any system to explain the wall-paintings.

Architects are therefore justified if they maintain that the wall-painting of the Houses of Parliament

became a failure because it was executed independently of any advice of the architect of the building. Much depends on the character of the plaster ground. But what member of the Royal Commission was competent to decide at Westminster about the proportions of the lime and sand, or whether such a compound was preferable to marble dust? Fresco painting is still practised in Italy, and the artists find it so simple a process they cannot comprehend why there should be failure in London, especially when they hear of the costly preparations. Fresco paintings were also occasionally produced in the eighteenth century in this country by wandering artists, which are not entirely destroyed by time and the atmosphere, although little care was taken to preserve them. The experience in the Houses of Parliament is, however, supposed to be decisive of the question. Walls are not painted because it is believed that, careful as the artist may be, he can never produce anything more satisfactory than the Westminster frescoes, and without constant watchfulness and expense the results may be more deplorable.

SMALLFIELD PLACE.*

SMALLFIELD PLACE is situated in the manor of Burstow, which was the lordship of Stephen Fitz Hamon, who assumed the name of the manor and was called Stephen de Burstow, in the reign of Richard I. He was a descendant of a younger brother of Robert Fitz Hamon, whose daughter and heir married Robert, a natural son of King Henry I., and was created Earl of Gloucester. It is certain that a family of De Burstow existed here at the latter end of the reign of Edward III., and that during this reign the stone mansion was erected. It was called Crullings, and was given to John de Burstow by Bartholomew, Lord Burgherst, as an acknowledgment for assistance received from him when thrown from his horse in a battle during the wars with France in the reign of Edward III.

Malden says:—"This John de Burstow was member of Parliament for the county of Surrey in 1301, and was paid four shillings a day as member of Parliament, together with his expenses in going and coming to and from Parliament; and in 1315 the two members for Surrey received 19*l.* 4*s.* for attendance from the octave of St. Hilary to the Sunday after Pope Gregory, that is, January 20 to March 9 in that year."

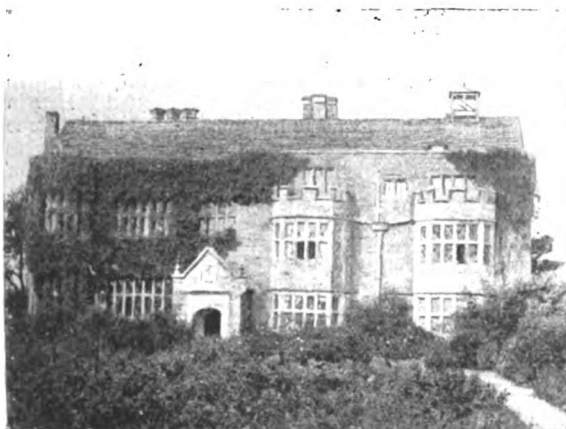
It afterwards came into the possession of the family of Byshe, who appear to have altered the name to Smallfield Place, and the embattled house which is yet standing was built by Edward Byshe in the reign of James I., 1603-25.

He was a bencher at Lincoln's Inn and a great practitioner in the Court of Wards, and in allusion to his practice and its successful results, as well as to the folly of his clients, he used jokingly to remark that he had built his house with woodcocks' heads, the woodcocks being his foolish clients. He had much property in the neighbourhood, and his name is still preserved in Byshe Court, a farmhouse near.

His son Edward was in 1640 M.P. for Bletchingley; in 1643 he was made Garter King at Arms; in 1646 the House of Commons passed a vote for making him Garter and Clarencieux. In 1654 he was M.P. for Reigate, and in 1658 M.P. for Gatton. After the Restoration he was obliged to quit the office of Garter in favour of Sir Edward Walker, but obtained a patent, dated March 10, in the thirteenth year of Charles II., as Clarencieux, which was given him in consideration of his having during the usurpation preserved the library of the College of Arms. In 1661 he was knighted and again sat for Bletchingley, and he was reported to have been a pensioner at 100*l.* a session. His reputation declined during the latter part of his life, for, after the Restoration, being much in debt, he abused his office of Herald by several unwarrantable grants of arms to supply his necessities, insomuch that Mr. Dugdale Norroy, who had been his greatest friend, and by whose interest he was brought into office, joined with Garter and other officers in a petition to the king against him. He died in the parish of St. Paul, Covent Garden, December 15, 1679, and was obscurely buried in the church of St. Olave, Jewry.

* A paper read at a meeting of the Upper Norwood Athenæum by Mr. Henry Virgoe on July 7.

Smallfield Place is the remaining part of a mansion which presents much of the appearance of a Tudor manor-house, and is acknowledged to be the most perfect and most interesting example of Domestic architecture in Surrey. A considerable part of the house was taken down some years ago, and the restoration of the remainder has been very carefully carried out by the present owner, Mr. W. Leslie Moore. Only a small part of the moat has been left. The chief part of the alterations which have been made are the building of a billiard-room with rooms above made of the old stones of the original house, so they do not seem out of place, and the making the top floor a trifle loftier, the panelling being used to repair the lower rooms. The old fireplaces that were bricked up have been reopened. Some are made from a single piece of stone. Plaster ceilings have been removed to show the oak beams. Arches found built into the walls have been restored to the doorways. Mullions and sills of the windows have been cleared of their whitewash and paint, and old inscriptions in the stone have been discovered. One is dated 1631.



SMALLFIELD PLACE.

There is much oak panelling in different parts of the house—the Elizabethan staircase of great beauty has carved oak panelling instead of balusters, and some elaborately carved chests. In the square hall the great object of interest is the richly-carved Tudor screen and the large fireplace, 16 feet across, with access to a "priest's hole" or hiding-place in the floor above.

In Aubrey's time there were various armorial bearings in the windows, and the date of 1661 is on the knocker of the door; on one of the leaden pipes the arms of Byshe still remain, viz. a chevron between three roses with the initials M
EB.

The old gardens, which had been destroyed to a great extent during the tenancy of the Hookers, have been relaid in the old-world manner, and the ancient box hedge on the terrace wall is now being coaxed back into something of its former grandeur.

A few old coins, notably a groat of Queen Mary, have been found during the restoration, but nothing of very great value.

Edward Byshe was the owner of Smallfield Place and estate in 1658. His son, Sir Edward Byshe, sold it in 1675 to Thomas Turgis, who gave it by will to Turgis Newland, a kinsman, from whom it descended on the death of his brother, Sir George Newland, in 1749, to the daughters of another brother, whose representatives in 1769 sold the property to Robert Bulkeley. In 1788 it was resold by the trustees under his will to John Ewart; in 1808 the estate belonged to his grandson, John Manship Ewart. Subsequently it was purchased of the Ewarts under the authority of the Court of Chancery for Willett Willett, afterwards came into the possession of Thomas Hudson, and after him it was the property of Isaac Martin Rebow, of Colchester.

The house was let as a farm for three generations to farmers of the name of Hooker, the elder Hooker being the first master and founder of the Burstow foxhounds. On the expiry of their lease the property was purchased by Mr. and Mrs. Leslie Moore, the present owners, to whom we are indebted to-day for permission to go over their historic mansion.

TROTTON AND COWDRAY.

THE members of the Hampshire Field Club and Archæological Society foregathered in goodly numbers at Petersfield, says the *Hampshire Advertiser*, for an excursion to Trotton and Cowdray in Sussex, just over the Hampshire border. The directors for the day were the Rev. G. W. Minns, F.S.A., Mr. Norman Nisbett, A.R.I.B.A., of Winchester, and Mr. W. Dale, F.S.A., of Southampton, hon. secretary. Assembling at Petersfield railway station about eleven o'clock, they proceeded in brakes and on cycles to Trotton, fine views being obtained en route of the western end of the great Wealden area. Arrived at Trotton Church they were met by the vicar, the Rev. F. Ashton, and entered the sacred edifice.

Mr. Nisbett read a paper in which, before noticing the architectural features or the particularly fine series of wall-paintings recently uncovered, he called attention to the remarkable "brasses" which had for such a long period made the church famous. Taking these in chronological order, he said that commemorating Margaret de Camoys, who died in 1310, was the earliest brass to the memory of a lady in England, the next being that of Lady Cobham, at the old church of Cobham, near Rochester, which has perhaps the finest collection of brasses in England. He pointed out the principal features of the brass, particularly noticing that outside the figure the background was "powdered" with daisies in allusion to the lady's name, which reminds us of the decoration on the gateways of Lady Margaret Beaufort's Cambridge colleges. Another feature was the canopy with its two pinnacles. This is of particular interest when compared with the canopies of the larger brass, representing Thomas, Baron Camoys, and his lady. The date is 1419, or about a century later than the other brass. Lord Camoys commanded the English left at the battle of Agincourt, and for the bravery displayed on that occasion was created a Knight of the Garter, and he was shown with this decoration below the left knee. The armour was described in detail, as well as the heraldry on the monuments.

Dealing then with the church itself, Mr. Nisbett said that for his notes upon the building he was indebted to a pamphlet written by Mr. Philip Johnston, secretary of the Sussex Archæological Society, and the architect who carried out recent repairs there. There was a church here at the time of Domesday survey, when Earl Roger held Traitone. The present tower was added to the older church about 1260. The church was later replaced by the present one, probably about 1300. It is most probable that this rebuilding was undertaken by Sir Ralph Camoys or his son, Sir John, husband of Lady Margaret. The details of the window tracery are worth notice, as, although they are excellent examples of Geometrical work, the quatrefoils are somewhat free. One of the doors is the original oak one, with its contemporary wrought-iron hinges. The old ironwork also is preserved on the priest's door in the chancel. At the side of the latter is a square-headed opening of the kind usually known as a "low side window." The altar tomb on north side of the chancel is believed to belong to another Margaret Camoys, whose will was dated 1386. She left money for the repairs of the church of Tradington (Trotton).

Mr. Dale followed Mr. Nisbett, and said that the fact of powdered glass being used in the enamels for the shields of the brass of Margaret de Camoys was discovered by Mr. W. H. St. John Hope. In the very fine Hastings brass in Elsing Church, in Norfolk, the same material is used. One of the supporting figures of this brass was identified in the Fitzwilliam Museum at Cambridge, and has been restored to its original place. It was in the refixing of this portion of the brass that the discovery was made. Looking about for any other example, Mr. Hope thought of this brass, and sent for a small portion of the material still adhering to the matrices of the shields. This was carefully examined and found to be powdered glass. These are the only two brasses known that have this peculiarity. If any other is discovered Mr. Hope would be glad to hear of it. Mr. Dale added that he would like to see this unique brass always covered. A special mat to lay over it would not cost much, and could easily be removed for inspection of the brass.

After thanking the vicar the visitors left the church, and passing over a fine fifteenth-century bridge they went on to Midhurst, halting at the Angel Hotel for about an hour for luncheon, and then proceeded to Cowdray Park, a few minutes' walk away, to visit the ruins of a fine sixteenth-century mansion which was burned down in 1793. Here a paper on "Cowdray, its History and Associations," was read by the Rev. G. W. Minns. He said:—

That the Hampshire Field Club and Archæological Society should visit Cowdray has been long a cherished wish of some of its members. A close connection existed between the Hampshire family of Wriothesley and the Sussex families of Fitzwilliam and Brown, who for 300 years made their home at Cowdray, which was built by Fitzwilliam, who bore the title of Earl of Southampton. A daughter of the house was married to Henry Wriothesley, second Earl of Southampton, of Place House, Titchfield. The similarity of the architecture of that house with Cowdray will at once be recognised, although Cowdray far exceeded Titchfield in grandeur. The magnificent monument of the Wriothesleys at Titchfield has its replica in the mutilated memorial of Sir Antony Brown, first Viscount Montagu, and his wives erected in Midhurst Church and removed to Easebourne, where it will be seen to-day. These and other circumstances in the course of history attest to a sympathy between Cowdray and Titchfield, in which Hampshire antiquaries will share. Dr. Johnson, who visited Cowdray in 1782, exclaimed, "Sir, I should like to stay here for four-and-twenty hours. We see here how our ancestors lived." In early times (Henry I.) the lordship of Midhurst and Cowdray was a possession of the De Bohuns, who had their castle on a neighbouring hill and removed somewhere near this site in the time of Edward III. In 1489 John de Bohun dying without issue male his heiress brought it by marriage to Sir John Owen, whose probable effigy is in Easebourne Church. From the Owens the Cowdray property was purchased in 1582 by Sir William Fitzwilliam. He rose to great eminence under Henry VIII., being attached to the king's person, became Lord High Admiral, was made Knight of the Garter and created Earl of Southampton (1527). To him we must assign the building of Cowdray, although some portions may belong to an earlier period. Sir William Fitzwilliam was the son of a Yorkshire knight, his mother being Lucy, daughter of John Nevill, Marquis of Montacute. This lady on the death of her husband married Sir Antony Brown, of Betchworth Castle, Surrey, Standard Bearer of England. William Fitzwilliam, Earl of Southampton, died in 1543, without issue, and bequeathed Cowdray to his half brother, a second Sir Antony Brown, and the first of the Browns of Cowdray. He also was much in favour with Henry VIII., and with Fitzwilliam had been engaged in matrimonial negotiations about Anne of Cleves, having been sent in 1540 to the Court of John of Cleves to act as proxy at the marriage of the king, while Fitzwilliam met the new queen at Calais to conduct her to her future country. In the same year Sir Thomas Wriothesley, the Lord Chancellor, proved useful in the repudiation of the marriage.

For their co-operation in the king's matrimonial iniquities each of the trio was rewarded. Although rigid Roman Catholics, they were not averse from sharing in the spoils of the monasteries. Wriothesley acquired a large share of the religious houses in Hampshire; Fitzwilliam received a grant of Easebourne Priory; the famous abbey of Battle fell to his half-brother, Sir Antony Brown. His son, Sir Antony Brown III., was created (1554) Baron and Viscount Montagu, the title being chosen on account of his descent, on the female side, from the Marquis Montacute. Viscount Montagu died in 1592, and was buried in the family vault in Midhurst Church. Nine viscounts bore the title in succession. On the death of the eighth viscount (whose tragic story remains to be told) the title devolved upon the next heir male, a friar, who received the Papal dispensation in order to marry and carry on the line, but dying without issue the title became extinct, and Cowdray was inherited by the sister of the eighth viscount, the wife of Mr. W. S. Poyntz, by whom she had two sons and three daughters. The sons came to an untimely end. Mrs. Poyntz continued to reside until her death upon the estate, which was sold in 1845 for 330,000*l.* by her daughter to the Earl of Egmont, and is now possessed by the eighth earl, who succeeded to the title in 1897.

Spelman, in his "History and Fate of Sacrilege," records the disasters which have befallen persons and families who acquired property devoted to the Church or purposes of religion. Similar calamities may possibly be traced in other cases, but certain it is that in the history of the Wriothesleys, Earls of Southampton, the four who bore the title had a large share of misfortune, and the experiences of the heirs of Cowdray afford instances in support of the theory which Spelman maintains. William Fitzwilliam, the possessor of Easebourne Nunnery, died without issue. Sir Antony Brown, the father of the first Viscount Montagu, acquired Battle Abbey, and while he was holding a feast in

the great hall, according to tradition, there came to him a monk, who foretold the doom of his family, "By fire and water thy line shall come to an end and it shall perish out of the land." The imprecation was apparently fulfilled by the burning of Cowdray House on September 24, 1793, leaving only bare walls and vacant windows to attest to its former magnificence. During the following month of the same year the eighth Viscount Montagu perished in attempting to pass in a boat the falls of the Rhine near Schaffhausen. His heir, the *ci-devant* friar, died without issue, and the estates came to Mrs. Poyntz. A further calamity befel the possessors of Cowdray, as the two little sons of that lady were drowned at Bognor, in 1815, by the upsetting of a boat. There are those who regard the story of the monk and his curse as a fiction, but the calamities which befel the family are solemn truth, and the destruction of their home is evidenced by what we see around.

Cowdray has witnessed many persons and events of national importance. Hither in 1538 the ill-fated Margaret, Countess of Salisbury, was brought as a prisoner from Warblington Castle by William Fitzwilliam, and after a few days transferred to the Tower, where, after execution, her body lies, instead of resting within the beautiful chapel she had erected for her burial in Christchurch Priory. In 1552 King Edward VI. was here on a visit, and in a letter described Cowdray as a "goodlie house, where we were marvellously, yea rather excessively, banketed." Here in 1591 Queen Elizabeth was sumptuously entertained: "three oxen and 140 geese were served at breakfast." Guy Fawkes was received here, which circumstance led to the arrest of his host, Viscount Montagu, in 1606, suspected of complicity in the Gunpowder Plot, his imprisonment in the Tower, and the payment of a fine of 4,000*l.* The Parliament troops, under Waller, were quartered at Midhurst, December 1643, "where my Lord Montagu's house is, a known and professed Papist." Francis, the third Viscount, was a sufferer in the cause of Charles I., and Cowdray sustained great damage during its occupation by the soldiers of the Parliament.

Dealing then with the architectural features of the mansion, Mr. Minns said it was entered by a porch surmounted by the Royal Arms—France and England quarterly with a lion and griffin as supporters—and Lord Southampton's motto, "Loyaute saprowera." The doorway contains the cognisances of Lord Southampton, an anchor and a trefoil, with the initials W.S. and L.P. These probably represent the initials of his name with the first and last words of his motto.

Quitting the interesting ruins, the visitors went on to Easebourne Church. Mr. Minns said that Esborn, as it is known locally, in accordance with ancient spelling, was the seat of a little Benedictine nunnery and the mother church of Midhurst. The church was rebuilt in 1876. The font remains of the thirteenth century, and it is similar to that of Barton Stacy. The chief interest attaches to the mortuary chapel, where is the tomb of the first Viscount Montagu, which originally stood in Midhurst Church, and was removed here in 1851. In general design, ornament and execution, especially the "pomp of heraldry" there displayed, one is forcibly reminded of the beautiful tomb at Titchfield, which has recently been judiciously repaired. Its replica has suffered badly. It was originally of considerable height, so that the head of Lord Montagu, the kneeling figure at a *prie-dieu*, was on a level with the gallery in Midhurst Church, and it was the weekly amusement of boys to put a piece of paper into Lord Montagu's mouth. Two recumbent figures of ladies rest on the slab, one that of Lady Jane Ratcliffe, first wife of Antony, Viscount Montagu, who died at Cowdray, 1552, at the age of twenty, the other, his second wife, Magdalene, one of the daughters of Lord Dacre. Four marble obelisks stood at the corners of the tomb as at Titchfield, and the figures on the panels have been sadly broken. In the same chapel is a monument by Chantrey to commemorate Mrs. Poyntz and "her two only sons, unhappily drowned in the flower of their youth under the eyes of their parents." She died December 1830. Another monument by Monti is to the memory of Mr. Poyntz, who died April 1840 and lies buried here. His end was occasioned by a fall from his horse, which produced injury to the spinal column, from which he suffered for some years before his death.

A Committee has been formed under the presidency of Cardinal Richelmy to make arrangements for the erection of a memorial of Christopher Columbus in the Vatican gardens.

CAMBRIAN ARCHÆOLOGICAL ASSOCIATION.

THE sixteenth annual meeting of the Cambrian Archæological Association was held last week at Carmarthen.

The Mayor, when receiving the members, said that if there was one thing in which the inhabitants took pride it was the historical associations and status of the town. He had come across a notice of Carmarthen in the year 1548. "The same towne of Karmarthen ys a fayre merkett towne having a fare haven and the flarest towne in all South Wales and of most scevillytie." He did not consider the statement was exaggerated. There was not in the Principality a single town of its size which contained so many objects of antiquarian interest. It had been said that if the old oak in Priory Street ever fell down Carmarthen would be swallowed up by the encroachments of the sea. The belief in that legend was proved by the efforts which had been made to keep the tree up, and those who visited it would notice that all that stood between Carmarthen and destruction now were the stones and mortar and iron bands which held the remains of the tree.

Archdeacon Thomas said that those who were at the meeting in the town in 1875 would well remember the address delivered by Bishop Basil Jones. There were two objects in which he felt great interest in Carmarthen—the parish church and the castle. The former was well kept, but he could not say so much of the castle. It would be a great credit to the town if the visit of the Association would lead to a movement for removing the unsightly buildings in front of it and displaying the fine gateway. He had much pleasure in vacating the chair in favour of Sir John Williams, who had shown by his ability and skill what a Welshman could do by his merits.

Sir John Williams then delivered an address, dealing with the history of Llanstephan Castle.

A paper by Professor Lloyd, of Bangor, on "Carmarthen in Norman Times" was read by the secretary, the Rev. T. Chidlow. The paper dealt with that obscure portion of the history of Carmarthen between the Roman occupation and the revolt of Owen and Cadwalladr, the sons of Owen Gwynedd in 1177. The author of the paper identified Carmarthen with "Llanteilyddog," one of the bishops' houses mentioned in the laws of Howel Da and other early records. "Teilyddog" was one of the disciples of St. Teilo, and "Llanteilyddog" a monastery of the primitive Welsh type gradually changing into a group of secular clergy. Rhydygorse was a castle of the "mote and bailey" type as early as the reign of William Rufus (1094). During the rising shortly afterwards Rhydygorse was captured by the Welsh, and Fitzbaldwin, the governor, had to return to Devonshire. In 1109 Robert of Gloucester founded at Carmarthen a stronghold of a later type, and no more is heard of Rhydygorse. After this date there was plenty of evidence that Carmarthen was a centre of royal administration for South Wales. At this time arose the distinction between old and new Carmarthen which existed until quite recently. New Carmarthen was a royal borough with a charter from King John, whilst old Carmarthen remained an ecclesiastical preserve under the protection of the venerable and mysterious Teilyddog. St. Peter's Church was built about 1120. In 1115 Bernard, the first Norman bishop of St. Davids, was appointed as a step towards subjecting the Welsh Church to the Norman power. Some records were quoted of Carmarthen in the twelfth century, showing that a knight was owing 20s. for having killed a Fleming, and another Carmarthen had to pay 7 marks for carrying off another's daughter by force. Carmarthen had in the twelfth century become a religious, military and administrative centre for South Wales.

Mr. Llewellyn Thomas said that the paper was a valuable contribution to an obscure period of the history of Carmarthen.

Rev. Griffith Thomas raised a discussion on the point whether the burgesses of Carmarthen had sworn fealty to William the Conqueror.

Professor Anwyl said that the borough was not then constituted, and there were no burgesses as such.

Mr. T. E. Brigstocke commented on the fact that the Roman remains were mostly found in the "old town"—the eastern portion of the borough.

Archdeacon Thomas quoted a passage from "Giraldus Cambrensis" which he translated "The ancient city is enclosed with walls of brick." This showed that even in the time of Giraldus there were remains of the Roman occupation.

Mr. Donne Bushell delivered a lecture on the astro-

nomical method of determining the age of stone circles. Certain lines clearly pointed to the points where the sun rose on Midsummer Day and at the equinoxes, and sometimes on the first day of May or thereabouts, the beginning of the farmer's year. Other lines, he believed, were laid down to mark the points where certain prominent stars arose—these being used probably as "warning stars," as they rose a short time before the sun, and thus gave warning to prepare for the sacrifice. However the points at which the stars rose varied slightly from year to year, but perceptibly from generation to generation, so that the grandson of the man who laid down the stones would not find these stellar lines answer their purpose. This fact, which annoyed the megalithic builders, assisted us. It was now a matter of calculation to find out when these lines had pointed to conspicuous stars. The speaker gave particulars of this method, which he had applied to a stone circle on the Precelly mountain, near Crymmych Arms. He found some lines pointing to the rising of the sun on certain days, but the other lines had no meaning now. One line he found to mark the rising of prominent stars about the time of the beginning of the Christian era, also in the ninth century B.C., and about 1040 B.C. At the latter date the line marked the rising of two important stars—Arcturus and Capella. Another line he found to mark the rising of the most prominent star in Andromeda also in the eleventh century before the birth of Christ. From this coincidence he concluded that that represented the date at which the stones were erected.

There were several excursions.

MAGDALEN TOWER.

IT is traditionally reported that the tower of Magdalen College, Oxford, finished in 1498, was planned by Cardinal Wolsey, and was his first essay in a science which he well understood and practised with extraordinary magnificence at his palace at Hampton Court, but of this circumstance the records of the college afford no positive proof. Fiddes, in his life of the Cardinal, would have us consider the tower of Magdalen College as an early essay of Wolsey's great mind, and it is called by his biographer Wolsey's Tower, and is cited as an instance of his good taste in architecture. But in 1492, when it was begun, Wolsey was only twenty-one years of age, and it is not likely that in so large a society, and under so grave and prudent a master as Dr. Mayhew, and at that era of college discipline (when the chief management of all weighty business was in the hands of the president and thirteen seniors) that young Wolsey at his time of life, and but recently a Master of Arts, should have had any power for the planning, or even influence for the promotion of such a structure. When the first stone was laid the founder had only been dead six years; we may therefore reasonably conclude that the edifice had its origin from instructions given him by the president and society, nor is it improbable that he had both seen and approved of the plan. Richard Gosmore, one of the lecturers on philosophy and middle bursar when the tower was begun, was made superior or supervisor of the work, with a stipend for his trouble, and to him payments were entrusted with the money beforehand for that purpose jointly with the president or some other person. In 1500-1 Pratt, the junior bursar, is named as having the care of the edifice, &c. The trust, however, was distinct from the bursarship, and we have no reason to conclude that there was any interval of superintendency between Gosmore and Pratt; or supposing one, that it was filled by Wolsey, to whom the honour of erecting the structure has been transferred from Waynfleet, the president and society, as far as we have been able to discover, without any foundation.

The Tower of Holy Trinity Church, Hull, is in danger through the loosening of the foundations. The structure is built upon oak trees interlaced with each other, and these have rotted and caused a subsidence. Mr. F. S. Brodrick, of Hull, architect to the trustees, has had the tower under observation for two years, and recently reported that immediate action must be taken. The cost is estimated at 5,000l. Mr. Francis Fox made an inspection of the foundations, and he finds that it will be necessary to underpin them and substitute brickwork and concrete for the timber.

NOTES AND COMMENTS.

WE believe that injunctions were formerly applied for to prevent the erection of post offices on account of interference with the light and air to neighbouring premises. In order to avoid repetition of the delay which usually follows such proceedings, the Bill which was introduced in Parliament last session on behalf of the Postmaster-General was treated as a private Bill. The notices required with those Bills were printed in the newspapers, and there was service on the persons interested in the properties which were to be purchased. Powers were sought to enable the Postmaster-General to acquire certain sites for the extension of post offices, two of those sites being in London and the other sites being in Birmingham, Blackburn, Bromley, Torquay, Carnforth and Walton-on-Thames. The Postmaster-General could build on the sites without reference to any questions of light which there might be connected with the adjoining properties, all those questions being left to compensation. He could also build on two or three sites which he had already acquired, compensating in the same way any easements of light in money, instead of allowing those easements to interfere with the character of the buildings. It would often be advantageous if the promoters of other private Bills relating to buildings in towns could secure similar privileges.

THERE is much similarity between the manner in which American judges deal with cases relating to materials in contracts and that employed in English courts. It is no easy matter to convince courts on both sides of the Atlantic how different is the cost of excavating and removal of one kind of material and another, and that, generally speaking, rock is far more difficult to deal with than ordinary earth. A case that came before the Supreme Court of Pennsylvania is an instance. The authorities of the town of Coatsville advertised for tenders for sewer excavation, and announced that for rock 3 dollars per cubic yard would be paid. As none of the tenders were considered satisfactory a new arrangement was proposed by which the town would supply the materials, so that the contractors were to provide labour only. One tender was accepted. But the contractors refused to sign the contract-deed on the ground that there was no mention of a price for rock. But they were assured by the borough engineer that it would be paid for at the established rate. The Court held that the borough engineer was only an agent, and was not a contracting party. There was nothing to show that rock excavation was contemplated, or that the borough engineer had any authority to enter into a contract respecting it. The Court therefore refused to recognise the claim, and the contractors will in consequence have to bear the loss. From a contractor's point of view the decision is absurd. But can any one say that such a judgment would be impossible in England?

AN inquiry which was held in Dublin on Tuesday indicates that in Ireland at least the Local Government Board intend to uphold sanitary officials. Complaints were made against a sub-officer of the sanitary department of the Corporation of neglect of duty and incivility. The public health committee accordingly dismissed him. The executive sanitary officer duly informed the Local Government Board, and asked for confirmation of the dismissal. The Board then asked that the sub-officer should furnish an explanation as to the charges made against him, and the explanation, which was duly furnished, contained a denial of the charges, and an allegation of prejudice on the part of the superintendent. An inquiry was ordered. The Local Government Board inspector stated that the Corporation committee had no right to dismiss the official without obtaining the consent of the Board. Judgment had been given in the Irish Courts in a similar case, but by the Public Health Act of 1878, Section 11, that judgment was erroneous. The decision of the Local Government Board will be given in due

course, but apparently the authorities have resolved to uphold officials whose duties are onerous and perplexing.

THE royal palace at Laeken is in a suburban park on the north side of Brussels. The building dates from the end of the eighteenth century, when it was erected by the Austrian Stadtholder of the Netherlands. NAPOLEON resided for some time in it. After the Belgian revolution it became the residence of LEOPOLD I. Although it was restored after the fire of 1890, it had on that occasion lost much of its original character. King LEOPOLD II. having resolved to alter and enlarge the building gave the commission, not to one of his own subjects, but to M. CHARLES GIRAULT, the French architect. As he was allowed a free hand and funds were abundant, M. GIRAULT has been able to transform the palace. He has added two great wings, one of which is arranged for residences and the other for receptions, fêtes and other occasions of State ceremony.

ILLUSTRATIONS.

CATHEDRAL SERIES.—ST. DAVIDS: THE NAVE, LOOKING WEST.

COMPETITION DESIGN FOR COUNCIL HOUSE EXTENSION, BIRMINGHAM.

IN preparing this plan the following motives have been kept in view, viz.:—Simplicity of arrangement; convenience of access to all parts by ample corridors, stairways and lifts; economy of construction; separation of the various departments, so far as the public are concerned, and easy intercommunication for the officials; the best and most profitable treatment of the site, with due regard to the grouping of departments; good approaches for public and staff and easy administration, and perfect capability of extension without injury or disturbance to the existing building. The plans and sections are very fully figured, so as to save unnecessary trouble to the assessors. Ventilation would be effected by means of a well-regulated system of inlets and outlets, assisted by natural or artificial helps in flues, fans or otherwise, at proper intervals, delivering fresh air at a height of, say, 6 feet above floor level, the vitiated air being carried away by ducts, the egress being as near the ceiling as possible; this, however, is not shown on the drawings, it being impossible to do so on so small a scale. The heating would be by water boilers of the Trentham Cornish type. One of these would heat the building and the other supply hot water to the lavatories, and both be coupled together in such a way as to be interchangeable. Accommodation is provided in a sub-basement for some thirty tons of coal or mixed fuel, equal to fifteen days' consumption for the two boilers. Cloak-room, w.c. and lavatory accommodation is provided on every floor. The work would be entirely fireproof as far as the term fireproofing is usually accepted. The floors are formed of rolled steel joists, with coke breeze, lime or cement concrete as circumstances require. The ceilings of strong rooms to be of Portland cement concrete interlaced with steel bars, crossing each other at regular intervals, forming a 6-inch by 6-inch mesh. Each strong room to be ventilated into corridors. Fire-hydrants will be fitted throughout the building.

Although "very little cooking" was asked for in the particulars given, an open range is provided for roasting, gas or electric potato or fish-oven, hot-plate, grille, &c.

The cost was estimated at 150,000/. The design is by Mr. BUTLER WILSON, of Leeds.

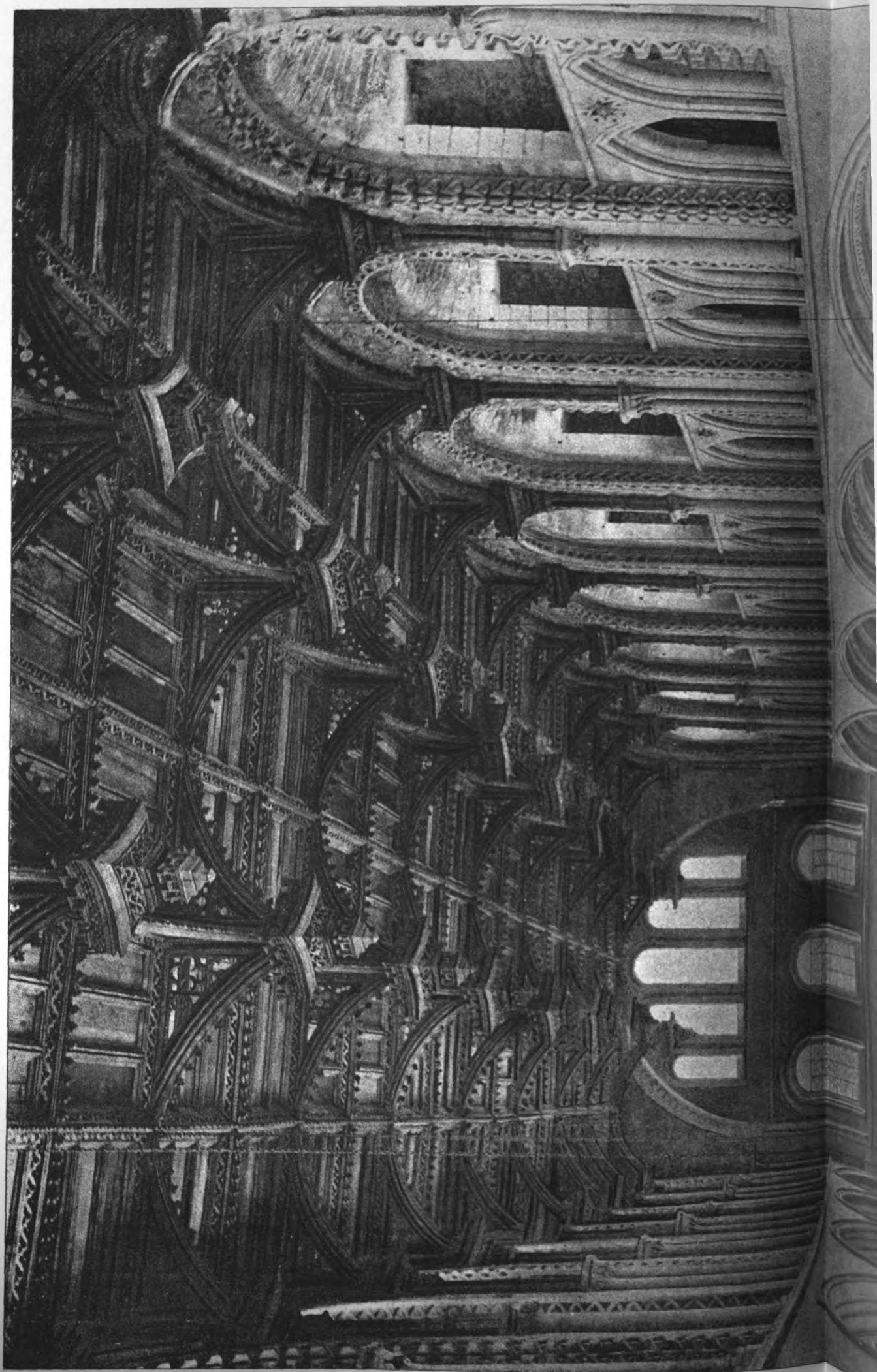
LITTLEGRANGE, WHYTELEAF, SURREY.

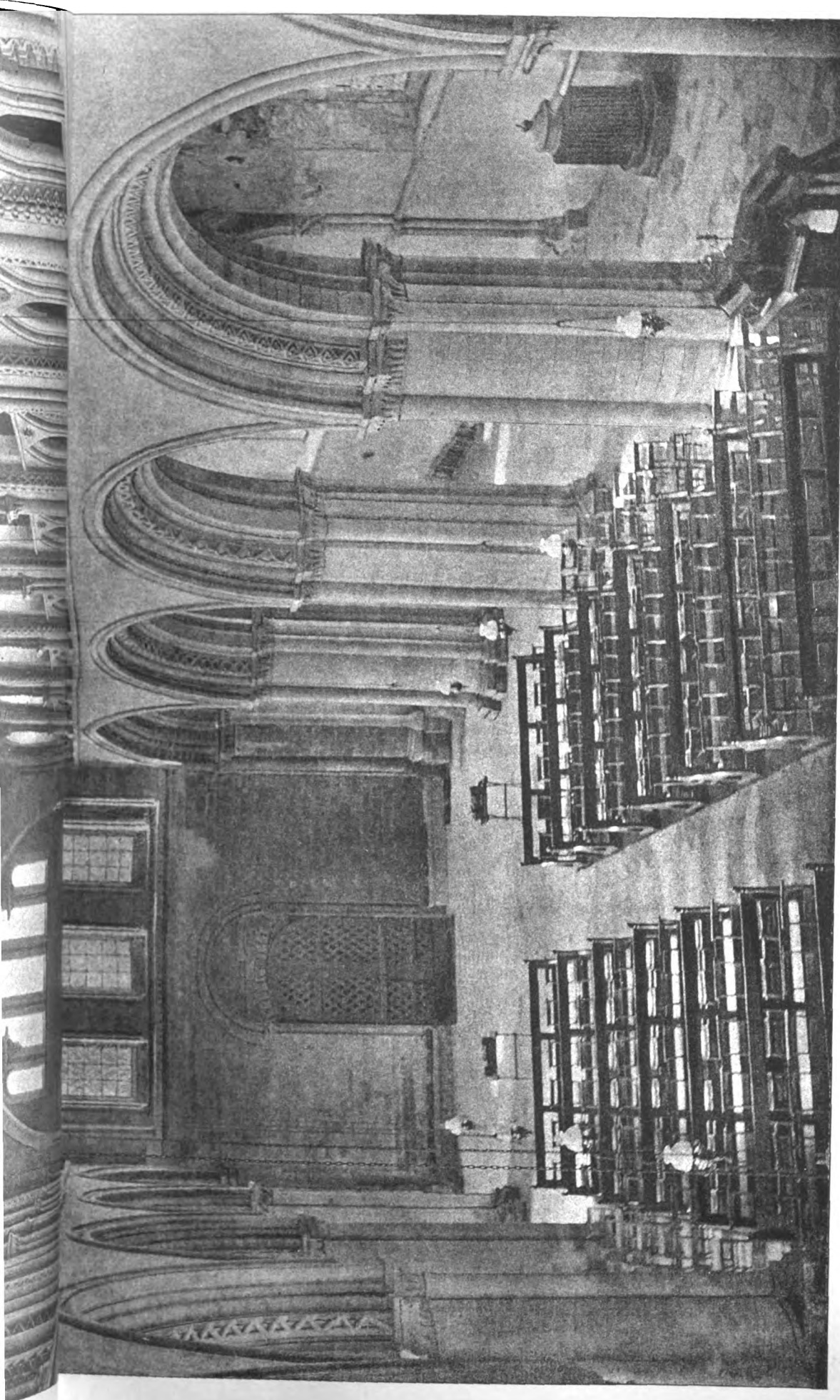
MAYBURY COTTAGE, WHYTELEAF, SURREY.

THE architect for both houses and for one published last week is Mr. WALTER HEWITT, A.R.I.B.A.

NEW OFFICES FOR THE HEARTS OF OAK BENEFIT SOCIETY, EUSTON ROAD, N.W.—DELEGATES' ROOM, LOOKING TO GALLERY.

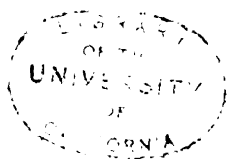
The Architect, Aug. 24th 1906.

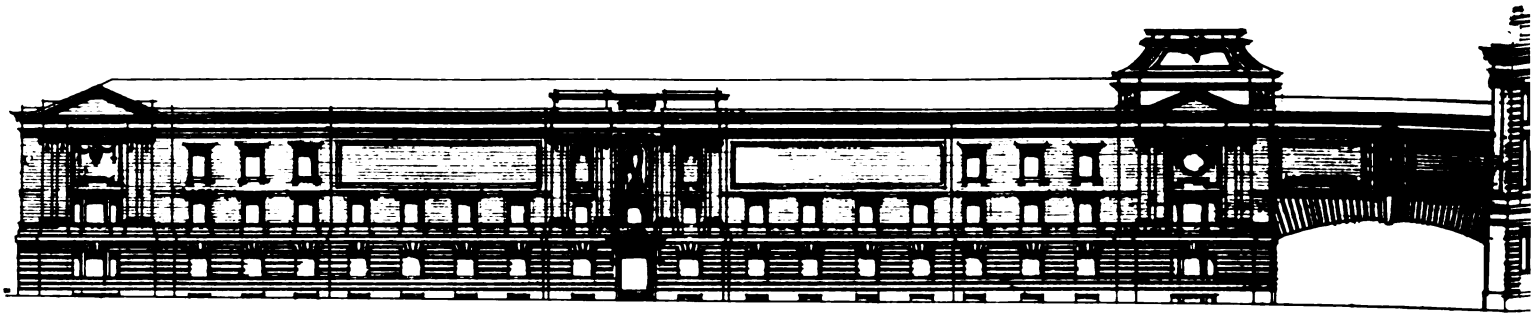




INK PHOTO SPRAGUE & C. L. 4 & 5 EAST HARDING STREET FETTER LANE E.C.

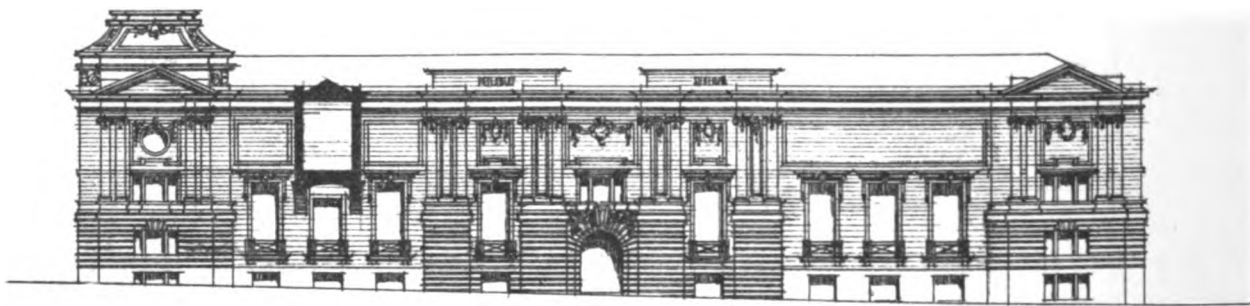
CATHEDRAL SERIES, No. 574.—ST. DAVID'S: THE NAVE, LOOKING WEST.





ELEVATION TO CONGREVE STREET.

CITY OF BIRMINGHAM.
COUNCIL HOUSE EXTENSION.

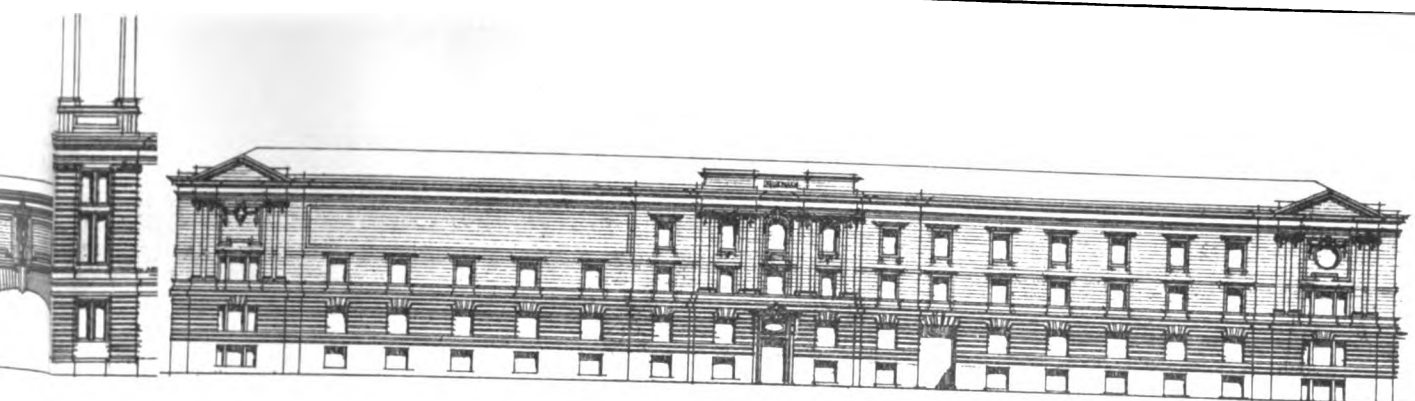


ELEVATION TO EDMUND STREET.



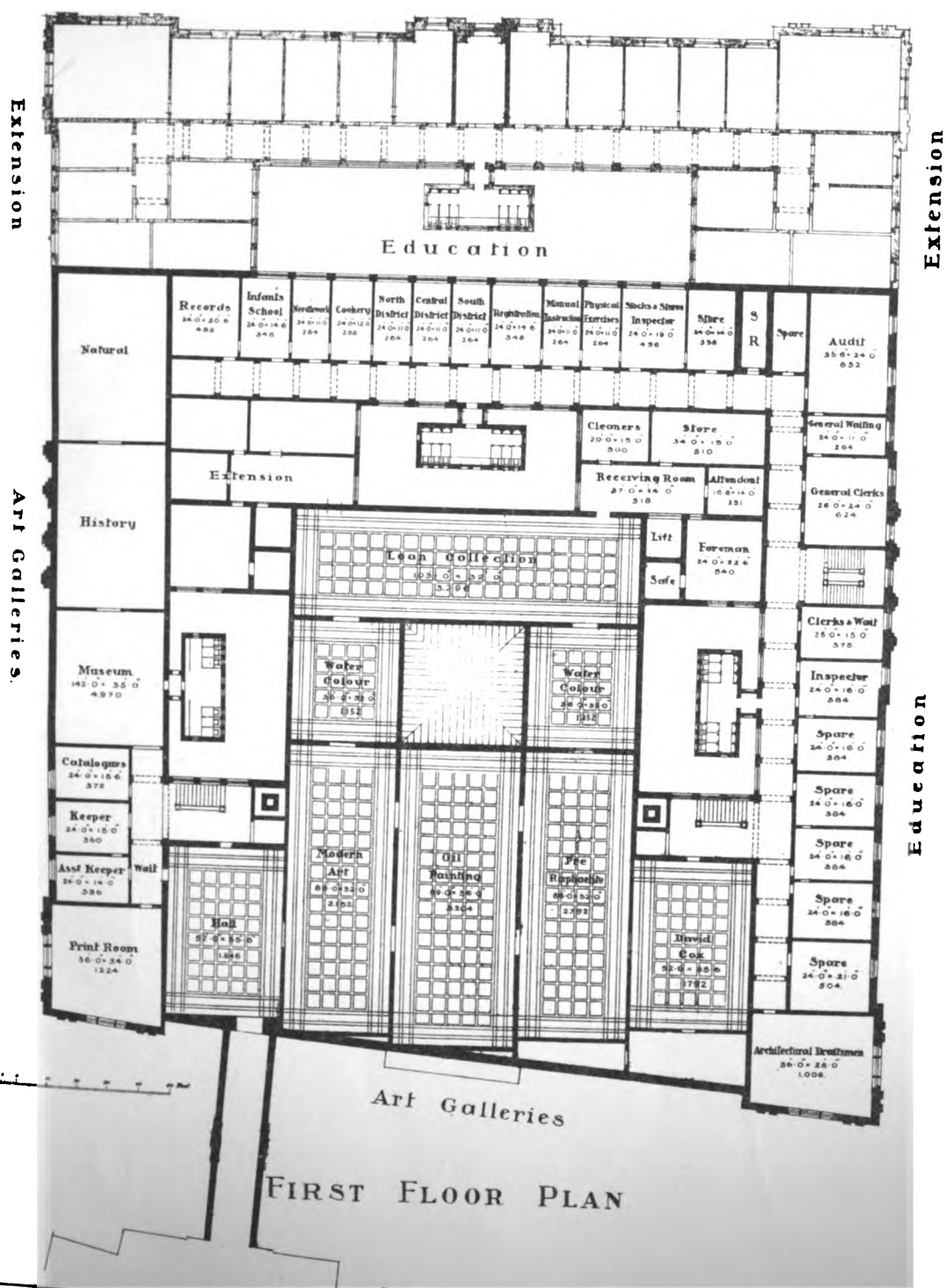
ELEVATION TO GREAT CHARLES ST.

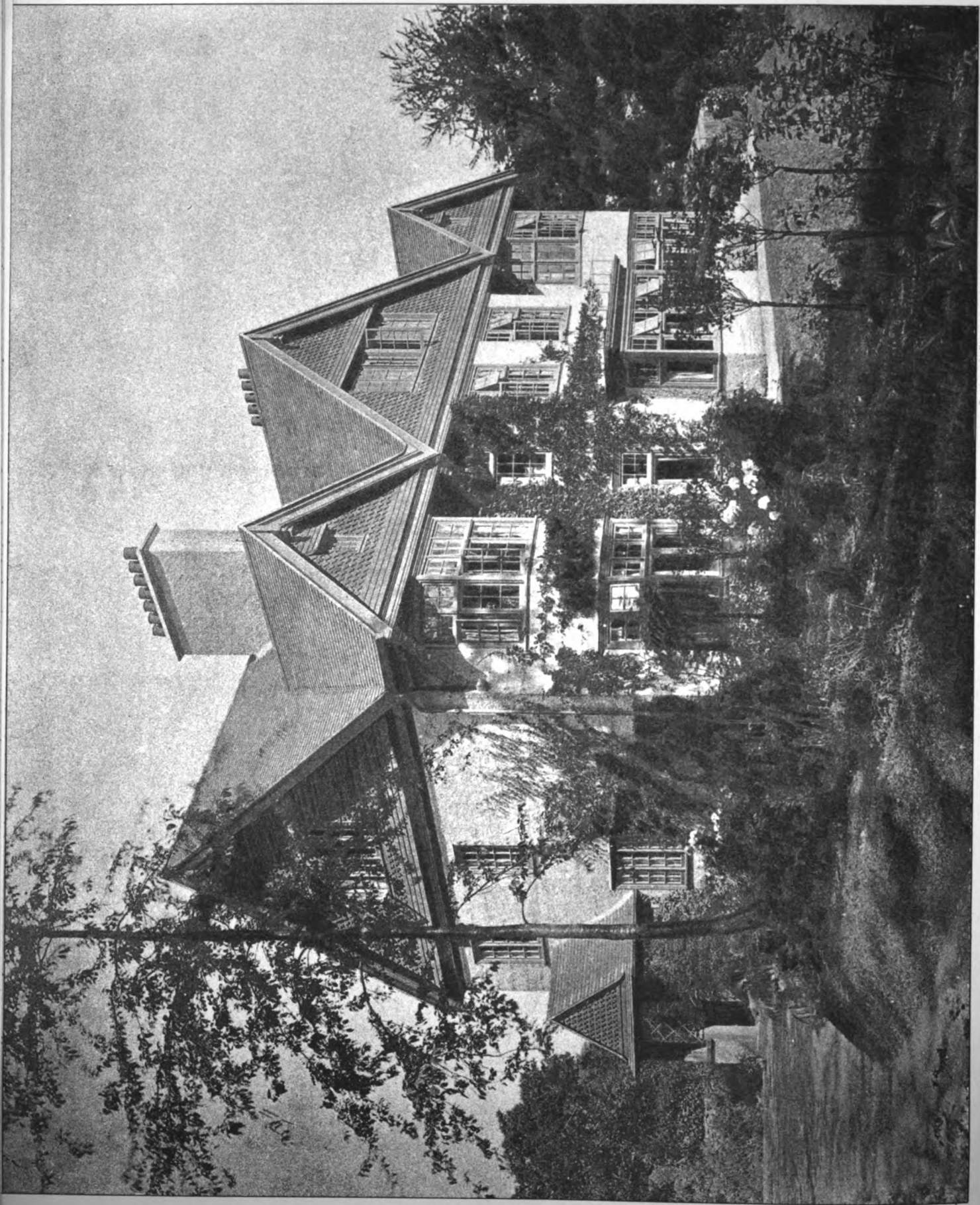
Thurs Aug: 24th 1906.



ELEVATION TO MARGARET ST.

Extension

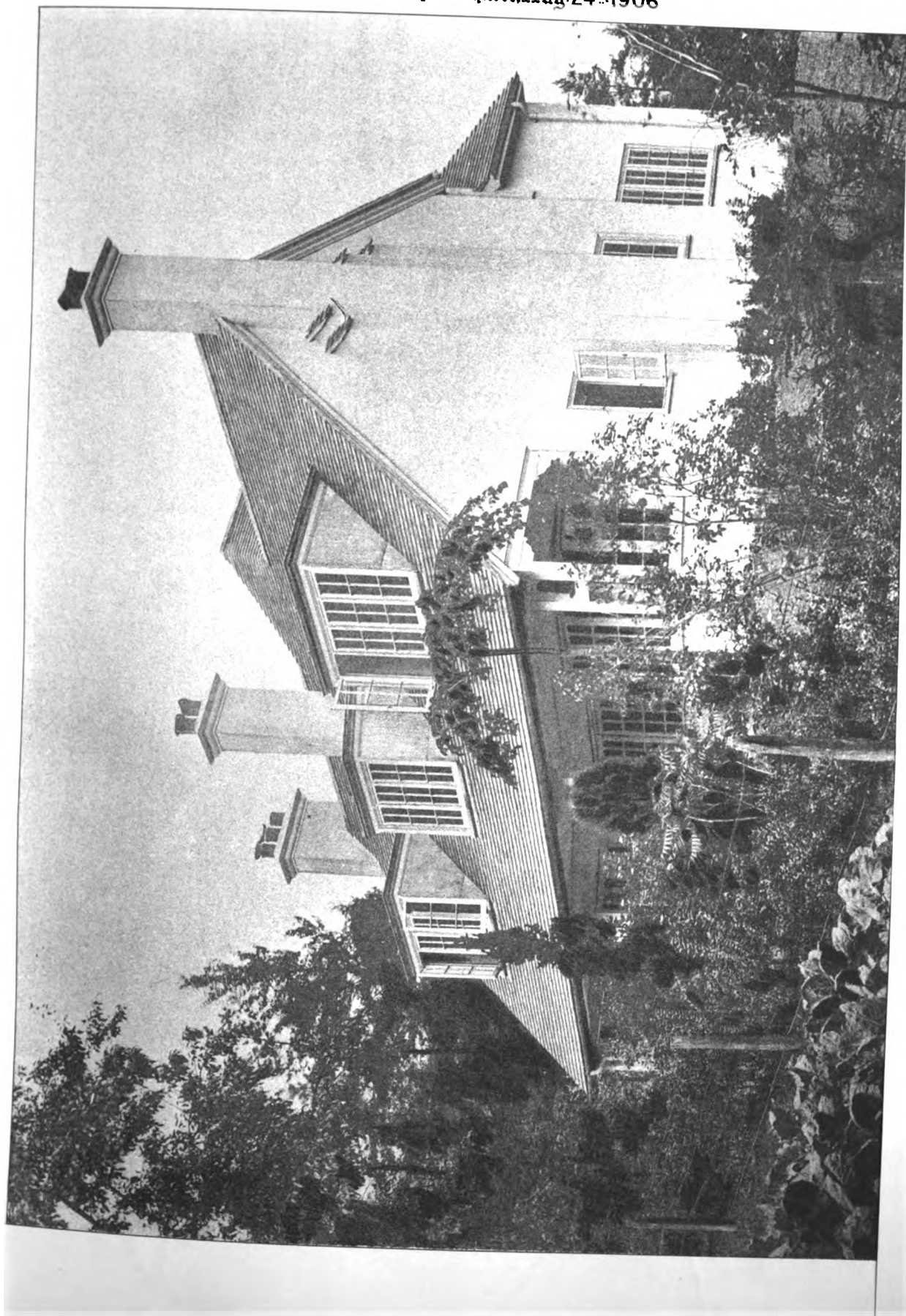




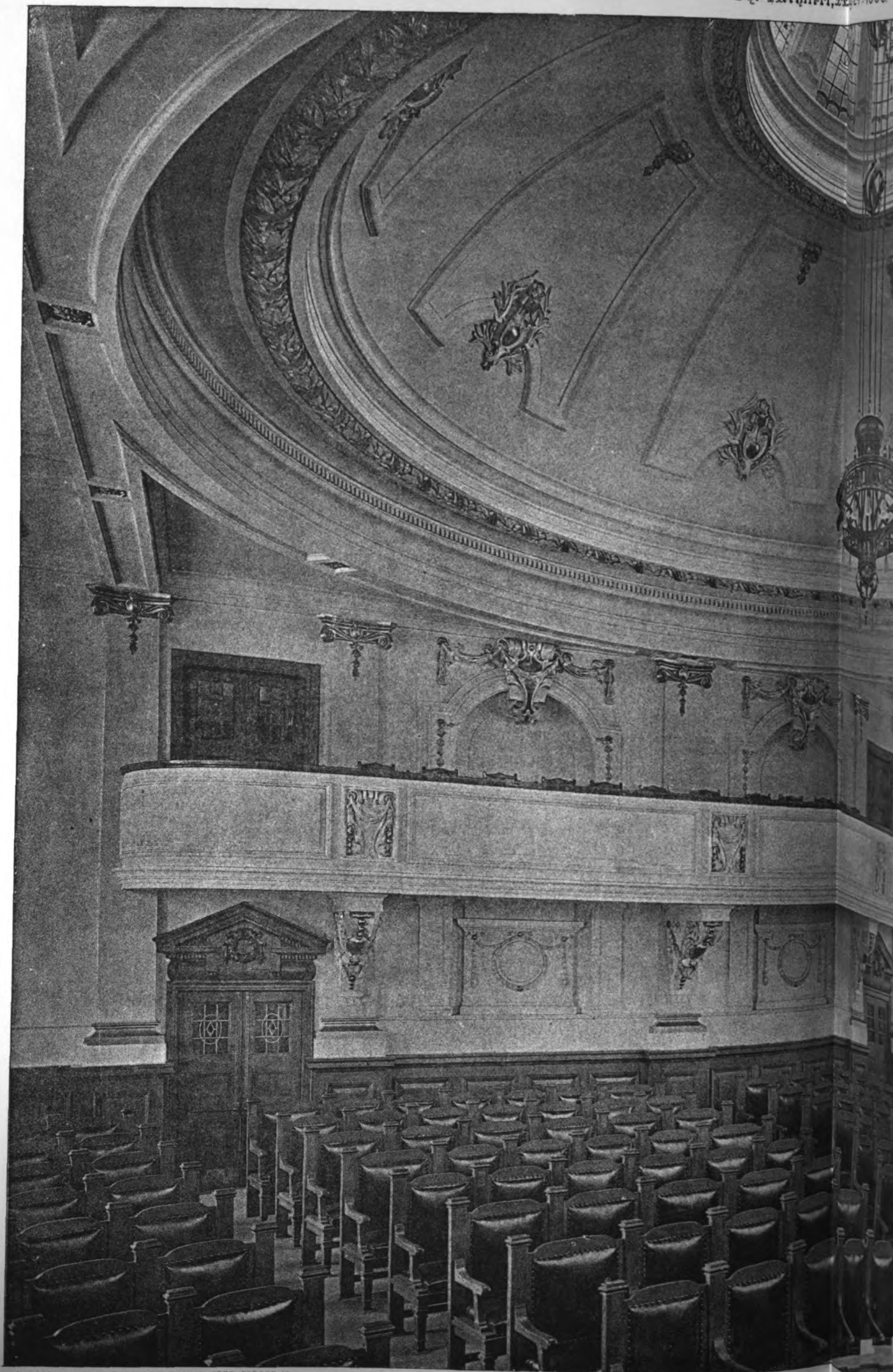
"LITTLEGRANGE," WHYTELEAFE, SURREY.
WALTER E. HEWITT, A.R.I.B.A., Architect.

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The Architect, Aug. 24th 1906



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NEW OFFICES FOR THE HEARTS OF OAK BENEFIT SOCIETY, EUSTON
DELEGATES' ROOM, LOOKING TO GALLERY.
Messrs. ESSEX, NICOL & GOODWIN, ARCHTDS.

The Architect, 24th 1906.



INK-PHOTO, SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

HEARTS OF
GATES' ROOM
FEBRUARY
FIT SOCIETY, EUSTON ROAD, N.W.:
TO GALLERY.
MAN, Architects.

ST. DAVIDS CATHEDRAL.*

(Continued from page 114.)

THE bases of the piers are excellent, and decidedly Early English in section with the characteristic hollow. The plinths exhibit some variety; they are rectangular, adapted to the form of the pier, except that the cluster towards the aisle rests on a single semioctagonal member. In a single case on the south side we find a tongue of foliage on a small scale. The arches are very rich and elaborately moulded on the face towards the nave, in such a manner and to so great an extent as to retain as little Romanesque effect as is consistent with the continued use of the round arch and other distinctive features of the style. The outer order has sectional mouldings rapidly advancing towards Early English; the inner has surface mouldings partaking a good deal of a sectional character, and which, together with those in the clerestory, afford a valuable study of the process by which the projecting tooth-moulding of the Early English style was developed out of the surface-carved chevron of its predecessor. The western pair of arches, being narrower than the rest, are kept at the same height by being pointed, though not very well turned. Their responds are of somewhat different character from the piers, the bases being of another section and without the strongly-marked hollow, while the subordinate shafts on the eastern face were detached, and have consequently been destroyed. In estimating the merit of these arcades it must be remembered that no small portion of their effect is derived from the rich and deep tints of the ashlar employed, brought from the neighbouring quarries of Caerfai. The whole has been rescued from the white or dingy yellow wash with which it was formerly disfigured; part has been carefully scraped, and part washed the colour of the stone. Neither process has been as yet applied to the upper portions of the wall.

The arrangement of the upper portion of the elevation is singular, if not unique. It may be considered as one architectural member, being recessed within a single rear-arch, with its cill coming down to the string above the arcade. This, or something similar, is found in the choir of Southwell and elsewhere, but the manner in which it is effected seems to be peculiar to St. Davids. In the other instances the triforium is, architecturally speaking, entirely lost in the clerestory; at St. Davids it still remains a feature of no small importance. We may best regard the whole elevation as divided into two stages, of which the upper is again subdivided into two small ones. We have seen that two windows in the clerestory answer to each bay of the arcades; each of these has its own rear-arch, within which, below the opening of the window, is formed the triforium range, or what occupies its place. The result is one of great richness, but very confused. The amalgamation of distinct members precludes the usual appearance either of a church with, or of one without, a triforium; besides that the treatment of the triforium arches is by no means pleasing. The passage itself is merely formed in the thickness of the wall over the pier range, and only opens by an occasional round arch into what, were the aisles vaulted, would be the space between the double roofs, and which in the ceiled south aisle really is so, but on the north side is necessarily a portion of the aisle itself. The round arches just mentioned have a heavy roll, formed of a very small segment, like many others in the church, and a *quasi* capital.

This portion of the nave is almost as richly decorated as the arcades below, and, from the smaller scale of its parts, the ornament is more conspicuous. The principal arches, acting also as the rear-arches of the clerestory windows, are without shafts, but are lavishly enriched with the chevron and other Late Norman decorations. In some the Early English toothing appears in an almost perfectly developed form. The triforium itself consists of two pointed arches, also without shafts, but with the mouldings continued down the jambs and the edges rounded off so as to produce a sort of heavy coil. Whether this moulding did or did not also extend as a kind of string below the pointed openings is far from clear. In the spandril between each pair of arches is a small circle adorned alternately with a star and an interlacing moulding. There seems a certain want of harmony between these rich circles and the comparatively plain arches with which they are so closely connected.

Between the arches comprising this combined triforium

and clerestory still rise the shafts originally designed to support the contemplated vaulting—an early instance of vaulting being even contemplated over so wide a space. The vaulting was evidently designed to be sexpartite; the great width of the arches probably rendering two lateral cells in each bay imperative. The shafts are alternately single and clustered, those of the latter form being placed over the piers, as having to support the transverse arches of the vault. The arches—pointed ones—of the cells may be distinctly traced, but at present the capitals of the shafts only serve to support the still smaller clustered shafts of wood belonging to the gorgeous ceiling of the nave. This is an addition of Late Perpendicular, if not Debased date, some of its forms manifesting a clear tendency to Cinquecento, although they do not actually introduce any details that can be distinctly said to belong to that style, if we may except a peculiar ornament occurring on the pendants and representing a dragon.

This very singular, if not unique, structure is, in its construction, simply a flat ceiling of timber laid upon the walls; but by some, certainly unjustifiable, violations of the laws of architectural reality, such as are not uncommon even in the stone roofs of that period, it is made to assume a character wholly its own, and which it is very difficult to describe in an intelligible manner. By the employment of vast pendants, which at the sides take the form of immense overlapping capitals to the small shafts already mentioned, the ceiling appears to be supported by a system of segmental arches effecting a threefold longitudinal division of the roof and crossed by a similar range springing from the walls. Of course, these arches in reality support nothing, but are, in fact, borne up by what appears to rest on them. Notwithstanding this unreality and the marked inconsistency of this roof with the architecture below, notwithstanding that its general character would have been much more adapted to some magnificent state apartment in a royal palace, still the richness and singularity of such an interminable series of fretted lines renders this, on the whole, one of the most attractive features of the cathedral. Both the arches themselves and the straight lines which divide the principal panels drip with minute foliations like lacework in a style of almost Arabian gorgeousness. It is much to be regretted that this ceiling cuts off the top of the western arch of the lantern, which at once spoils the effect of the latter and gives an unpleasant appearance to the unfinished pendants of the ceiling when seen from behind, out of the choir. Still, this very view of the roof, in which hardly any other part of the nave is visible, is wonderful in the extreme.

The great width of the bays is nowhere so conspicuously shown as in the enormous span of the untoward arches marked out for vaulting on the north side. In three bays of the north aisle we discern the first precursors of the vast props which appear externally, in the form of bold and slender flying buttresses of Perpendicular date, abutting against the clerestory wall, and just visible without above the roof of the aisle. The greater part of their length is within the church, where they rest on the vaulting shafts, which were shortened and furnished with new angel capitals to receive them. The north wall of the nave has an almost fearful outward leaning, to counteract which this ingenious expedient was doubtless devised.

The roofing of the aisles is at present very poor. Below the external roof of the south aisle is the skeleton of a flat timber ceiling of infinitely plainer character than that of the nave; but the panelling either has never been added, or has been destroyed. It has a very extraordinary and by no means pleasing effect, occasioned by many of the hammerbeams hanging down in front of the windows. Some of their terminations are disguised by shields.

The reconstruction of the west front has not so entirely removed all ancient character from that portion of the church within as without. The fact is that the wall was only rebuilt from the level of the cill of the great west window upwards; below that point it merely received an external casing. Hence the difference in thickness, most conspicuous within. Consequently the original rear-arch of the western or bishop's doorway remains—a Norman arch with sectional mouldings and jamb-shafts. The west window also has a rear-arch of the same character, but rich with mouldings similar to those in the arcades and clerestory; this would appear to have been worked up again from its predecessor.

The central tower is naturally one of the most striking features of the cathedral in an external view, and although it has but little claim to commendation as an architectural

* From the *History and Antiquities of St. Davids*. Architectural Description of the Cathedral, by W. S. Jones, M.A., and E. A. Freeman, M.A.

design, and may perhaps be considered as in some degree directly opposed to the general tone of the edifice, it is nevertheless one of the parts which most prominently tends to influence the character of the whole. It is a tall yet massive structure of three stages without buttresses, and as the three belong to as many different dates and are built with very little endeavour to fuse them into one architectural composition, the whole is in truth little better than a piece of patchwork. The lowest stage rises very little above the original roof-line; it retains a small portion of Norman ashlar, with angle shafts at the north-east and south-east, but the rest is of rubble and exhibits no architectural features. An arch of construction in the west wall should, however, be noticed, as being, as we shall hereafter see, of importance in the history of the building. Above this stage, divided from it by a string adorned with the ball-flower, is a rather tall Decorated storey, with a long two-light window in each face; these are now blocked and otherwise disfigured. It may, however, be doubted whether this circumstance is not a gain in the general appearance of the tower, for if these windows instead of being almost concealed stood out in their full prominence as the natural belfry windows, the superadded stage would have still more the appearance of a mere excrescence than it has at present. In subordination to the central mullion is a transom and also a secondary mullion in each light, but as these do not run into the tracery, which is complete without them, they must be concluded to be later insertions, though it is difficult to conceive their object. Each window has a small niche on each side of it and two diminutive lights, hardly more than loopholes, above. On the west face the windows and niches are comprised beneath a large arch of construction. This stage also has angle shafts, but naturally much smaller than the Norman ones below. The highest stage of all is Perpendicular, and though certainly not beautiful may be remarked as at least an attempt to adapt a certain degree of enrichment to the position and character of the building. An open parapet and pinnacles are at least rendered a less incongruous finish to the steeple of St. Davids Cathedral than might have been expected. The chief fault is that the polygonal clustered shafts at the angles—evidently an adaptation from the earlier ones beneath—actually overlap, and consequently render this stage top-heavy—an effect not always avoided to the eye even when the stage is only of the same size as those below. A single flat octagonal shaft runs up the middle of each face, and the windows, mere lancets, with depressed heads, are placed close to it on each side. The open parapet is but poor and the eight pinnacles odd, hexagonal with small shafts at the angles, and finished at present with small domical terminations, some of which have been mutilated; while from the appearance of one at least of their number it would seem exceedingly doubtful whether this was their original finish.

In the interior of the tower the four grand arches which form the lantern are of very noble proportions and richer than is usual in large churches, but they have been more marred than almost any other equally conspicuous part of the cathedral by the maltreatment of later times, and are not enhanced in beauty, though greatly so in singularity, by the fact that one, the western, is round while the rest are pointed. They are, however, of very much the same general Late Norman character, though certain differences may be observed in their capitals and mouldings. The result of this difference of shape is that though the western arch rises from a higher point, its apex is lower than those of the other three and the string above it is consequently carried along at a lower level than the other, which is later and is connected with it in the usual manner. The eastern and western arches are as usual more richly decorated on their western than their eastern faces. The western arch especially is one of the most magnificent pieces of enrichment in the whole church. It has been already mentioned as being partially concealed by the ceiling of the nave. Till lately it was completely blocked, as its southern fellow still remains. The shafts supporting the inner member of the eastern arch appear to have been mutilated, and probably such is the case. Yet they must always have been corbelled off, at however small a height, as the base-moulding is continued along the square face. This is doubtless connected with certain peculiarities of ritual arrangement, to be hereafter mentioned. Over each arch is a decorative arcade forming a triforium. Over the western one it consists of eight quite plain pointed arches resting on Norman shafts. This arcade has always been blocked; smaller arches (now also blocked) having opened

in the centre into the passage behind. The way in which the two are combined is very elegant. The string over this arcade is enriched with the billet. Those over the other three arches are decidedly Early English, though they retain a very slight trace of Romanesque character in their capitals. They are worth notice as presenting a combination of shafts, corbels, and large bowtells furnished with bases like shafts. There is also a passage in the stage above, by the old belfry windows, with an arch on each side opening into it.

How much of this tower should be open to the church is to a great extent a question of taste, and the position of the roof has doubtless varied at the different periods when the tower itself was raised or altered. At present the arrangement as to this point is eminently unsatisfactory, as the middle or original belfry stage is cut in two by a wooden vault rising from stone perpendicular springers resting on earlier shafts. There is no appearance at any point of the tower to lead to the conclusion that a stone spire was ever designed.

The transepts present the appearance of a tolerably uniform original design both within and without, but they have undergone more alterations at once striking the eye than perhaps any other portion of the church. The roofs have lost their high pitch by a curious process—not having the whole fabric lowered, but only the upper part cut off square, or rather, as the original high pitch, though parallel with the commencement of that which has thus been prematurely cut short, is positively lower than it, they must have been entirely reconstructed in this curious form. Meanwhile the gables have been lowered in the ordinary manner so that they do not agree with the roofs. The fronts, north and south, have undergone many changes, and the original Romanesque design survives only in the flat turrets with angle-shafts which flank both and in a slight vestige of a string in the south front. And even these turrets have been tampered with and carried on in an octagonal form, and finally these later additions have lost their original finish. Large windows had been inserted in both, that in the north recessed between two broad pilasters within the turrets; this was bad Perpendicular, for which a large Decorated window, chiefly copied from one of those at Sleaford, has been substituted. The great south window must have been Decorated or very early Perpendicular, and had its arch round or very nearly so; it is now blocked (though it may be traced throughout), and four Perpendicular windows arranged in two stages have been inserted, besides a segmental-headed opening above them which is now blocked. When the gable of the south front was lowered it was made to rise from a higher point, and as the apex of the great window rose higher than the masonry of the walls, the horizontal string has been curiously raised to make room for it. In the gables of both transepts are Perpendicular openings; that in the south, pointed with a large cavetto, appears to have contained tracery, while its northern fellow is much smaller and square-headed of a single light. The west end of each transept retains an original pilaster; the north has a blocked Norman doorway and window above it; instead of the latter we have on the south side a Decorated insertion lately renewed.

The south-east and north-west angles of the transepts have received, like the north aisle, the addition of vast props of masonry, and in the south this seems to have been connected with the addition of an eastern aisle, since modernised.

The internal architecture of the transepts is almost entirely Transitional Romanesque, the pointed arch now appearing on a large scale. It is the form exclusively employed in arches of construction, though a few round ones still occur in the decorative members. This, the usual course of the development, differs, as must have been observed, from what we have seen in the nave. These transepts form, perhaps, the best exhibition in the church of a peculiar form of incipient Gothic found in this church and several others in South Wales and the West of England. There is general resemblance in detail between the Transitional and Early English architecture of St. Davids and Llandaff cathedrals, Cheriton Church in Gower and Slymbridge in Gloucestershire; and there is a similar resemblance in foliage between the South Wales cathedrals and the great churches of nearly the same date in Somersetshire. This seems to show that the influence of Bristol and Somersetshire models, which has been often pointed out as having so great an effect upon the architecture of South Wales during the Perpendicular age, had commenced even

at this early period. And it is the more remarkable, both as being spread over a long space of time, and as being almost entirely confined to detail affecting buildings which differ widely from each other in the character of their principal constructive features. We shall have, as we proceed, to point out some other instances of this connection with Somersetshire at a later age, though in the latest period, when it is elsewhere the most common, we find but little trace of it at St. Davids. In these transepts the peculiar character of the more slender shafts has freer scope than in the nave and choir, where a more massive pier is employed; we may observe the general omission of the neck-moulding and the use of the ogee keel, as at Llandaff. The latter is here applied very curiously, being in several of the members doubled and set laterally, the effect of which is by no means pleasing, though it may have had some influence on the architecture of a later period.

The transepts are approached from the nave aisles, not, as usual, by arches, but by original Norman doorways with their inner sides to the transepts. They are rather plain, and exhibit in the inner order and in the rear-arch the same shallow bowtell as some other portions of the building; the northern one has the inner arch of a trefoil form, and one of its capitals has carving of a character unusual in this church. At the east end of each transept are three pointed arches, including those which open into the choir aisles. The remainder were designed as recesses for altars, with the exception of the extreme one on the north side, which opened into St. Thomas's Chapel (the present chapter-house), and that such was its original purpose is shown by its being furnished with mouldings on both sides. These arches form a continuous range, but those leading into the choir aisles are somewhat lower than the rest. The arches themselves are plain, compared with those in the nave and choir, having no ornamental mouldings. There is a considerable diversity in the piers and responds, which may be remarked as somewhat low in proportion to the arches which they support. The neck-moulding is entirely absent except from a single member of the southernmost arch, where we also find a round abacus. This last feature occurs nowhere else in work of this date except in the eastern triplet; the octagonal form, however, is freely used. In the corresponding arch in the north transept we find a continuous bowtell, which has an odd effect. The responds adjoining the lantern piers present another remarkable feature, namely, a detached column of dimensions very unusual for such a position, and rather resembling in size and proportion those which often serve as piers in small Norman churches. They rise, moreover, in a singular manner out of masses of masonry like the set-offs of a buttress.

The western windows of the transepts are far more perfect within than on the outside. In the south transept the rear-arch and shafts of the original round-headed window are preserved, the pointed insertion, which alone appears outside, not having interfered with them. In the north transept we shall perceive, what we should hardly have guessed externally, though on attentive examination some traces may be recognised even there, that the window still remaining was a member of a couplet, the other light being to the north of it. The latter is completely blocked, flush with the surface of the wall, but it is easy to perceive that the northern shaft of its fellow is not a mere jamb-shaft, but a whole shaft partially blocked. The spring of the label also remains, and the whole of the arch can just be traced out. Some corbels remain in this corner of the transept; it is not easy to divine their use, but whatever rested upon them would necessarily have interfered with this window, and may therefore account for its being so completely blocked. Of the large doorway in the north transept no internal traces remain.

Both transepts have at present mean modern roofs of wood, but in the north may be discerned the design of an intended vault, sexpartite, like that in the nave, rising from small shafts, rising from corbels, many of them beautifully floriated; the alternate ones are clustered for the same cause as in the nave and some are shortened by reason of the windows. The want of an upper range of windows on both sides produces an effect of bareness both within and without, and the blind passages in the walls might easily have been made in the ordinary manner in the windows.

Mr. William Imrie, who died recently, has, it is stated, bequeathed 100,000*l.* to the Liverpool Cathedral Fund. The money will not be received until after the decease of his youngest daughter.

CONCERNING BRICKS AND BRICKWORK.—II

AN effort was made by Sir Thomas Browne in the sixteenth century to explain how bricks and tiles contract verticity. If we erect a red-hot wire, he wrote, until it cool, then hang it up with wax and untwisted silk, where the lower end and that which cooled next the earth doth rest—that is, the northern point; and this, we affirm, will still be true, whether it be cooled in the air or extinguished in water, oil of vitriol, *aqua fortis*, or quicksilver. And this is also evidenced in culinary utensils and irons that often feel the force of fire, as tongs, fire-shovels, prongs and andirons, all of which acquire a magnetical and polary condition, and, being suspended, convert their lower extremes unto the north, with the same attracting the southern point of the needle. For easier experiment, if we place a needle touched at the foot of tongs or andirons, it will obvert or turn aside its lily or north point, and conform its cuspis or south extremity unto the andiron. The like verticity, though more obscurely, is also contracted by bricks and tiles, as we have made trial in some taken out of the backs of chimneys.

In the south of Spain, Italy and Portugal it is customary to build walls, &c., brick on edge, and it is very customary to make partitions in rooms by a wall so built. The bricks are 1 inch thick, and being plastered on both sides with good mortar, make a very firm and substantial partition. If two bricks are used it becomes a solid wall.

Early Bricks.

Some early bricks of peculiar size will be noticed in the churchyard wall of Horton, the village associated with the earlier poems of Milton. Those used for the construction of the college buildings of Eton were made in Slough in 1442; then bricks came from Holland. The great monopolist during the reign of Charles I., Sir Nicholas Crisp, is credited with their reintroduction into this country and with having perfected their manufacture after many experiments. Their size was regulated by an Act passed in 1625.

A tablet in Iver Church is worth mentioning in connection with brickmaking:—"Beneath this place lyes interred the body of Venturus Mandey, of the Parish of St. Giles in the Fields, in the County of Middlesex, Bricklayer, son of Michael Mandey, Bricklayer, and grandson of Venturus Mandey, of this Parish, Bricklayer, who had the honor of being Bricklayer to the Honorable Society of Lincoln's Inn, from the year of Our Lord 1667 to the day of his death. He was studious in the Mathematics, and wrote and published three books for Public Good; one entitled 'Mellificium Mensionis, or the Marrow of Measuring,' another of 'Mechanical Powers, or the Mystery of Nature and Art Unvayled.' The third, 'An Universal Mathematical Synopsis.' He also translated into English 'Directorum Generale Uranometricum' and 'Trigonometria,' and some other Tracts which he designed to have printed, if Death had not prevented him. He died the 26th day of July A.D. 1701, aged 56 years and upwards. He also gave Five pound to the Poor of the Parish."

Virginian Bricks.

In the *Century Magazine* for Dec. 1904 Mr. John William Palmer, in his article "Old Maryland Homes and Ways," says that "here stood the sturdy domicile, broad and square, built of bricks brought over from England in the ships that came for tobacco." In spite of the tradition there is not a case to be found in the annals of Virginia of bricks imported from England. It stands to reason that it was easier to import brickmakers than bricks. It seems that brick was made use of almost contemporaneously with the first settlement. The Rev. Alexander Whitaker, who wrote in 1612 of Virginia, said:—"The higher ground is much like the moulds of France, clay and sand being proportionately mixed together at the top, but if we dig any depth (as we have done for our bricks) we find it to be of red clay, full of glistening spangles." In the "New Life of Virginia," published in London 1612, we read:—"You shall know that our Colonie consisteth of 700 men at least of sundrie arts and professions. Being thus invited, here they pitch: the spademen fell to digging, the brickmen burnt their bricks, the Company cut down wood, the carpenters fell to squaring out, the sawyers to sawing, the souldiers to fortifying, and every man to somewhat."

The first brick houses in America made by Englishmen were built at Jamestown, and in August 1637 Alexander Stonor, who calls himself "brickmaker," took out a patent for an acre of land in Jamestown Island, "near the brick-kiln." That the soil on the island was adapted for making bricks is shown by the letter of the Council in 1667, who,

when the king required the fort at Old Point to be repaired, argued in favour of that at Jamestown, "which hath great commodity of Brick Turfe or mudd to fortifye with all."

In 1649 there was printed a little tract called "The Description of Virginia," wherein it is stated that "the people in Virginia have lime in abundance made for their houses, store of brick made, and house and chimnies build of brick and some wood high and fair, covered with skingell for tyles, yet they have none that make tyles, wanting workmen in that trade; the brickmakers have not the art to do it, it shrinketh." Cypress shingles are still preferred in Virginia to clay tile for roofs of dwellings. In the Act of 1662 providing for brick houses in Jamestown, not only are brickmakers mentioned, but the price for "moulding and burning brick." And in the York County Records in 1692 John Kingston, "brickmaker," is allowed 7*l.* against the estate of Robert Booth "for making and burning bricks." In the inventories of dead men's personal property there are several mentions of "brick moulds" necessary in making the brick. There is one record of 100,000 bricks from New England, which came doubtless in response to some pressing demand. The statute for building up Jamestown in 1662 called for "statute brick," which meant brick made according to the English statute.

The Old London Brickfields.

According to the "Annals of Agriculture," by Thomas Baird, 1793, "there is one mode of making use of earth which is probably carried to a greater extent in Middlesex than in any part of the kingdom, namely, in the manufacture of bricks. Some years ago the sum usually paid for an acre of brick-earth was 100*l.*, but the price of this, like that of other commodities, has been rapidly increasing, and, indeed, has gone as high as 350*l.* per acre. The common way now is for the proprietor to get 1*s.* per 1,000, and to receive the ground in a level state, within a foot of the height of the adjoining road, when the brick-earth is completely manufactured.

"The common calculation is that there is one million of bricks per acre in every foot depth of brick-earth (at least, with the addition of the ashes that is mixed with the earth), and, one field with another, that the brick-earth is 4 feet deep. The bricks called 'grey stocks,' for the outside of houses, sell at from 2*s.* to 28*s.* per 1,000, carriage included; common brick for inside work at a guinea.

"Unless the earth with which the ground is filled up is of very good quality, or unless great quantities of manure are laid upon it, some time must elapse before the field recovers its former fertility. There are many who object to such a manufacture being suffered in the neighbourhood of the Metropolis, considering it offensive and unwholesome. On the other hand, it is contended that fire is a great purifier of the atmosphere, and that in close and hot weather a number of brick kilns all round London is of real use to the health of the inhabitants."

A Brickmaking Machine.

In 1891 a new method of brickmaking was invented by Mr. Kennedy, of the United States, and a company was formed to work the patent in this country. The brick-making machine was shown at Southall. The peculiar feature in this mechanical brickmaker is that the clay is used perfectly dry. After being reduced to powder and strained through a sieve, it falls into the hopper of the machine, the coarse particles being returned to the disintegrator to be reduced once more. From the hopper the powdered clay is fed into moulds, and a pressure of 160 tons is then brought to bear upon each. This is equal to about one ton per square inch, and this great pressure is secured by compound levers of the first order. When the bricks so made leave the mould, they are very hard and compact, and they are at once taken away to the kiln to be fired. The machine is automatic, self-feeding and self-discharging, and the work being done under shelter, can go on all the year round without interruption. The machine has an output of 20,000 bricks per day of ten hours.

Is Clay a Mineral?

All metals are minerals, but all minerals are not metals. Although mineral, in the restrained sense of the word, would infer fossil bodies that may be melted, &c., still in the general and accepted sense in present use minerals may be defined as inorganic masses, of which the crust of the earth is composed. Coals are minerals, gypsum is a mineral. There are mineral resins; in fact, earths, stones, metals, fossils of all kinds, come under this general denomination. Clay is an argillaceous earth found in beds

or veins, and although in digging for the same it is perhaps unusual to call the delf a mine, that would not invalidate the classing it as a mineral, more especially as, by a peculiar process, from it is derived that beautiful and now universally known metal called aluminium. To the lord of the soil in feudal times belonged all mines, minerals, diggings, quarries, &c., of what kind or nature soever, and this right is still sedulously kept up by the customs (as recorded upon the Court Rolls) of various copyhold manors wherein this restriction has been perpetually made. Clay, therefore, may be correctly defined a mineral.

Tiles.

After the fire of 1212 in London the roofs of reed or rush, which were then general in the City, were declared unlawful, and were to be replaced with tiles and other materials. In 1245 an order was published by the Mayor that all houses in the principal thoroughfares should be covered in future with slates or tiles. In 1302 Thomas Bat indemnified the City from peril in respect of his property in St. Laurence, Cannon Street, by agreeing to tile the roofs of the premises by the ensuing Pentecost.

In St. John's Street, Bridgnorth, in Shropshire, is an ancient mansion called Diamond Hall, formerly inhabited by Mr. William Hardwicke, the Shropshire antiquary, and built by Roger Pope, an equerry to King Charles II., out of the proceeds of the stakes won by a celebrated horse called Diamond belonging to him. A figure of a horse and rider was placed upon the roof of the house by its builder, and remained there till quite recently.

The public librarian of Plymouth writes March 17, 1883, that he has a good specimen of a ridge tile, which was removed from the roof of a house in that town. The tile is of the corrugated pattern, roughly made, and represents a man in a costume that may have been intended for a cavalier. Both man and horse are roughly made, and somewhat the worse for their two or three centuries exposure to wind and rain. Similar tiles are to be found in Exeter, Tavistock, Totnes, Plympton, East and West Looe. At Exeter the figure is a very noticeable object on a fine old house in the main street. Tradition has it that these curious signs were placed upon the houses in which one of the Charleses was entertained during his visit to the West.

Decorated Tiles.

Two birds back to back, with their heads turned to each other, were common on ancient tiles. The seal of the borough of Chard, in the county of Somerset, has two birds in the above position, with the date 1570.

Painted tiles are set all over the guard-chamber floor in the remains of a castle of the Dukes of Normandy at Caen, and said to have been laid down during the time of William the Conqueror, having represented on them the arms of some of those who attended William in his conquest. In 1786 these were taken up and presented by the Benedictine monks of St. Stephen, at Caen, to Mr. Chas Chadwick, of Healy Hall, Lancs.

In December 1880, while carrying out some works at Fenchurch Street station, a piece of the old Roman wall was met with. The top of the wall, which was 7 feet 6 inches wide, was composed of a bed of limestone walling in concrete mortar about 6 inches thick; there was then two rows of red tiles, extending right through the wall and projecting 3 inches beyond each side of it; below were more layers of red tiles, also extending through the wall. These tiles are 17 inches long, 12 inches broad and 1½ inch thick, are well burnt, still retain their sharp edges and bright-red colour, but are slightly curved; they bear no date or inscription. Inscribed tiles are extremely rare, very few having been found among our London discoveries.

"THE WINTER'S TALE."

THE impending revival of "The Winter's Tale" at His Majesty's Theatre has given rise to speculation about the interpretation. But no less interesting is the manner in which the play will be "staged." The title in relation to the play is in itself a mystery. The winter's tale about the man who lived near the churchyard, which the boy prince of Sicilia begins to relate, stops before the first sentence is concluded. On what ground was it selected as the title of a tragic play? Dr. Ulrici maintains that it suggests the marvellous caprice by which the whole of the events were inspired. According to him, "the sovereignty of eternal contingency gives the play the character of a tale and its title. For pure contingency in its outward, objective form, which as such interrupts the order of nature, the given division of time and space, the causal connection of things,

comes in between like a foreign element." "The Winter's Tale" is therefore a combination of the serious and the fantastic. Time and place are alike disregarded. Bohemia becomes a maritime country; the Delphic oracle is supposed to be of the same age as Giulio Romano, who for the occasion ceases to be a painter and becomes a sculptor. The mirror held up to nature is a distorted one, and the tragic as well as the comic scenes are exaggerated.

With such a play it is no easy matter to decide upon the character of the costume and of the buildings in which the events arise. What was the style of Leontes's palace or the palace of Polixenes? If the architecture could be determined, then the "properties" in general would present few difficulties. But with a play which contained so many references to what existed in England at the beginning of the seventeenth century it is difficult to decide what period is to be expressed. Mr. Tree, it is understood, will make the Sicilian scenes classical, while those in Bohemia will be oriental in character. Few lovers of Shakespeare have given more attention to the subjects of the "Architecture and Costume of the Plays" than the late E. W. Godwin, F.S.A. In one of the series of articles he contributed to *The Architect* on the whole of the plays he deals with "The Winter's Tale" in a remarkable way, which at the present time has renewed interest:—

"That the Classic element in 'The Winter's Tale' is overlapped by English Mediævalism to an extent which is at times startling cannot be questioned by anyone after reading the fourth Act. That quite apart from the introduction of sixteenth-century English country life there are strange anachronisms respecting places and people must be conceded. As, for example, the introduction of the Oracle of Delphi as an integral part of the plot, the mention of the Emperor of Russia as Hermione's father, the presence of Giulio Romano in Sicily as a painter of sculpture, and the existence of a country with a sea-coast called Bohemia, and ruled over by a king called Polixenes. Nevertheless, I am not by any means prepared to say with some readers of this play that it is a comedy quite removed from the sphere of reality. The Italian painter and the Emperor of Russia slip into the text almost unobserved, and but for the picture of the English village festival, together with one or two slight references to costume, we should have a play almost wholly free from anachronism.

"The important part in the plot played by the Pythia, or priestess, of Delphos recalls a time anterior to 371 B.C., when the oracle was popular; the names of the *dramatis personæ* are Greek down to the names of the shepherdesses and pedlar, and the state of society, divided as it is between two classes—the aristocrat and the labourer—might take us back even to the heroic age. Then for 'Bohemia' I would venture to read Bœotia, and so get rid of the geographical difficulty. Finally, as to the English character of the fourth Act, we may bear in mind that a shepherd's life was very much the same in the heroic age as it was in the Elizabethan or any other age; and that the Bœotian poet Hesiod, in the 'Works and Days,' gives us pictures of a simple country life very little different from those given us by the English poet in 'The Winter's Tale.' We have, therefore, to choose some date before 371 B.C. for the period of the action. I say 371 B.C., because after this time the Delphic oracle had so far lost its hold upon the public faith, and its old towering influence had been so much reduced by the exhibition of manifest favouritism, that it would hardly have attracted a colony so far removed as Sicily. Nor, on the other hand, must we venture to go too far back, for fear we reach an art period wherein the extremely realistic painted statue as we have it suggested in the play would have been impossible—impossible to the first or Archaic period as a matter of course, impossible to the second or Ideal period (464-32 B.C.) as a matter of art, which artists at least can readily understand. It is to the beginning of the naturalistic, or third and last, period of Greek art (430-7) that I would refer the action of 'The Winter's Tale'; and thus it comes to be bracketed with 'Timon of Athens,' which is really a Greek history, Timon, the misanthrope, and Alcibiades, the general of the Athenian forces, being prominent names in Athenian history from 422-4 B.C.

"The architectural scenery in 'The Winter's Tale' is Sicilian, and includes

1. A street scene (before the palace).
2. A room in the palace of Leontes.
3. The outer room of a prison.
4. A court of justice.
5. A room in Paulina's house.

The palace of Polixenes appears once only in the short opening scene of the fourth Act, but this scene might just as well be a country road or a garden as a palace. The five scenes above enumerated may be reduced to four without doing the slightest violence to the text, and without incurring any archaeological improbability, by uniting Nos. 3 and 4, so making the court of justice serve for the second scene of the second Act. Nor would it be very difficult with careful attention to the planning and setting of the scene to reduce the list still further by uniting No. 2 with 3 and 4. Now, although the period of the action belongs to the naturalistic, or last style of Greek art, it is necessary to remember that a Classic city, as a rule, was not necessarily built in one day and in one style any more than a Gothic town was. That just as London and York, Coventry or Bristol in A.D. 1430 exhibited buildings of a variety of dates up to the purest work of the thirteenth century, and beyond that to at least the middle of the twelfth century, so in Agrigentum for a century and a half, and in Leontini and Syracuse for three centuries, the builders' hands had been busy before Polixenes came on his unfortunate visit to Leontes.

"But whatever variety existed in the proportions of column and entablature, whatever changes and refinements were developed under the indubitable art-culture of the Sicilians, Doric was the prevailing character of the architecture. On public buildings like the temples and palaces, colour, gold and varnish were lavishly used outside as well as inside when the work was of porous stone and stuccoed, but they were perhaps applied in less quantity when the work was of marble. M. Hittorff, who in 1823-4 travelled in Sicily in company with the German architects Zanth and Stier, tells us that the body of the walls was painted a pale golden yellow, the triglyphs and metules blue, the metopes and tympanum red, and on some parts were traces of green, all used in various degrees of intensity. Other antiquaries tell us that "the white marble never remained naked," and that even the portions intended to be white received a transparent coating, that the blue used was of a grey opaque character, that the red was transparent, and that the green was very delicate although bright. The streets were narrow, and were paved with irregular polygons or blocks of stone, and every building was *not* exactly a repetition of a peristylar temple. Indeed the majority of houses appear from Aristophanes to have been very deficient in their internal arrangement, and to have been built on very limited plots of ground. There seem to have been no sanitary provisions of any kind, and the poultry lived, Irish fashion, in the room where the beautiful Myrrha carded her wool or plied her distaff. The roofs of many of the houses were flat, and thither the women retired, some to indulge in wine, some to mourn for Adonis.* The Nestorian house, illustrated in Layard's 'Nineveh,' may be taken as giving a fair idea of the general appearance of the common class of Greek tenements. But, again, a Greek town was not made up wholly of the lower class of dwellings any more than it was of temples or palaces. In the 'Thesmophoriazusæ' and 'Ecclesiazusæ' we meet with residences of more than one storey where, too, the women of the house have a distinct suite of rooms to themselves, where some of the upper windows look into the street, and where bay trees and statues shade the entrances. Still, with the extension of plan and increase of means here indicated there was scarcely any addition to the walls in the shape of architectural detail. Nor did the ordinary domestic building of Greece partake of anything like what we understand by the words architectural style until a hundred years after the time now under our consideration.

"The difference between the houses of the lower and the upper classes was one depending chiefly on size, solidity and paint. The palace of Leontes towards the street might be represented as a massive stuccoed wall of two storeys covered with painted decorations and pictures, pierced above by plain square windows with folding shutters, and below by a wide and lofty doorway set in a frame of Doric antæ entablature and triple step-raised threshold. The doors themselves should be folding, with framework of plates of bronze studded with gold, two large golden rings used as knockers and numerous square panels filled with ivory bas-reliefs, painted and gilded and backed by bronze or wood. Before the antæ might be placed marble statues† of Apollo and Hermes, and before these,

* Lysistrata. See also Ezekiel, chap. 8.

† Statues in the open air had "meniskoi" or metal discs above the head to protect them from falling matter.

and by the side of them, the bay and the laurel, with marble seats beneath them, extended avenue-like to the line of the street.

"The interior or room of the palace might be either the 'aule' or peristyle, the open part covered with a linen velarium, or a hall arranged on a theatre-like plan. Such an addition to a royal palace might be unusual, although not impossible, for the half-circle was a form of ground plan by no means limited to the uses of the drama. But whichever plan may be selected, there must be no lack of imagery portrayed upon the walls round about—amber colour and ivory, bright red and gold, grey blues and silver, tender green and bronze may all be there. There too we may have curtains of the rich Tyrian purple, covered with embroidery in gold, white and red. The wall-paintings might be arranged in two or three rows, the lowermost level being some four or five feet from the floor. The subjects would be taken from the stories of gods and heroes—Aphrodite's envy of Psyche, or the labours of Hercules; how Jason won the guarded fleece of gold, or how Theseus escaped the labyrinth—whilst some rooms would be wholly given up to the story of the siege of Troy or the wanderings of Odysseus. But unfortunately such scenery as that of the kind here suggested is practically impossible in this generation. We may have artists equal to save the work from being ridiculous, but no manager would be mad enough to pay for it, while actors and actresses work from low motives, are sand-blind to art, and therefore utterly incompetent to act in the poetical drama.

"Paulina's house would of course be very inferior to the royal palace, and yet we must remember that the text indicates a place of refinement, a house where art was honoured, where sculpture was at home, and where the latest and best work was enshrined god-like within a tabernacle, tent, curtain or velum. These curtains were movable in three ways, either by being drawn aside, by being lowered to the floor, or by being raised to the ceiling. They were either of fine wool or thick linen, and some were sumptuous in wealth of lovely colour and woven figure. An open or half-open gallery or corridor, the roof resting on squared posts of timber or masses of stuccoed masonry, statues on cylindrical pedestals, a wall with a painted band or two of ornament, a recess for Hermione, and a general amberish tone of colour over all are the chief ingredients for this scene.

"And now turning to the *costume* of B.C. 430-7, I confess I am troubled, not for want of authorities but through excess of them. On marble, vase, coin and gem are the illustrations which the old Greek has left us of the written word. This last tells us of women decked out in the feminine yellow or saffron-coloured chitons over loose Cimmerian transparent chemises, or chitonians of fine linen, with girdles round the waist and sandals on the feet. An outer garment and a cloak, or himation, was worn over the chiton, the latter usually at night and in cold weather. Besides these, mention is made of Persian slippers, veils (shawl or peplos), parasols, small mirrors suspended from the girdle, rings, necklaces, gold ornaments, paints and unguents for the skin, the head-dress, the head-band, and the caul or net cap worn also at night. We are told of the hair of some women being cut bowl-fashion, of that of others being loose and flowing. As to the men, we learn that they wore a linen shirt, a chiton, girded, shoes, and in winter a cloak and boots, and that they wore the chaplet of flowers received at dinner throughout the evening, although they might be going to other houses. The colours most usually employed were the Tyrian purple, the Sardian red, soft whites, tender greens and dark blue-greys.

"It is somewhat strange that, considering the abundance of illustration in the British Museum alone, a Greek dress has yet to be made; for neither in the numerous (attempted) Classical costumes of the stage, nor in the paintings of Classical subjects publicly exhibited, has a Greek tunic or chiton been fairly represented. It is quite impossible without the help of drawings to fully explain the different shapes of and modes of wearing this the chief article in a Greek wardrobe; but it may be noted—(1) that fineness and closeness of texture in the wool is essential; (2) that fulness of material so as to secure a multitude of folds is equally necessary; (3) that the gigantic key and wave borders we have been accustomed to see on the English stage have nothing to do with Greek work of the time of Alcibiades; (4) that the decoration of the dress was effected by double lines and dots arranged vertically in the centre of the front of the chiton as well as by border lines; (5) that there were sundry kinds of girdles ranging from the

simple string tied in a large bow at the front or side to the broad metal zone tied or clasped; and (6) that there were two distinct kinds of chiton—one single bodied, and the other compound or double bodied (called 'diplois'), which consisted in the chiton being much longer than the person, the extra length being doubled over, and falling over the front and back as low as the waist or lower. Besides these common forms of the chief dress we meet with illustrations of over dresses reaching some distance below the waist, and girded. Some of these have short shaped sleeves, and some have long, loose, or bag sleeves. Another form which has the appearance of a sleeve is nothing more than the upper extensive hem of the chiton dropping over the upper arm, and looped up by one, three, four, five or six buttons. For the Greek chiton was formed of a square cut piece of wool, and was as broad or broader than it was long. When, therefore, the dress was not looped over the arm, it hung from the shoulder button in an open fold under each arm, through which might, perhaps, occasionally be seen the delicate chemise or vest beneath. The borders were usually enriched with single lines, sometimes dots set close together were added on one or both sides of the line, and in the richest examples double lines occur, the upper band thus formed enclosing embroidered figures—the marginal one decorated with conventional leafage.

"Various, too, was the arrangement of the women's hair, as also the designs of their head-dresses. Some of these were extremely beautiful, others, again, look awkward, not to say ugly, if such an objectionable word may be allowed in connection with anything Greek. The bracelets were chiefly of gold, made in the spiral form. Necklets were mostly of beads or pearls, which were also used for the head-dress, for neck-chains and even girdles. The peplos or shawl, and the chlamys or scarf, were worn out of doors. The first of these was a very capacious sort of wrap, and was often used as a cover to choice furniture. It was usually worn round the body, the end being thrown over one shoulder and falling to the bottom of the back. The scarf was sometimes made in an oblong piece, the length equal to twice its width, and sometimes with triangular goars or wings added. The chiton and chlamys were worn by both sexes. I might go on exhausting the patience of my readers with descriptions of the different methods of wearing the scarf, and of many other modes and details of dress, but if anyone is anxious to learn more they have but to devote a spare day or two to the British Museum, or if this is not within their reach, Hamilton's 'Vases' may be consulted.

"And now, after one has been wandering in museums and noting ancient Eastern authors, it is quite a refreshing change to come home once more and to turn to the notices of costume in the text of 'The Winter's Tale.' Hermione's words—

You may ride us
With one soft kiss, a thousand furlongs, ere
With spur, we heat an acre,

introduce us at once to a period wholly different from the time of Alcibiades. As we go on we hear of the day when Leontes saw himself unbreech'd in his green velvet coat, his 'dagger muzzled lest it should bite its master, and so prove, as ornaments oft do, too dangerous.' Hermione wears 'a medal,' also called 'a jewel,' hanging about her neck, a fashion we see illustrated in many of the sixteenth and seventeenth-century paintings. Paulina is persuaded of the clown's truth by recognising her husband's handkerchief and rings. And lastly, in the fourth Act, mention is made of 'three pile' (velvet) and of a host of Elizabethan millinery, 'ribands of all the colours in the rainbow,' points or tags, inkles, caddisses, cambrics, lawns, tawdry lace, tape, silk, thread, sham jewels, brooches, pomanders, shoe-ties, and

Gloves, as sweet as damask roses;
Masks for faces, and for noses;
Bugle bracelet, necklace-amber,
Perfume for a lady's chamber:
Golden quoifs, and stomachers."

The Cistercian Abbey of Hayles (Glos), where Richard Earl of Cornwall and his son Henry (murdered at Viterbo) lie buried, is being excavated for the owner by Mr. St. Clair Baddeley. The excavations, which successfully recovered the plan of the abbey church and chapter-house in 1900, promise to recover that of the frater, kitchen, dormitory and infirmary.

THE EMPLOYMENT OF COLUMNS.

THE primary and most obvious office of the column is the support of a horizontal superstructure for the purposes of shelter. Hence its use in the portico and external peristyle of the Greek temple, and frequently also in its exterior. None, therefore, will dispute the significance and decorative fitness of the column where thus applied to porticoes, colonnades or interiors as characteristic of utility and necessary support. In this manner of use we premise the employment of unbroken entablatures and regular intercolumniations. But are we to be restricted to this? Is there no significance or propriety in the use of the column under combinations less primitive and rules less severe? In the internal introduction of arches and vaulting instead of the horizontal superstructure for shelter are the column and entablature to be necessarily discarded? Certainly not, unless we would sacrifice almost all the beauties of Roman and Italian composition to that ill-supported hypothesis, popularly adopted from Vitruvius, which makes the column and entablature to be mere representations in stone of the props and roof of the primitive wooden hut. For, unimportant as the question of the origin of these members may at first sight appear to be, it is well worthy of our careful notice that the admission of this hypothesis of Vitruvius is fatal to the consistency of expression in detail of almost every ancient or modern work of importance. Even the structures of Athens will not be found faultless on this supposition; for the scheme of timber construction can never justify the conjunctive use of a complete internal and external entablature, as in the case of the peristyle and cell of the Parthenon and many other edifices. On such a supposition our imagination must be constantly haunted with the idea of the repetition of roofs on the inside of buildings, and even about their doors and windows. But reject this notion, and consider the entablature under its most obvious character, not as representing a wooden roof, but as being and representing honestly a platform of stone, raised for any specific purpose, primarily, indeed, for that of shelter, and the whole difficulty thereupon disappears, supposed incongruities vanish, and significance and fitness are, in many instances, recognised in the place of misapplication and confusion.

This point, then, being admitted, we shall be prepared to see that the use of columns and entablatures does not necessarily render a surmounting arch or vault inappropriate; that, for instance, two parallel lines of columns, with continuous entablatures, may fitly be united by a vaulted covering. But suppose, further, a somewhat similar arrangement to be that of the nave of a modern church, in which, however, the smallness of the regular intercolumniation is a matter of objection on account of the obstruction caused by numerous columns, and instead, therefore, of continuous entablatures on each side, a succession of arches is made use of from column to column, surmounted by the general vaulted ceiling; at the same time the decoration of columns or pilasters must be continued round the extremities, east and west, with a regular entablature. We then are under the necessity of employing over each column a square piece of isolated entablature, to preserve a correspondence of lines round the whole interior, a combination of which we find constant examples in the churches of Wren and subsequent architects.

This particular arrangement is, by many persons, pronounced to be a great abuse; but with such an opinion we are not prepared to coincide. For the truth is, that the introduction of the arch and vault, in this and similar instances, entirely sets aside the importance of the entablature as the member of support, superseding it in efficiency for all large intercolumniations and leaving to it only those smaller intervals which may be within the usually admitted limits. On the other hand, to avoid such a discontinuance of the entablature when arches are employed over columns, the only alternative would be to omit it altogether and to let the arches spring immediately from the capitals. To this, however, there is the greatest ground of objection, inasmuch as the inseparable connection of the column with its entablature is a point of fundamental importance to the preservation of the identity of Classical architecture, to neglect which is to wander at once into those mazes that terminate in the Moorish or in the Norman style: not to notice further the naked and unsatisfactory appearance of a column so employed, as contrasted with the same member under every other application in colonnades and porticoes; nor yet to insist on the fact that one of the Roman orders,

the Doric, is essentially incomplete without its entablature, the triglyph of which alone gives a denomination to the column.

In saying this we wish to show that the supposition of the invariable importance of a continuous entablature which has been derived from the study of Greek works is not of universal adaptation to that complex system in which the arch obtains so conspicuous a place. There are occasions in internal arrangement in which the arch, as the substitute for the entablature over large intercolumniations, greatly exceeds it in value and efficiency; occasions when the latter could not be carried out and applied to the same office without manifest inconsistency, and, indeed, false construction. Occasions, therefore, in which the expression of utility requires a broken entablature as subservient to the arch. But even in these cases the object for which a continuous entablature would be desirable, viz. the connection of horizontal lines, is not to be lost sight of; for, in the instance before supposed, of a row of columns and detached entablatures connected by arches, the whole ought to be surmounted by a larger cornice than that of the entablature, previously to its receiving the general vault, as instanced in the clerestories of some of our churches. A groined ceiling, instead of the arches and vault, would be wanting in character, since this would preclude that connection by means of a general surrounding cornice. Of course, the license for which we plead, in the occasional management of arches, applies principally to the composition of interiors; it cannot in external design be extended to the sanction of such an abuse as that of the interruption of a general entablature for the admission of an arch, where there is no superior cornice above to connect the whole, while, on the other hand, it may offer sufficient apology for the practice of using a subordinate order, with discontinued entablature, in such instances as those of Venetian windows, so common in the designs of the Palladian school.

Having so far noticed the twofold employment of columns for the purposes of shelter, on the one hand, by the support of continuous entablatures and horizontal coverings, and, on the other hand, by the support of arches and vaultings, to which the entablature then becomes subordinate, let us for a moment observe some inferior examples of such combinations for the same ostensible object. As one of these, we sometimes see a portico or colonnade made use of not to protect and designate an entrance, but as a mode of decoration to windows. How far, it may be asked, on the principle of utility, is this justifiable? When such an appendage has sufficient projection and arrangement to render it really available as a place for walking in shelter, it is undoubtedly appropriate, having the use of a verandah combined with an architectural character which that class of erections can never possess. When, however, its projection is insufficient for this object, the columns being placed, perhaps, as close as possible to the wall in which the openings occur, the only principle of utility upon which it can be admitted is that of affording protection to the windows in the same manner, though to a greater extent, as an ordinary window dressing is professedly made to do. It is only upon the same supposition, indeed, that we can recognise any practical fitness in the use of engaged semi and three-quarter columns. For it must be allowed that the employment of the column in this attached mode is defective in point of significance, countenanced as it is, nevertheless, not only by the frequent practice of modern architects, but by examples from antiquity.

The application of columns to windows and the frequent use of engaged columns are matters that often stand associated with another circumstance of practice which demands notice, viz. the employment of orders upon orders. This practice does not deserve sweeping condemnation, since there are many considerations that render it justifiable, at least occasionally. It is true, indeed, that two orders, of which one is placed upon the other, are not in the abstract equally imposing with one order of their united heights, and that such an application as the former constitutes a departure from the example of the best (though not of all) Greek remains. But neither of these circumstances is a sufficient objection, since, in the first place, the column is not in composition to be considered alone, but in connection with accompanying features, especially in reference to the apertures; and, in the second place, those apertures are with us subjects of much more importance and deserving of more concession than they were in the climate and temple architecture of Greece. If, then, in the decoration of a façade of several storeys we

would preserve to the windows that prominence of character which the expression of utility imperatively demands, we must limit in proportion the size of the columns with which they are associated, never allowing the height of the latter to include more than two tiers of ordinary apertures, or one tier of such apertures as may be large enough to require a wide intercolumniation. If this limitation be exceeded, the window not only loses its proper character, but is deprived of its internal efficiency on account of the extreme width of the intermediate piers required by larger columns. This restriction, then, in the height of an order so employed, will render it advisable for the decoration of the supposed remaining storeys to introduce sometimes a basement, sometimes a second order and sometimes both together, as in the banqueting-house at Whitehall and the exterior of St. Paul's. Nor are the character and office of the column and entablature, if rightly considered, at variance with such an application. On the Vitruvian hypothesis of their origin, this practice would, indeed, involve the absurdity of representing as many roofs as there are entablatures, or even cornices, in the height of a front; but upon the supposition that the entablature expresses simply a platform of stone, there is discerned a manifest significance rather than an abuse in thus marking the division of storeys by the use of successive orders. Of course such fantastic display as that of piling the five orders one upon another is not to be commended; but the practice of supercolumniation as resorted to by masters of the Italian school is capable of justification. Those masters acted in the true spirit of art in thus modifying and applying the systems of antiquity to their own altered wants and circumstances.

Besides the various employment of the column in such cases as those already adverted to, where the obtaining of shelter is the professed object, some other purposes for which it may be used should be noticed. Of such purposes probably the next in importance is that of the definition of boundary. Thus, wherever a screen or fence wall does not need continuous solidity we may consider a columnar screen capable of application in its stead, without any opposition from the principle of utility; a consideration which will extend to the decoration of gateways and park entrances. Closely connected with this subject is that of the embellishment of archways upon the model of the triumphal arches at Rome. Here, too, the utilitarian principle may justify the employment of the column, though upon another and a third ground, viz. that of presenting support to essentially characteristic parts of the composition. As applied to a triumphal arch, the column would have no significance as a means of obtaining shelter or of defining boundary; it has, however, sufficient import and character as a means of support to so essential a feature as statuary. Hence in the Arch of Constantine there is a reason not only for the use of columns, but even for what would under other circumstances be objectionable, an entablature broken round the columns; since the office of each column is specifically the support of its statue, and since, too, the entablature could not, with an expression of propriety, be carried unbroken across such wide intercolumniations as those caused by the arches.

Lastly, the application of columns to structures whose principal end is that of ornamental effect should be noticed. It is obvious that the application of the principles of utility is not more strictly necessary for the management of detail than for the purpose of the entire composition. This consideration, indeed, might have disposed of objections on the ground of superfluity in the decoration of the triumphal arch. It is a consideration also which will apply with much force to the composition of steeples; objects in which, after all allowance for the demands of a belfry, the chief purpose desired is that of designation to the eye. Here, then, it is idle to look for any further recognition of utility in the use of columns than that which relates to fitness of effect, subject always to the expression of constructive practicability. Members, elsewhere superfluous, are here appropriate if they promote a characteristic tendency of lines and a progressive lightness of ornament. Here also the preservation of unbroken entablatures is not to be enforced, since the effect to be attained is directly the reverse of that which is appropriate to elevations of the ordinary lengthened form, whose prevailing lines are horizontal, and wherein, therefore, the entablature must be continuous and uninterrupted by needless angles. On the other hand, it is the object in steeple composition to counteract that predominance of horizontal lines so incident to the Classical styles of architecture, and

to substitute for it a vertical and aspiring tendency of form, which, of course, can only be preserved by multiplying the perpendicular and breaking the necessary horizontal members so as to lead the eye imperceptibly upwards from storey to storey. A due consideration of this object may also lead us to view with indulgence the numerous breaks of entablature so common in the Palladian school of design, when they are found to occur in elevations of more storeys of orders than one, and in which the height may be unusually great in proportion to the length of frontage.

GENERAL.

Mr. James Dredge, C.M.E., civil engineer, died at Pinner, in his sixty-seventh year, last week. He was joint editor of *Engineering* since 1870. Mr. Dredge had been officially connected with most of the universal exhibitions, including that of Vienna in 1873, the Centennial Exhibition at Philadelphia in 1876, and those of Paris, 1878 and 1889. At the Chicago Exhibition of 1893 he was a member of the British Royal Commission, at that of Antwerp in 1894 a member of the British committee, and at the Brussels Exhibition of 1897 was Commissioner-General for Great Britain.

Mr. J. Reid Murray, a Glasgow artist, died at Prestwick last week after a long illness. Mr. Murray, who was a native of Helensburgh, studied in the schools of art of both Glasgow and Edinburgh, and afterwards worked for three years under Verlat at Antwerp.

The Clerk to the London County Council (Mr. G. L. Gomme) has addressed a letter to the metropolitan city and borough councils on the subject of the constant disturbance of London streets by companies and others having the legal power to break them up, inviting the support of the councils in bringing about a remedy.

Dr. Tristram, E.C., heard an application for a faculty for alterations and improvements in Hillingdon Church. The Chancellor, in delivering judgment, said the alterations proposed to be made in the church would be a decided improvement. The most important was the making of a better exit from the west end. At present the exit at the west end under the tower was very inconvenient, and in case of fire or any alarm it really might be dangerous. That was one reason why the court was held to hear the application for the faculty. The London County Council had reported that in very many cases there was no safe exit from many of the London churches in case of alarm.

M. Ballu, the French architect who has revealed the Roman city of Timgad to tourists in Algiers, has been fortunate in discovering treasure trove in money and jewels at the site of Lambese between Timgad and Babna.

A National Housing Conference is to take place in connection with the Trade Unions Congress in Liverpool during the first week in September. It will be held on the Saturday preceding the Congress and has been promoted by the Workmen's National Housing Council and the National Housing Reform Council. Mr. D. C. Cummings, president of the Trade Unions Congress, will be in the chair. The conference will advocate the conferment by Parliament of greater powers to local authorities and urge a more enterprising and effective use by local authorities of the powers they already possess for insuring the better housing of the people.

The Transvaal Education Department invite designs for the erection of a Johannesburg college and a high school at Jeppesstown, at a cost of 12,000*l.* for each building. Premiums of 100*l.*, 75*l.* and 50*l.* are offered for three selected designs for each building. Designs must be lodged with the chairman of the tender board not later than September 22.

The Government have not been able to accept the collection at Florence offered to the nation by the late Mr. Stibbert owing to certain conditions imposed by the terms of the legacy. Under the will the bequest will therefore pass to the Commune of Florence, and it will be open to the public on the same terms, and preserved in the same manner, as if it had been held by the British nation. Mr. Stibbert stipulated that the collections were to remain unaltered. They are estimated to be worth 250,000*l.*

Henley Bridge is showing signs of a settlement of the piers. It was erected 120 years ago, and then provision could not be made for the passage of traction engines, &c.

The Architect.

THE WEEK.

THE dinner in Dublin of the Federation of Master Builders received attention from politicians on account of the veiled utterances of the Irish Under-Secretary, which were interpreted as meaning some measure of Home Rule for Ireland. There is now a belief that an experiment of the kind will be made, and that popular favour will be acquired by the purchase of the building in Dublin, now used as the Bank of Ireland. Everyone knows the building was erected in the eighteenth century as a Parliament house. But before it had become venerable it was turned to other uses, as the Lords and Commons of Ireland ceased to have a separate existence from the time the Union Act was passed within the walls. It is a very large structure of admirable design, especially when it is remembered that the exterior is mainly a screen, for although there are doors, it is without windows. THACKERAY said of it:—"In the Bank may still be seen the room which was the House of Lords formerly, and where the Bank directors now sit under a clean marble image of GEORGE III. The House of Commons has disappeared for the accommodation of clerks and cashiers. The interior is light, splendid, airy, well-furnished, and the outside of the building not less so." The prestige of the new Council would be lost if any attempt were made to accommodate the Bank within the building. The Bank of Ireland Company will therefore have to erect new premises, and in a style which will uphold the character of their former accommodation. It is not unlikely that if the change is made as foreshadowed by the Under-Secretary a mighty impetus will be given to building in Dublin, where work of the kind is greatly needed.

THE Manchester education committee have settled the claim of Messrs. SPALDING & CROSS, architects, for work in connection with the School of Technology. It was agreed that the sum of 1,000 guineas should be paid under the direction of the town clerk "as extra remuneration and in full settlement of their claim under the agreement dated February 23, 1893, or otherwise, in connection with the school or the fixtures or fittings therein." One member objected on the ground that when architects exceeded their estimates they got extra payment, instead of being penalised for what he called their "inexact calculation." Sir JAMES HAY, the chairman, said the agreement was that the architects were to receive 5 per cent. on their own estimate of the cost, and that nothing beyond that should be paid except at the option of the committee. The architects in this case had received, with the sum now to be paid, 1,700*l.* in excess, but the gross amount of their receipts was far under 5 per cent. of the total outlay on the school. From this it will be seen that instead of receiving more than the sum to which they were entitled, Messrs. SPALDING & CROSS have gained much less than the ordinary fees.

It was lately announced that the Town Council of Birkenhead intended to adopt a scheme by Mr. G. F. DEACON and to obtain a new water-supply from a source in Wales. It would now appear that the scheme was only of a diplomatic character, and was introduced in order to induce the Liverpool water committee to supply Birkenhead on more economical terms than had been proposed. The terms originally stated were that Liverpool should take over the mains, towers, reservoirs and other property connected with the Birkenhead water-supply, and that the price paid to Liverpool for water should be 6*d.* per 1,000 gallons. It would be also necessary that Birkenhead should lay down mains from Delamere Forest, the point of connection with the

Liverpool works, to the town without any expense to Liverpool. The terms were not thought to be acceptable, and then Mr. DEACON'S project was put forth. The result was that new proposals came from Liverpool, and terms are offered which correspond with those arranged between Liverpool and Bootle. Liverpool is to construct the connecting main at a cost of about 130,000*l.* The debt of Birkenhead at present amounts to about 18*l.* 4*s.* per head of the population. But an independent water supply would increase the debt to 24*l.* 19*s.* per head. There was some hostility to the new proposals. But thirty-three members of the Corporation have voted in favour of them, while there were only ten opponents. We have always stated that the Government should interfere, and determine the area of water supply for different towns. Liverpool has an excessive supply, and the same may be said of Manchester and Birmingham. By monopolising the most productive sources in the country the claims of the Metropolis have been disregarded, and a difficulty has been created which before long will have momentous consequences.

THE late STANFORD WHITE, like many other men, was not free from frailties, but his fellow-architects made allowances for them. He evidently possessed qualities which endeared him to those who were his rivals. The following tribute has been offered to his memory by the architectural societies of New York:—"The executive committees of the New York Chapter of the American Institute of Architects, the Society of Beaux-Arts Architects, and the Architectural League of New York desire, in the name of their respective societies, to express their sense of the great loss which the profession and the art of architecture have sustained in the death of STANFORD WHITE. His quick and generous appreciation of all that is beautiful, even beyond the field of his immediate profession, was so genuine that the influence of his work will long continue to be a stimulus to the artistic development of this country. Only those of us who have been closely associated with him professionally can fully appreciate the love and enthusiasm with which he devoted himself to art. His was a commanding personality, and whatever he produced had the touch of genius."

IN 1727 LOUIS XV. ordered that the road between Paris and Fontainebleau should be altered and improved in the neighbourhood of Juvisy, where accidents occurred. According to an inscription, it was necessary to rend the rocks, to level a hill, to construct a bridge and much else in order to improve the route: "planam, rotabilem, et amoenam fieri curavit." The bridge which crosses the river Orge, one of the tributaries of the Seine, is a remarkable work. It goes by the name of Pont des Belles-Fontaines, because in removing the great masses of rock a spring was tapped which was utilised by constructing a pair of fountains on the parapets. As was to be expected in designing them, they were made to subserve as memorials of the king. One was formed as a trophy with a group of children supporting a globe which bore the arms of France. The group on the opposite parapet shows Time holding a medallion of LOUIS XV. and trampling on Envy. Both were the work of the younger COUSTOU, the sculptor. NAPOLEON observed them in his journeys from Fontainebleau to Paris and had the figures restored. In fact, it was quite close to the fountains that he first heard of the capitulation of Paris. Since his time they have been neglected. COUSTOU'S figures have lost their beauty, for it was a rustic amusement to pelt them with stones, and the inscription is illegible. But the bridge, which may be said to consist of two storeys, is as secure as ever. There is no similar work in all France, and some lovers of the past are now endeavouring to persuade the Government to spend money on the restoration of the figures.

ALFRED STEVENS.

THE esteem which artists in general and many Parisians felt for the late ALFRED STEVENS, the painter, who died on Friday last, was shown by the selection of his name to designate a short street or *impasse* in Paris. It is in the artists' quarter near the Place Pigale, and was intended mainly for the habitation of painters. The shrewd speculators owning it knew that no name was to be discovered which could be more attractive, or more likely to suggest elegance in the apartments. ALFRED STEVENS was, however, a Belgian, who was born in Brussels in 1828, but when he was eighteen or nineteen he went to Paris. He was fascinated by it, and a great many of the inhabitants were in turn fascinated by him. He was what is called "a man's man," and he could not pass along the boulevard without being stopped at almost every step by friends who were glad of even a moment's conversation with so admirable a *causeur*. To the close of his life his figure was striking, and he was easily recognised amid a crowd of *viveurs* in a restaurant. In his old days he must often have thought sadly of the joyous time he shared when the Empire was young, and when he was able to hold his own with the best talkers and wits Paris could produce. As a painter his merits were admitted without any envy by the ablest among his contemporaries. In a word, ALFRED STEVENS was treated as if he were a Frenchman, and by artists who differed from one another except in their appreciation of him.

His father was an officer in the army; but as he was fond of pictures both his sons were allowed to work at the Brussels Academy under FRANÇOIS NAVEZ. JOSEPH, the elder, became an excellent animal-painter, and one of his paintings was in the last Guildhall exhibition. While ALFRED was a student some of his works were seen by CAMILLE ROQUEPLAN, the French painter, who easily persuaded M. STEVENS to allow the youth to study in Paris at the Ecole des Beaux-Arts. In 1849 ALFRED STEVENS exhibited in Brussels his *Soldier in Trouble*. It may be remarked that originally he did not appear to be destined to become the painter in chief of feminine life, for his subjects were sometimes of a kind that would now be called sensational. It might even be supposed that his brother JOSEPH would be more successful. ALFRED obtained, however, a first-class medal in Brussels in 1851 and a third-class in Paris in 1853.

The Paris International Exhibition of 1855 afforded him a great opportunity. He was then living in that city, and he sent half a dozen paintings. Some critics were able to recognise his ability as a colourist. One painting was a figure of a Moor seated on a rock; two were costume pieces. There were two works which suggested the line he was best adapted to follow. One represented a young girl pawning her diamonds—apparently in order to oblige a friend—the other, which gained some notoriety, had for title *What is called Vagabondage*, and depicted the arrest of a poor woman with a baby on a winter's day with the snow falling, and who is being conducted to the police station by several agents. ALFRED STEVENS's pictures were so much talked about he must have obtained more than a second-class medal if such awards did not follow a regular gradation.

Soon afterwards, though he did not often make them the subject of doleful paintings, ALFRED STEVENS devoted himself to the representation of woman's life under the new conditions. Imperialism had given an impetus to luxury. The semi-Puritanism of the Orleanists had passed away. Men became celebrated as dressmakers, and artists received high prices as designers of gowns. ALFRED STEVENS's paintings expressed the spirit of the time, and may therefore be taken hereafter as supplementing or illustrating what will be recorded by historians about the influence of the Imperial Court. One proof of his success was to be seen in the award of a first-class medal at the

International Exhibition of 1867. He received a similar distinction in 1878 and in 1889 he was awarded a Grand Prix of the Universal Exhibition. He entered the Legion of Honour in 1863, was made an officer in 1867 and promoted to the rank of Commander in 1878. In distinctions he stood on a level with the most valued of his French contemporaries.

Although his works were so much admired, ALFRED STEVENS could not in his prime be considered as a very productive artist. His best pictures generally represent no more than a single figure, and often he avoided full lengths. They were carefully painted, although their treatment is not suggestive of great labour, and with all the breadth of the handling he was careful in suggesting every characteristic of the fashion of the moment. It was probably owing to their fidelity to temporary fashions that after a time the paintings of ALFRED STEVENS did not compel the attention and admiration which originally were given to them. The prices fell, and the painter, for whose smallest work amateurs and dealers contended, confessed to a friend that in the course of nine months he was compelled to produce seventy-five pictures. To a man whose thoughts for many years were concentrated on the luxurious life of worldlings the compulsory obligation to toil like a galley slave in order to meet the demands of common everyday life gives an air of tragedy to the latter years of the artist.

His works are likely to be valued hereafter not merely for their representation of the costly costumes of the nineteenth century, but for suggesting the peculiar relations between men and women in France at that time. The "Ewig-Weibliche" became to Frenchmen a problem which was solved in a manner which differed from that of the German or the Briton. It corresponded, however, with what was to be found in French poems and novels. His fashionable women might not be driven to a cell by three or four policemen, but they seemed to be all either deserted or doomed to be deserted by those who should be their protectors. One of his paintings represents the conclusion of a masked ball in the dawn of an Ash-Wednesday, when the gaiety had become vapid. That was only a more emphatic expression of the idea latent in other works. He never cared to suggest, like DA VINCI, that woman was a sphinx, but the majority of his figures hint that women are destined to be victims by fate, and that one time or another the impending tragedy is as inevitable as gravitation.

Instinctively, Englishmen and Englishwomen must have realised the mystery which brilliant colours could not conceal in his paintings. That, we suppose, is the reason why so few of his works are to be found in English collections. If we remember rightly, not one of those by ALFRED STEVENS in the last Guildhall Exhibition came from an English house. And yet it must be allowed that in technique many of his paintings merit high praise. A painter's work should always compel us by a kind of magnetism to feel the degree of power employed in its production. ALFRED STEVENS's paintings must always convince an amateur that there was no straining after some indefinite quality or expectation that by accident a lucky stroke would be accomplished. The modelling may not always be rigidly correct owing to carelessness or indifference, or his preference of colour to form. But in every part we feel the artist was at his ease and could realise all that he had in view. Indeed, he was capable of much more if he cared to exert himself.

It is to be hoped that some of his friends have BOSWELL's gift and will attempt to relate his conversations. He had a talent for narration, he mixed with many varieties of men and women, and he was as suggestive of life in his stories as in his paintings. He had known every painter and writer of any account who appeared in Paris during half a century, and his astonishing memory enabled him to recall traits in a manner which professional biographers might envy.

SERMONS IN STONE.*

FOR nearly a century the name of PETER BELL, the hawker of earthenware, has been a by-word, because

Nature ne'er could find the way
Into the heart of Peter Bell.
In vain, through every changeful year,
Did nature lead him as before;
A primrose by the river's brim
A yellow primrose was to him,
And it was nothing more.

It is hard for an honest trader to be pilloried for being unendowed with imagination, and for passing through picturesque districts without thinking of anything but his pots and pans. If he lived in our time he might be disposed, like other men, when looking on the primrose to think of the greatness of one political party and the misdeeds of another. In other words, the flower would now be to him a symbol, and expressive of many things which are not recognised in treatises on botany, or known to florists. PETER BELL in his second state would find other men who had acquired an esteem for the primrose as a political agent, and in that way he would belong to a cult, and would pride himself on his superiority over those to whom the primrose was still only a flower, a mere yellow sign of the return of spring.

We have sufficient evidence that from an early age symbols of a conventional, if not of a floral kind, were employed as marks of distinction, not merely in creeds, but among philosophers who were supposed to be superior to vanities, and indeed among men of all ranks. In a way they may indicate the difference between those belonging to the exoteric and esoteric class or degrees of rank. In course of time numerous associations were formed around the symbols, and their origin is therefore enveloped to an extent that obscures it.

It is not irreverential towards Christianity to say that its promotion was aided by symbols. Those which are to be seen in the catacombs may have been intended to suggest to the Roman police that the object of the meetings was innocent merrymaking. Amorini, grapes, flowers, a shepherd, birds, palm branches, stars, fish and the like seemed to be not more subtle in their signification than the simple representations of things that we sometimes see in distemper on the walls of shelters in English tea-gardens. The police authorities were no doubt aware that the figures had other meanings. But in no State where law has a scientific basis is there liberty to read meanings into the forms of objects. To the Christians, or at least to those among them who were fully initiated, the figures in the early places of assembly were eloquent enough. They were mute exhortations to faithfulness. We may suppose that addresses were given not only to explain them, but to prove that there was a special fitness in having such symbols already prepared. Indeed, there can be little doubt that the adoption of symbols was sometimes carried to excess. Gnostics, Easterns, Greeks and Egyptians introduced signs which originally were likely to have had less suitable meanings.

When Christianity was able to utilise basilicas as churches the desire for symbolism continued to be employed in order to make the buildings uphold the doctrine. The benches on which the pagan judges sat were appropriated by the clergy, and the power claimed of binding and loosening became more manifest than when services were held in subterranean or in humble chambers. The basilican type was therefore often adopted when churches had to be erected. But it could not be said that the Roman architects who created that type anticipated a time when the planning which was adopted for secular purposes should be utilised to

express theories of Christian doctrine. The word "basilica" signified, among other meanings, a palace, and the title was supposed to be adapted by Providence for houses of prayer and the dwelling-places of the King of kings.

This question of intention is one of extreme importance in connection with symbolism, as exemplified especially in church buildings. A modern architect, let us say, understands all the requirements of a church. He knows he has to respect certain precedents, and however much he might desire to introduce alterations he has not the necessary power. He is aware that tradition is in favour of adopting ornament and other details which are supposed to be efficacious in exciting desirable associations, or which are consistent with established principles. But the authors of the introductory essay to the translation of DURANDUS—MESSRS. NEALE and WEBB—who were potent in the early days of the Gothic Revival, would not be satisfied with such fitness in an architect as is derived from ordinary practice. Symbolism with them, and many other clergymen were found to adopt their view, signified *Sacramentality*; and as only men set apart could administer the sacraments of the Church, a peculiar body of architects should alone, it was declared, be allowed to design episcopal churches. In one place they write:—

We are not prepared to say that none but monks ought to design churches, or that it is impossible for a professional architect to build with the devotion and faith of an earlier time. But we do protest against the merely business-like spirit of the modern profession, and demand from them a more elevated and directly religious habit of mind. We surely ought to look, at least, for Church membership from one who ventures to design a church. There cannot be a more painful idea than that a separatist should be allowed to build a House of God, when he himself knows nothing of the ritual and worship of the Church from which he has strayed; to prepare both font and altar, when perchance he knows nothing of either sacrament but that he has always despised them. Or, again, to think that any churchman should allow himself to build a conventicle, and even sometimes to prostitute the speaking architecture of the Church to the service of her bitterest enemies. What idea can such a person have formed of the reality of church architecture? Conceive a churchman designing a triple window, admitted emblem of the Most Holy Trinity, for a congregation of Socinians. We wish to vindicate the dignity of this noble science against the treason of its own professors. If architecture is anything more than a mere trade; if it is, indeed, a liberal, intellectual art, a true branch of poesy, let us prize its reality and meaning and truthfulness, and, at least, not expose ourselves by giving to two contraries one and the same material expression.

It does not require a long argument to prove that such essentials could not fail to lead to hypocrisy. Skill in designing or construction became of less importance than external acts, which were calculated to impress the clergy with a belief that they were dealing with a modern BEZALEEL. We have been often puzzled in looking over the proceedings of the ecclesiological societies, of which MESSRS. NEALE and WEBB were among the inspirers, to see the number of plans by able architects which were "disapproved." Indeed, it would appear to be much easier to pass the ordeal of the works committee of a modern local board than that of the clerical judges fifty years ago. Apparently certain plans were supposed to be wanting in the desired but indefinite sacramentality, and for that mysterious quality no excellence of another kind could compensate.

It seems to us the great point to be considered in such cases is the effect which a church produces on the worshippers. If carved stones can become suggestive it surely is not necessary for attaining that effect to have acquaintance with all the religious acts of the carver or the state of his soul. That would be as unreasonable as to insist on the type, paper and ink used in printing a Bible or Book of Common Prayer being all produced by Christian hands. In all this we believe the editors

* *The Symbolism of Churches and Church Ornaments.* A translation of the first book of the "Rationale Divinorum Officiorum," written by William Durandus, sometime Bishop of Mende. With an introductory essay and notes by the Rev. John Mason Neale, B.A., and Rev. Benjamin Webb, B.A. (London: Gibbings & Co. Third edition.)

have not acted in the spirit of DURANDUS. The French bishop quotes St. AUGUSTINE as saying "so many things are varied by the different customs of divers places, that seldom or never can those causes be discovered which men followed in constituting them." In other words, let us accept forms which have been created, and if possible derive spiritual benefit from the stones without distracting our thoughts with speculations about the motives of the builders and artists. They, no doubt, like all honest men, considered the labourer was worthy of his price, for in the Middle Ages, as in our time, food and raiment had to be purchased, and their work could not be entirely spiritual or disinterested.

Unfortunately little is known about WILLIAM DURANDUS. He was born in Provence, where, he says, there was an altar of earth which MARY MAGDALEN and the three MARYS of the Gospels had set up. It might be supposed that with so simple an example DURANDUS would have been in favour of worshipping in the Temple of Immensity, but he was a true thirteenth-century bishop and loved churches and ecclesiastical ceremonies with all his heart. Evidently he was also gifted with a wonderful power of association, and could see analogies between all the parts of a church or the *instrumenta ecclesiastica* and the precepts of the Scriptures and the Fathers. Whether he was the representative of a class or was peculiar in his talent, he at least was a good example of the happily gifted men who are able to find "sermons in stones, books in the running brooks and good in everything." In our time he would have appreciated CARLYLE's words:—"It is in and through symbols that man, consciously or unconsciously, lives, works and has his being: those ages, moreover, are accounted the noblest which can the best recognise symbolical worth and prize it the highest. For is not a symbol ever, to him who has eyes for it, some dimmer or clearer revelation of the Godlike?"

In the thirteenth century few laymen were readers, and the "Rationale" was therefore intended for ecclesiastics, to enable them to understand more deeply the daily service. The ritual they followed was not always uniform, for different countries had more or less modified practices. DURANDUS, as an ecclesiastic, looked at things as he might have seen them from the pulpit. He evidently gave attention to detail. But he resembles the historians who wrote upon abbeys and churches. He tells us about the ceremonies that take place in laying the first stone and blessing the foundations, and how the church is to point due east. But he has not a word to say about the plans or directions which had to be prepared, or about the men from whom they were obtained. Certainly he does not prescribe any rules about pious architects, and, in fact, ignores the existence of all workmen. The larger stones, polished and squared, are to be placed on the outside at the corners, in order to represent men holier than others who retain weaker brethren in Holy Church. But rules about the dimensions are passed over, and the stones might have been miraculously dressed. The different sizes of the stones he compares with the different members bound together by a spirit of charity, as though united by cement. The cement of those days was ordinary mortar composed of lime, sand and water. The lime denoted fervent charity; the sand, efforts for the temporal welfare of the brethren, while the water was the Holy Spirit. The threefold division of a church he compared with the head, the hands and arms, and the trunk of the human body. The four walls symbolised the Evangelists; the roof, charity, which covereth a multitude of sins. The door signified obedience; the pavement humility. Some parts have more than one signification. The four walls also suggest the cardinal virtues. Transeptal churches signify that we are to be crucified to the world, while the circular churches suggest the universal extent of the Church itself. In that way DURANDUS considers the different parts of the building, nor does he forget its privileges, for he adds:—"In the last place, a consecrated church defendeth

murderers who take sanctuary in it from losing life or limb, provided that they have not offended in it or against it. Whence it is written that 'JOAB fled to the tabernacle, and laid hold on the horns of the altar.' The same privilege is possessed also by an unconsecrated church if the Divine offices be therein celebrated."

There is a chapter devoted to the altar. In the course of it he gives the remarkable statement that when CONSTANTINE built the Lateran Church he placed in it the Ark of the Testament which TITUS had brought from Jerusalem, and the golden candlestick with its seven branches. Speaking of pictures and ornaments, he is careful to point out the kind of respect which should be paid to them, and their excessive use was forbidden. He follows Pope GREGORY, who discriminated between pictures and descriptions; that is to say, between them and sermons:—"Paintings appear to move the mind more than descriptions; for deeds are placed before the eyes in paintings, and so appear to be actually carrying on. But in description, the deed is done as it were by hearsay: which affecteth the mind less when recalled to memory. Hence, also, is it that in churches we pay less reverence to books than to images and pictures."

In the thirteenth century hangings were used on certain occasions to conceal the mysteries; the sanctuary was divided from the clergy, and the clergy from the laity. But, in addition, curtains were used on festivals for the sake of ornament, in order that people might be induced to think of the beauty that was invisible. White curtains signified purity of living; red = charity; green = contemplation; black = mortification; livid colours = tribulation. The eggs of ostriches and other rarities were allowed to be exhibited in order to attract people to the church.

Bells also receive attention, and the chapter suggests the length to which symbolism was carried. The wooden frame signified the cross; the pegs by which the frame is joined, the oracles of the prophets; the iron clamps denote charity; the hammer is the right mind of the preacher; the rope is humility or the life of the preacher. Sometimes when composed of three strands it corresponds with the Scripture, which consists of history, allegory and morality. The pulley through which the rope passes is the crown of reward, final perseverance, or Holy Scripture.

There are other chapters by DURANDUS. We have also a supplement containing two chapters from the "Mystical Mirror of the Church" of HUGO DE SANCTO VICTOR. It is an older work than that of DURANDUS, and, of course, does not enter into the same detail. The differences between them serve to show that symbolism is not intrinsic in the form, but arises out of the peculiar vision of the expositor. Neither of them seemed to be able to discover any symbolic utility in architects or craftsmen.

When the translation appeared in 1842 it created a deep impression among the enthusiastic lovers of Gothic. But architects could not fail to realise that it was no more than the ingenious speculation of a good man. The book imparted a novel interest to churches. But as regards construction it did not serve to introduce any new feature. It was, however, essential in every architect's library as evidence of clerical thought in the thirteenth century. Now it may be taken as a companion to the Blue-book on ritual observances which lately was issued. For with such eloquent buildings as DURANDUS describes, ceremonies that would likewise be mystic and symbolic, while scriptural, would appear to be in keeping. We need not say that of late years the study of symbolism is not confined to architecture, iconography and ritual. It inspires several schools of poetry. The following extract by the editors, although written in 1842, serves to show that they also realised much more than was attempted in the "Rationale":—

Music, however, has the strongest claims to our notice. We know, for example, that each instrument symbolises

some particular colour. So, according to Haydn, the trombone is deep red; the trumpet, scarlet; the clarinet, orange; the oboe, yellow; the bassoon, deep yellow; the flute, sky blue; the diapason, deep blue; the double diapason, purple; the horn, violet; while the violin is pink; the viola, rose; the violoncello, red; and the double-bass, crimson. This by many would be called fanciful; therefore let us turn to a passage of Haydn's works and see if it will hold. Let us examine the sunrise in the "Creation." At the commencement, as it has been well observed, our attention is attracted by a soft-streaming sound from the violins, scarcely audible, till the pink rays of the second violin diverge into the chord of the second, to which is gradually imparted a greater fulness of colour, as the rose violas and red violoncellos steal in with expanding beauty, while the azure of the flute tempers the mounting rays of the violin. As the notes continue ascending to the highest point of brightness the orange of the clarinet, the scarlet of the trumpet, the purple of the double diapason unite in increasing splendour, till the sun appears at length in all the refulgence of harmony.

GRAVESEND, NORTHFLEET AND SWANSCOMBE.*

GRAVESEND has a history older than our oldest watering-place, Hastings, which dates, like Battle adjoining, from the Battle of Hastings. Gravesend can say, like Cobden to the noble lord who boasted that he came over with William the Norman, "Yes, but I was here before then." Gravesend, which has now nothing whatever antique about it but its bare name, is described in Domesday Book, as also Milton adjoining. At the time of taking the survey Gravesend manor formed part of the possessions of Odo, Bishop of Bayeux, half-brother to King William I., and is thus recorded:—"Herbert, son of Ivo, holds Gravesham of the Bishop of Baieux; it was taxed at two sulings and one yoke. The arable land is four carucates. In demesne there is one and four villeins with eight servants having two oxen. There is a church and one hythe. In the time of King Edward the Confessor it was worth ten pounds, when he received it as much, now eleven pounds. This manor was in three manors in the time of King Edward; Leoric and Ulwin and Godwin held them; now it is in one." On the disgrace of Odo, in 1083, it most probably reverted to the Crown, soon after which it became parcel of the demesnes of the Cramville family, called sometimes for shortness Cremille, who had likewise very considerable possessions in the eastern part of this county. They held this place at one knight's fee, parcel of the fourteen and a quarter which made up the barony of Peverel, being part of the lands assigned to John de Fienes and his assistants for the defence of Dover Castle, to which the tenant of Gravesend was bound to perform his ward three times in each year. Henry de Cramville possessed the manor of Gravesend, at his death in the fifty-fourth year of King Henry III. holding it of the king *in capite*, and was succeeded in it by his son Henry de Cramville, who died seized of it in the twenty-sixth year of Edward I., as did Joane, his wife, in the eighth year of King Edward II. After this it by some means came to the Crown, for Edward III. by his letters patent in his fourth year granted it in special tail to Robert de Ufford in consideration of his services, that he might the better support himself in the king's wars in Gascoigne. In the eleventh year of that reign, March 16, he was in the Parliament then held solemnly advanced to the title and dignity of Earl of Suffolk, after which he was continually employed by the king both in his wars and in the most important negotiations. In the eighteenth year of Edward III. he was made admiral of the king's fleet from the Thames mouth northward. He was present in the Battle of Poitiers. After that he was made a Knight of the Garter next in succession to those who were called the founders of it. He died in the forty-third year of the above reign, and was buried according to his will in the abbey of Campepe in Suffolk, having married Margaret, daughter of Sir Walter Norwich, of Suffolk, knight, by whom he had issue, Robert, his eldest son, who died in his lifetime without issue; William, who became his heir; and three daughters. William, who succeeded, was at the time thirty years of age, whose son afterwards conveyed it by sale to King

Edward III., who by his charter, dated October 5 in his fiftieth year, granted this manor among others to certain feoffees for the endowment of his newly-founded Cistercian abbey called St. Mary Grace, near the Tower of London. These feoffees after King Edward's death, in compliance with his last will, conveyed it to the abbot and monks there and their successors for forty years, to the intent that it might be given by King Richard II. in mortmain to them and their successors for ever. After this the abbot and convent granted their interest in this term at a certain yearly rent to Sir Simon de Burley, K.G., and Lord Warden of the Cinque Ports, who having forfeited it with his life for high treason in the tenth year of Richard II., that king by his letters patent, August 3, in his twelfth year, at the petition of the abbot and convent, granted to them and their successors the rents and profits of this manor among others, to hold to them as a sufficient endowment until he should otherwise alter or provide for them. After which this king, by letters patent, July 3, in his twenty-second year, granted it to them to hold in pure and perpetual alms for ever for the performance of certain religious purposes therein mentioned, and he also gave license to the surviving feoffees of King Edward III. to release and quit claim these manors and lands to them and their successors. The manor of Gravesend remained part of the possessions of the above monastery till the final dissolution in the thirtieth year of King Henry VIII., the next year after which it was together with the lands and revenues of it by the general words of the Act then passed given to the king, his heirs and successors for ever.

King Henry VIII., July 17, in his thirty-first year, granted among other premises to Sir Christopher Morrice (alias Morys), knight, all his manor of Gravesend with its rights, members and appurtenances in as ample a manner as it was lately let to John Laurente, and all these his lands and tenements in Pykeaxe land, and all those his lands called the "Ship," in Gravesend and Mylton, all which premises were parcel of the possessions of the late abbey of St. Mary Grace, London, to hold during the term of his natural life without any rent or account whatsoever.

He died possessed of these premises in the thirty-eighth year of that reign, soon after which, viz. on June 10 that year, the king granted to his widow, Elizabeth Morys, in consideration of the good services done to his person by his servant, Sir Christopher Morys, knight, lately deceased, this manor with all its rights, members, appurtenances, and sundry other premises in Gravesend and Mylton, late belonging to the above abbey, to hold during the term of her natural life at the yearly rent therein mentioned. King Edward VI., August 29, in his first year, granted to his uncle, Sir Thomas Seymour, knight, Lord Seymour of Sudley, &c., the office of bailiff of this manor for the term of his natural life, with the like fees, wages and emoluments that Sir Richard Long, knight, lately deceased, enjoyed with the same. On the attainder of Lord Seymour the king, January 8, in his third year, granted this office for life to Sir George Broke, K.G., Lord Cobham, and lieutenant of his town of Calais (?), with the like fees, wages and emoluments; which letters patent the Lord Brooke having surrendered in the seventh year of that reign, the king, April 10 of that year, granted other letters patent of the same to his servant, Sir Henry Sidney, knight, one of the four principal gentlemen of his privy chamber, with the like fees, wages and emoluments, to hold during the term of his natural life.

After the death of Lady Elizabeth Morys, King Edward VI., June 12, in his fifth year, demised this manor with the other premises late in her possession in ferme to his servant Thomas Asteley, Esq., for twenty-one years at the yearly rent therein mentioned.

It appears that this term was soon after resigned into the king's hands, for on June 28, in his seventh year, the king demised the manor and the above-mentioned premises to his servant John Fowler, one of the grooms of his privy chamber, and Anne, his wife, to hold during the term of their natural lives or the longest liver of them, without any rent or account whatsoever. They remained in possession of them in the eleventh year of Queen Elizabeth, soon after which Robert Dudley, Earl of Leicester, possessed the fee of this manor. He, in the twenty-third year of that reign, having obtained the queen's license for that purpose, conveyed it by sale to Thomas Gawdye and James Morice and their heirs.

In the twenty-fifth of that reign the sole right to this manor was become vested in Sir Thomas Gawdye, knight, who had then license to alienate it to William Brooke,

* Read at a meeting of the Upper Norwood Athenæum on July 21, by Mr. W. F. Potter, Architect.

Lord Cobham, and his heirs. William, Lord Cobham, was twice married, first to Dorothy, daughter of George, Lord Abergavenny, by whom he had an only daughter, Frances; and, secondly, to Frances, the daughter of Sir John Newton, knight, by whom he had three sons, Henry, William and George, and three daughters, Margaret, Frances and Elizabeth. He died April 5 anno 39 Queen Elizabeth, and was buried at Cobham, being at the time of his death Constable of Dover Castle, Warden of the Cinque Ports, Lord Chamberlain of the Queen's Household and K.G. He was succeeded by his eldest son Henry, Lord Cobham, who, being found guilty in the first year of King James I., together with his brother George and others, of conspiring to kill the king, and other acts of high treason, had judgment of death pronounced against them, upon which George, his brother, was beheaded, and both of them attainted, but the execution of the Lord Cobham and some of the others was, through the king's clemency, suspended. The manor of Gravesend coming thus to the Crown, it was afterwards granted by King James to his kinsman, Lodowick, son of the Duke of Lennox, in Scotland, whose descendant was created Duke of Richmond. But the manor of Gravesend, with Cobham Hall and the rest of the estates of Charles, Duke of Richmond, in this county were, about 1695, sold, at which time this manor came into the possession of Sir Joseph Williamson, and shortly after was possessed by the Earl of Darnley, from whom it has descended to the present Earl of Darnley, whose principal seat is Cobham Hall. Such are the extracts from Domesday and Hasted's "History of Kent," showing that Gravesend possesses a very respectable claim to antiquity. Then the question arises, How do we account for its present very "mushroom" appearance, there not being the slightest evidence of architectural antiquity from one end of the town to the other? The simple answer is that this unfortunate town has several times been destroyed by war and by fire. This town was burnt and plundered by the French and Spaniards in the reign of Richard II., to compensate which the king vested it and Milton with the sole privilege of carrying passengers by water to London, which was confirmed by Henry VIII. We have already learnt that there was a church and a hythe here in Saxon times as described in Domesday Book. The original church of Gravesend was dedicated to St. Mary, and stood in a field still called Churchfield, but being inconveniently situated for the purpose, the parishioners in 1497 obtained leave to build a chapel or oratory which afterwards became the parochial church; it was destroyed by fire in 1727, and the present church was erected in 1733, and in compliment to the king was dedicated to St. George.

Northfleet is thus described in Domesday Book:—"The Archbishop himself holds Norfluet in demesne for six sulings. It was taxed in the time of King Edward the Confessor, and now for five. The arable land is 14 carucates. In demesne there are two, and 36 villeins having ten carucates. There is a church and seven servants, and one mill of ten shillings, with one fishery, and 20 acres of meadow: wood for the pannage of 20 hogs. Its whole value in the time of Edward the Confessor, it was worth ten pounds, when he received 12 pounds, and now 27 pounds, and he pays 37 pounds and ten shillings. What Richard de Tonbridge holds in his lowy of this manor is worth 30 shillings."

The manor continued part of the possessions of the see of Canterbury till Archbishop Cranmer, in the twenty-ninth of Henry VIII., conveyed it with the rectory, parsonage and glebe, and the advowson of the vicarage to that king in exchange for other premises.

Queen Elizabeth granted it to James Guilford, after which it was assigned to Lord Watton; but it was again in the hands of the Crown at the death of Charles I. in 1649. This manor, with its appurtenances, was afterwards sold to John Brown, with whom it remained till the restoration of King Charles II. in 1660, when it again returned to the Crown, where it remained till the twenty-second year of that reign, when the quit rents of this manor, amounting to upwards of 50*l.* per annum, were purchased by the Dean and Chapter of Rochester, part of whose revenues they still continue. The manor itself, with the royalties appertaining to it, still remained in the Crown, where it continued till about the year 1758, when it was granted to William, Earl of Bessborough, at the yearly fee farm rent of 6*s.* 8*d.* He in 1760 conveyed it, together with Ingress in the parish of Swanscombe, to John Calcraft, Esq., who died possessed of it in 1772. Northfleet Church is dedicated to St. Botolph, and is a venerable and very spacious structure, and is

referred to in Domesday Book. It consists of nave, chancel, side aisles and a tower with six bells at the west end. The living is a vicarage valued in the king's books at 20*l.* (now 400*l.*), in the patronage of the Crown. In the south wall are three stone stalls, and on a slab in the pavement was a full-length figure in brass of a priest standing under a richly ornamented canopy with an imperfect Latin inscription round it. The grave beneath being opened some years ago, the body of Peter de Lucy was found encased in leather. This brass, with others, was taken up and deposited in a closet. Here is also a fine alabaster tomb to the memory of Dr. Edward Browne, physician to Charles II., and author of travels in Hungary. This church was part of the ancient possessions of the see of Canterbury, and was given, with its appurtenances, to the monks of St. Andrew, Rochester, by Archbishop Anselm in 1093.

His successor, Archbishop Ralph, confirmed this gift to them, and besides gave them an acre of his demesne land there, in a field called Gudlesfield, for the building of houses for themselves and their chaplain, and the tithes of all villeins that held land in Dune, all which were confirmed to the church of Rochester by several succeeding archbishops and by King Henry II. Notwithstanding these several confirmations of the gift of the church of Northfleet to the priory of Rochester, it seems they had to struggle hard to maintain their right to it and for that purpose appealed to the Court of Rome, whither in the year 1240 the prior and convent sent one of their brethren as their proctor to manage this business against Edmund, then Archbishop of Canterbury.

This church afterwards continued part of the possessions of the see of Canterbury till the twenty-ninth year of King Henry VIII., when Archbishop Cranmer conveyed to that king in exchange the manor and the rectory, parsonage and glebe of Northfleet, with the advowson of the vicarage of this church, since when the advowson has remained in the possession of the Crown. Northfleet Church is one of the largest in Kent; it is loftily situated in the village. In the year 1863 there was a complete and perfect restoration of the chancel, which is upwards of 50 feet in length and is believed to date from the early part of the fourteenth century, when Peter de Lucy was vicar, who died in 1370.

Dr. Thorpe and other antiquaries have supposed Swanscombe to have been the Vagniacæ of the Romans. The ancient Watling Street, or Claudian Way, commenced by the Emperor Claudius and completed in the reign of Vitellius, the ninth Roman emperor, and from whom it takes its name, Vitellina Strata, or Watling Street, passes through Swanscombe Park Wood. This wood is well-known: here was a cavern called "Clabberknapper's Hole" in its northern extremity, and is a fine British oppidum; on the south side is the track of the old Watling Street, and there is also in the wood the remains of an extensive British encampment. Some years ago there was a stone dug up at Southfleet, near here, which proved to be a Roman milliare or milestone; it lay on its side about a foot below the surface of the ground in Watling Street, and was about 2 feet 6 inches long, and on one side it was deeply cut with the letter X, the Roman numeral for ten, this spot being about ten Italian miles from the Medway at Rochester.

The chief historical event connected with Swanscombe was the landing of King Sweyn near the place; he landed at Greenhithe, formerly part of this parish, and marched from here and encamped at Swanscombe, or Sweyn's Camp, written in Domesday Book Swine's Camp. He was proclaimed first Danish king of England in 1013, but he died the following year, and was succeeded by his son Canute.

The next conqueror of England, William the Norman, after the Battle of Hastings, was met by the Kentish men at Swanscombe, headed by Archbishop Stigand, and Egelsine, Abbot of St. Augustine, each man having a bough of a tree in his hand, so that the whole multitude seemed a moving forest, when, throwing down their boughs at the sound of a trumpet, they appeared with their arms prepared for battle. This somewhat alarmed William, but on being told by the archbishop and abbot that the people of Kent were come to assure him of the submission of the county, and withal to demand the confirmation of their ancient laws and privileges, he thereupon received them very graciously, and not so willingly as wisely granted their requests, which include the ancient laws of gavelkind. This account is found in a manuscript history of St. Augustine's, Canterbury, drawn up by Thomas Sprot.

Swanscombe Church, dedicated to St. Peter and St. Paul, is described in Parker's "Glossary of Architecture" as the

last of the Saxon churches that is still used for worship. There are older ruins, such as the Reculvers, which contain Roman work, and the Saxon church ruins in the Roman Pharos at Dover, but this Swanscombe Church, which was originally constructed by our Saxon forefathers, and has been twice struck by lightning and met with many vicissitudes, is still used for Divine service. Parker, in his "Glossary," says that buildings where bricks are found "are evidently constructed with the wrecks of Roman work, as in the churches of Brixworth in Northamptonshire, Darenth in Kent and the ruined church in Dover Castle." The quantity of Saxon brickwork found in Swanscombe Church no doubt justified Dr. Thorpe in his supposition that this town was the Vaginacæ of the Romans, the site of which has not yet come to light. Swanscombe Church was struck by lightning on Whit Tuesday in 1802. It was reopened by the Bishop of Rochester June 23, 1903, after it was struck by a thunderbolt, August 14, 1902, or about a century after its first attack by lightning. The Saxon window of Roman bricks in the tower fortunately escaped. A very graphic account of the destruction and damage done to this church in 1902 appeared in the *Daily Telegraph* at that time, together with a short history of the structure; all this will be found reproduced in *The Architect* in August 1902. When last struck by lightning the shingled octagon spire which surmounted the square tower with its eighteenth-century bells disappeared, and the precious Norman font of solid chalk stone was shattered. This has been pieced and restored as we have seen. With difficulty the church registers, dating back to 1549, were rescued in a sadly battered condition. This church was restored in 1874 by Mr. J. Bignell, architect, and again restored by him. There is a portion of a pre-Reformation altar inserted in the present Communion table. Of the monuments in the church the principal are those to members of the Weldon family, including Sir Ralph Weldon, "Chiefe Clarke of the Kitchin to Elizabeth, and afterwards Clarke Comptroler to King James, and dyed Cla. of the Grencloth on the 12th of November, in the yeare 1609." Sir Ralph's grandfather served King Henry VII., and was Master of the Household to King Henry VIII. The epitaph is as follows:—

To the Memory of Edward Weldon.
Let this suffice for those who hereby passe
To signifye, howe, when and who he was,
And for his life, his charge and honest fame,
He hath Well-don, and so made good his name.

He was father to Anthony, the author of "Memoirs of the Court of James I." and grandfather of the above Sir Ralph Weldon.

THE STORY OF A NORMAN FONT.

MUCH excitement is stated to have been aroused in North Notts and Lincolnshire by the assertion that the font in the old parish church of Austerfield, North Lincolnshire, the home of the Pilgrim Fathers, at which the leader of the little band, William Bradford, was baptized, is nothing more than a farmer's stone cattle trough. Every summer dozens of Americans visit the parish of Austerfield, and one of the chief objects is naturally the parish church wherein the Pilgrim Fathers worshipped, while the font has always been pointed out as the one from which the water was taken for Bradford's baptism. With a view to obtaining the facts a Press representative, says the *Birmingham Daily Post*, has paid a visit to the district and gathered many interesting details. He learned that about fifty years ago the then sexton, a man named Milner, was ordered to remove a quantity of rubbish and to sell what he could. This he duly carried into effect, and among the "rubbish" removed was the historic Norman font, which he sold to a local farmer named John Jackson. After a time the font passed from Jackson to his son William, who was the tenant of the New Park farm, Austerfield, and he had it placed in his garden as an ornament. In 1895 the younger Jackson ceased to be the occupier of the farm mentioned, and the font, along with other fixtures, passed to the new tenant, Mr. W. E. Fielding. In the auctioneers' inventory award, dated April 15, 1895, it is described thus, "Garden.—Stone baptismal font, formerly in Austerfield parish church." Mr. Fielding presented the relic to his mother, who was born in Austerfield, and she in turn handed the font over to the trustees of the Primitive Methodist chapel at Lound, a small village near Retford, where it now remains. It is alleged that when the then incumbent of Austerfield became aware that the font had been removed he sent for Sexton Milner and explained the gravity

of the situation. Milner, in order to avoid further trouble, consented to present the church with a stone trough which he had at his farmstead. This he did, and it is the substituted trough, so it is stated, that has been pointed out to the American visitors as the identical font at which Bradford was baptized. During the past few weeks Austerfield churchmen have endeavoured to persuade the Lound Primitive Methodist chapel trustees to give up possession of the font, which they consider rightly belongs to Austerfield, but without success. The story narrated above is corroborated by the circuit trustees at Retford, Messrs. Charles Taylor and John Peatfield.

THE COVENTRY GRAMMAR SCHOOL.

AN appeal has been issued for funds to restore and enlarge the building in Bishop Street, Coventry, known as the old Grammar School, for as such it was used for about three centuries. A report on the state of the building has been made by Mr. W. Weir on behalf of the Society for the Protection of Ancient Buildings. He describes the school as of extreme interest, and built in the fourteenth century, in connection with a religious house, and is still called St. John's Hospital. About seventy years ago the building was reduced at the west end, when Bishop Street was widened. The old fourteenth-century window of five lights was evidently refixed, but otherwise the west front was modernised. There are two three-light fourteenth-century windows at the east end of the south wall in fair condition. Mr. Weir indicates the repairs which are necessary to the building, but says the condition of the roof appears to be thoroughly sound. It is proposed to add new classrooms to the north and east of the existing building. The classroom at the east end, it is proposed, should have a doorway leading into the assembly-room formed through the wall under the centre of the east window; but, says Mr. Weir, there is not sufficient height under the window to allow of a strong enough lintel being formed to support the window, and he feels sure that any such attempt will end in serious damage to the window sooner or later. The entrance could be arranged through the proposed classroom on the north side. The assembly-room is surrounded with fine old fourteenth-century miserere seats, which would require to be rearranged to allow of an entrance being formed from the new classrooms, unless it could be arranged to use the old doorway near the centre of the north side. There is supposed to be a crypt under a portion of the old building. In conclusion, Mr. Weir states that a scheme has been prepared for the treatment of the proposed new classrooms, which it would be well for the Society for the Protection of Ancient Buildings to see and advise upon.

DUST ON ROADS.

IN a letter to the *Times* General Brymer Schreiber writes:—"On the 20th inst. I had occasion to pass three or four hours in Woodbridge, Suffolk—the town is on the main road from London to Yarmouth—and I gathered from questions asked that about fifty to sixty motor-cars, besides the ordinary traffic of a quiet agricultural district, pass along the 'Thoroughfare,' about one mile in length, daily. I was struck by the extraordinary dryness of the streets and at the same time the utter absence of dust when motor-cars passed. I asked for information from various tradesmen and others living in the Thoroughfare as to how this happy state of affairs was brought about. They all told the same tale, viz. that this year their lives were bearable—they could open their doors and windows and enjoy the summer air in place of being, as quite recently, smothered with dust if they tried to take such liberties. To find the exact why and wherefore of this most remarkably pleasant change I had to go to the office of the clerk to the sanitary Council. I there learnt that owing to certain information given in some paper devoted to these subjects the Council had decided to give a trial to using a solution of chloride of calcium for watering the streets, which has so far been attended with complete success.

"I was in Woodbridge on the 20th inst., and the clerk to the Council assured me that the streets had not been thoroughly drenched with the solution since July 28. They had been watered lightly once daily early in the morning. They were in perfect condition, and not a particle of dust flying when I inspected them.

"Chloride of calcium can be purchased at 30s. per ton at the works at Northwich, and the strength of the solution is 1 cwt. to 100 gallons of water for first heavy watering—half-strength afterwards."

NOTES AND COMMENTS.

DISUNION in Ireland has been exhibited under so many forms during more than seven centuries, we presume it is unavoidable, and may arise from conditions of climate or race which have yet to be investigated. It will therefore cause no surprise either in or out of Ireland when it is known that the Ulster Society of Architects has ceased to be affiliated to the Royal Institute of Architects of Ireland. As no architectural society is supposed to be able to stand alone, application is to be made to the Royal Institute of British Architects to take the place of the Dublin Institute. As the principle, *Divide et impera*, has always been acted upon in the relations between England and Ireland, we expect the Ulster Society will be welcome in Conduit Street. The ostensible cause is some alteration in the by-laws relating to conditions of contract. But Irishmen can find quarrel in a straw if a more important incentive is wanting. Belfast, no doubt, is a thriving city which is envious of the dignity attained by Dublin as a capital. All the inhabitants believe in their importance, and we imagine there would be no division if the older Society agreed to become affiliated to the Ulster Society, although very much its junior. The Irish Institute has not been lucky of late, for the Master Builders' Association have repudiated its conditions of contract, which required about six years to prepare.

It is sometimes recommended that hospital buildings should always be of a temporary character in order that they may be totally destroyed by fire after a few years' use. That might be an efficacious mode of dealing with disease germs. From the report of the medical superintendent of the Bangour Asylum to the Edinburgh District Lunacy Board it appears that five villa buildings of wood and iron were used by officers and patients during nineteen months. The plans were well thought out and their arrangements convenient and easily workable. After a residence in one of them for a year and a half Dr. KEAY testifies that they are comfortable and healthy. But owing to the nature of their construction they are easily damaged, and he fears that their upkeep in plaster and paint will be excessive. Since the villas were occupied, each has had a verandah erected on the side facing south at a cost of 475*l.* for the five, and these verandahs have been found most useful. Besides the villas, buildings to accommodate 754 patients are now completed or are in course of erection.

ILLUSTRATIONS.

CATHEDRAL SERIES.—ST. DAVIDS: THE CHOIR, EASTWARDS.

COMPETITION DESIGN FOR THE PEACE PALACE AT THE HAGUE.

THIS design, which is an example of commodious arrangement, was submitted in the recent competition by Mr. J. HATCHARD SMITH, F.R.I.B.A. The principal entrance is in the centre of the façade under a lofty portico and through bronze gates into a vestibule, through which the great hall is approached with the grand staircase facing the entrance. The large court of justice and the small court of justice are entered direct from the great hall. The other rooms, the council-rooms, waiting-rooms, lavatories and wardrobes are all *en suite* with the judge's room, approached by large and well-lighted corridors. A special entrance is arranged from the park for the use of the judge, counsel, &c. This entrance could also be used as office entrance when the principal entrance was not required. The Chancery room, with safe and book-lift, adjoins the staircase communicating with the first floor. The buffet is placed conveniently at the end of the great hall.

The first floor is approached by the grand staircase leading to the ante-room of the permanent court of arbitration, with a room for the president, and lavatory, a room for the general secretary, with waiting-room and lavatory, two secretaries' rooms, two rooms for clerks, four study rooms and two spare rooms. These rooms are all *en suite*, and form with the ground floor a suite of magnificent reception-rooms. Large and well-lighted corridors communicate with the gallery at the side of the great hall and with the gallery of the large court of justice. Large rooms are arranged for archives, messengers, wardrobes, lavatories, &c.

The basement is approached by a staircase from the great hall and also from the vestibule, and contains a room for stenographers and spare rooms approached by well-lighted corridors.

The caretaker's rooms have direct access to the park and communication with the different floors by means of a service staircase. There are four rooms, with kitchen, &c. The place for the calorifers with fuel store is placed centrally underneath part of the great hall, and is entered from the caretaker's corridor. There are also wardrobes, lavatories, servants' rooms, waiting-rooms and store-rooms.

The library is arranged to form a separate part of the building. The principal entrance is at the side, from the park, and communicates by means of corridors with the great hall, and also by a staircase with the first floor. From the vestibule are entered the reading-rooms, map-room and librarian's room all *en suite*. The office for the distribution of books is placed immediately facing the entrance, and communicates directly with the library, which is well lighted from three sides, with shelves for 480,000 books in five floors. The ceiling of each floor is composed of glass. The spiral staircase and the lift for books communicate with the several storeys. The upper floor contains a room for the board of directors of the Carnegie Foundation, with a waiting-room, a Chancery room, spare rooms, messenger rooms, wardrobes, lavatories, &c. The basement contains the caretaker's apartments, consisting of four rooms and kitchen, having entrance direct from the park, and communicating with the other floors by means of a service staircase. There are also rooms for packing and unpacking, bookbinders' workshop and spare rooms.

It was intended to have the exterior faced with selected stone. The facing of the light areas would be of glazed brick; the great hall and vestibule to be faced with stone.

The columns in the great hall and the large and small courts of justice are of grey marble, with bronze capitals and bases of black marble. The dados of the corridors, the courts and the ante-chamber are of marble. The principal staircase is marble, but all the other staircases are to be Portland stone.

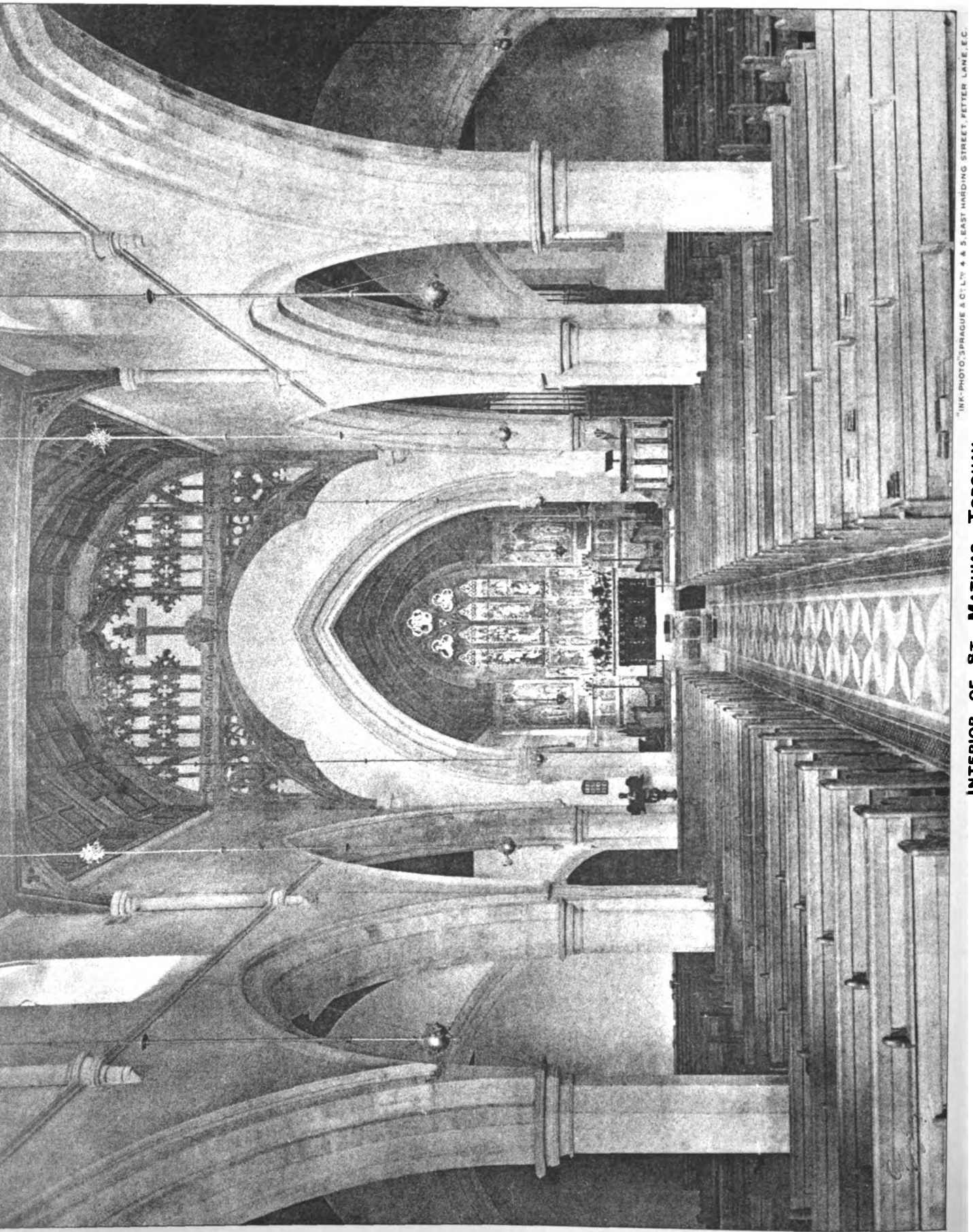
The floors of the great hall and vestibule are of marble and the corridors marble mosaic. The floors of all the other rooms are of oak parquet, except those in the basement. All the joinery to be of hard selected wood. All girders, stanchions and steelwork to be surrounded by concrete. All floors are fireproof. The doors to the principal entrances are of bronze. All the roofs are covered with cement concrete and asphalt. The ceilings of all the rooms, except in the basement, are of fibrous plaster.

The problem offered was difficult, as only sketches were sought. In this case the design could become well adapted for the contemplated use.

INTERIOR OF ST. MATHIAS, TORQUAY.

CAPITAL AND COUNTIES BANK, GRAVESEND.

NEW OFFICES FOR THE HEARTS OF OAK BENEFIT SOCIETY, EUSTON ROAD, N.W.—COMMITTEE-ROOM—PUBLIC OFFICES.



INTERIOR OF ST. MATHIAS, TORQUAY.
SHOWING ROOD SCREEN ERECTED IN MEMORY OF THE LATE JOHN SNELGROVE, ESQ.

Messrs. O. F. HAYWARD & HAYWARD & MAYNARD, Joint Architects.

"N.K. PHOTO, SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, PETER LANE, E.C.



PHOTOGRAPHED BY BEDFORD LEMERE & CO. 117, STRAND, W.C.

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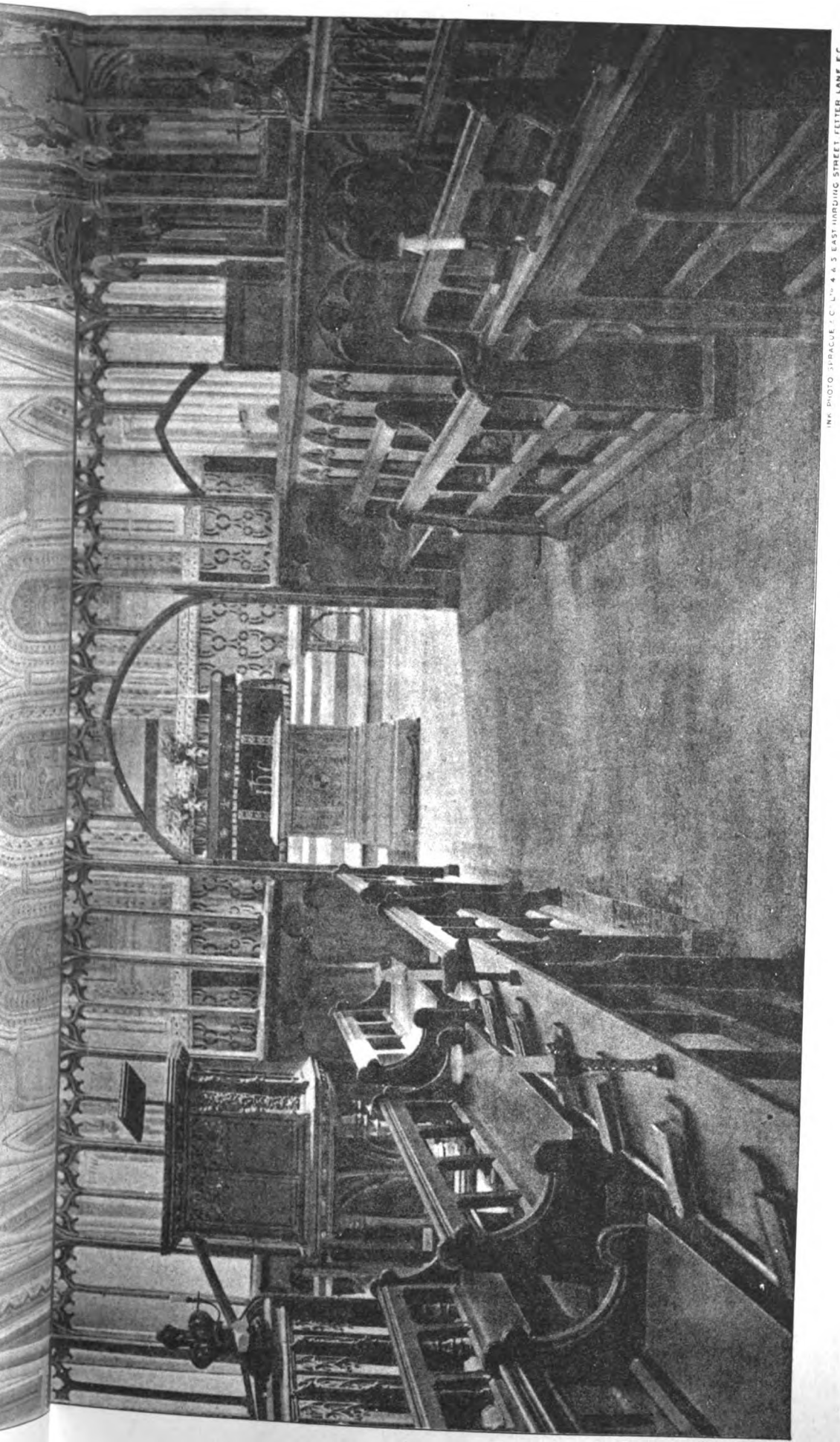
CAPITAL AND COUNTIES BANK, GRAVESEND.
GEORGE E. CLAY, Architect.





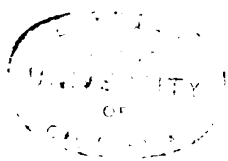
The Architect. Aug. 31st 1906.

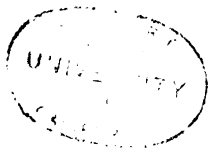




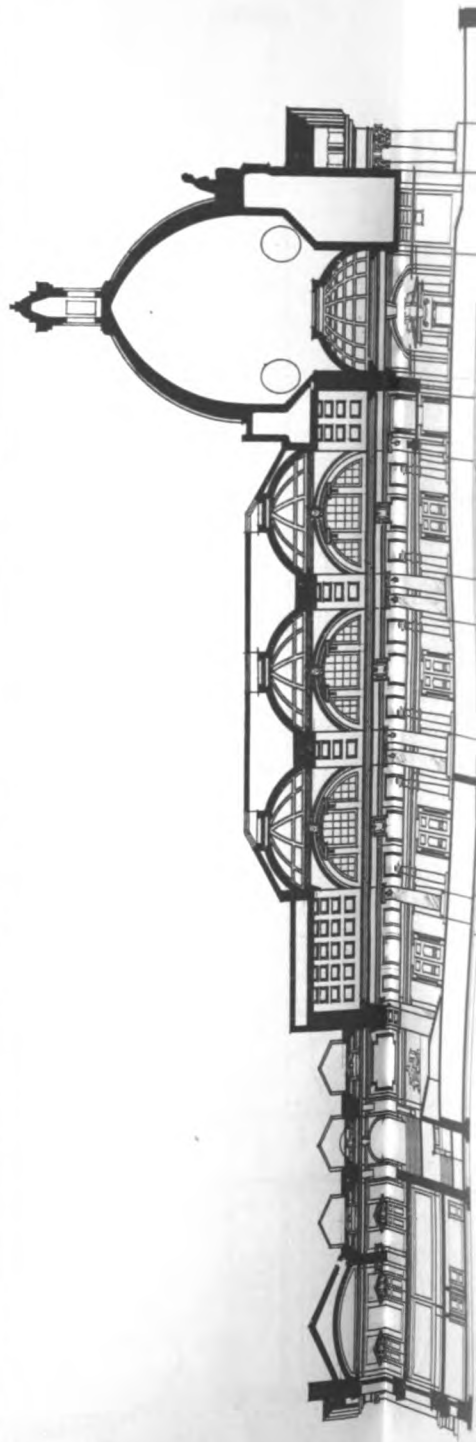
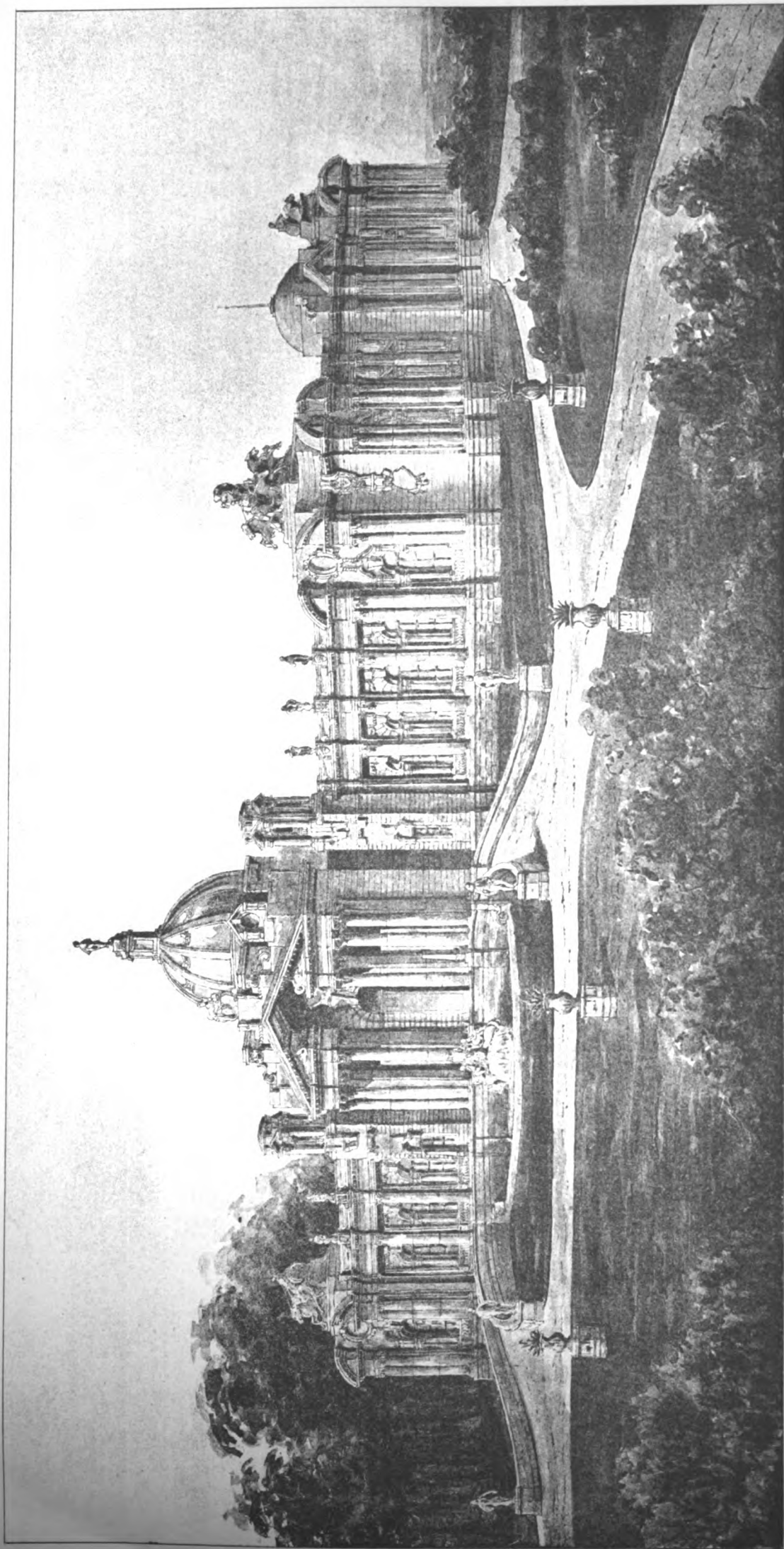
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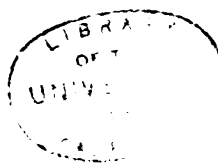
CATHEDRAL SERIES, No. 575.—ST. DAVID'S: THE CHOIR, EASTWARDS.

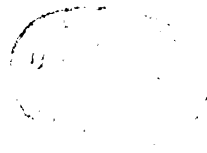


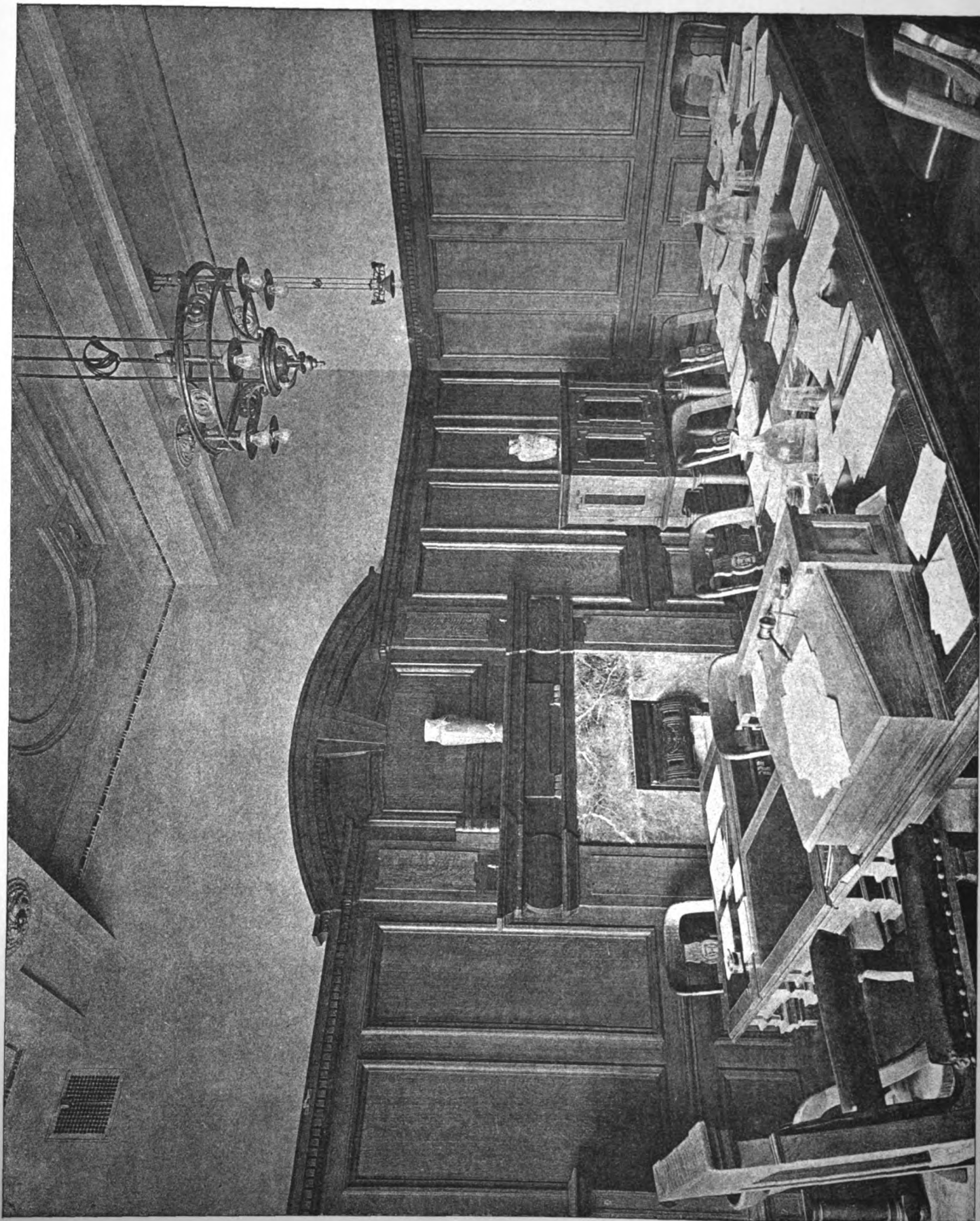


The Architect, Aug. 31st 1906.









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NEW OFFICES FOR THE HEARTS OF OAK BENEFIT SOCIETY, EUSTON ROAD, N.W.:
COMMITTEE ROOM.

Messrs. ESSEX, NICOL & GOODMAN, Architects.

1/4" PHOTO. SPRACUE & CO. LTD. 4 & 5 EAST HARDING STREET FETTER LANE, E.C.

The Architect, Aug. 31st 1906.

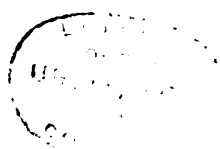


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NEW OFFICES FOR THE HEARTS OF OAK BENEFIT SOCIETY, EUSTON ROAD, N.W.:
PUBLIC OFFICES.

Messrs. ESSEX, NICOL & GOODMAN, Architects.



ST. DAVIDS CATHEDRAL.*

(Continued from page 135.)

THE choir itself is now the only portion of the building east of the tower retained as part of the church, and, with a small exception, the only part which retains its roof. The aisles of the choir, like the chapels beyond it, are nearly ruinous, being blocked off from the choir, and roofless; their large windows also are completely filled up with masonry. Nevertheless, their regular ranges of buttresses and pinnacles continued uniformly along the choir aisles and eastern chapels, notwithstanding many of the pinnacles have been broken off, still suggest the notion of no inconsiderable architectural display. The arrangement here has a great advantage over the similar one in the nave, on account of the much smaller width of the bays. Externally, therefore, we discern but little trace of the original choir, except in the tall clerestory, which though no great work of art externally, has a very fine effect, rising as it does among ruins. Here when the roof was lowered the walls were considerably raised and embattled without disturbing the four plain lancets of the clerestory, so that the large space above them has a singular appearance. The corbel table marking the original spring of the roof still remains, and the weather moulding may be traced against the east wall of the tower, with its apex rising somewhat higher than those of the nave and transepts, so that the excess of height in the choir, which is now very conspicuous, must have been designed in a smaller degree from the time when the present clerestory was built. It may probably have been occasioned by the rise of the ground towards the east. The design of the east end may be tolerably well made out, as it stood before the addition of the eastern chapels. The angles, both of the choir and its aisles, were flanked by square turrets, with angle shafts similar to those attached to the transepts, but of richer design. Over the triplet, which still remains, was an Early English composition, which from the small traces left appears to have consisted of a quintriple of windows, with a niche on each side forming a portion of the same design, and another niche on each side higher up. Through this has been cut a large Perpendicular window of seven lights, subarcuated with a common complement; this forms the present east window of the clerestory. Portions of the turrets may be discerned at all the angles embedded in the later walls, but in the south aisle a Decorated buttress with a rich pinnacle has been substituted externally; the northern turret remains, with a plainer pinnacle placed upon it.

The internal view of the choir is certainly one of the most attractive features of the church, and though, as we shall see, it has undergone more alterations than might at first sight be imagined, its general effect is decidedly harmonious. There is no lack of ornament, but the simplicity of composition forms a decided contrast to the effect produced by the over-complicated design of the nave, and is indeed a positive relief to the eye after contemplating the latter. There are four bays of extremely simple yet beautiful elevation; the piers, massive columns alternately round and octagonal with tall clustered shafts attached, support pointed arches with mouldings of much the same character, though not the identical section, with those in the nave. The transitional vaulting shafts terminate a little under the string above the arcade, and support much smaller Decorated ones with rich capitals; that is, where they have been carved, for some are left in the block. There is no triforium and the clerestory consists simply of the lancets visible without, widely splayed and with a light form of the chevron moulding on their jambs. Nothing can well be simpler than this composition, yet it is wonderfully effective; the only important fault is that the piers are decidedly too massive for the mouldings of the arches, so that neither of the ideas which they respectively suggest is well carried out. There is also a degree of awkwardness in the way in which the vaulting shafts are attached, producing a certain amount of interpenetration; in both these respects the arrangements of the nave are decidedly preferable. The east end is of two stages; the lower one consists of an exceedingly rich triplet, exhibiting Norman and Early English detail more palpably intermingled than any other portion of the church, there being a profusion of rich Romanesque mouldings, while the shafts, which are banded several times, have both the round and the square abacus. But we may remark that the round was evidently that

which the architect employed when there was no special reason for the square, as the former occurs in the two central shafts which stand free, the latter only in the responds, where it is the continuation of a string, being just the position where the square form was usually continued latest. The capitals, too, share the diversity, those under the square abacus being of the cushion form, while those under the round are decidedly Early English. This fine window is now blocked on account of the addition of the eastern chapels. Below this is a very rich string, or rather band, consisting of a large embattled moulding resting on a series of intersecting semicircular arches. The wall below this is rubble, above it ashlar, which, together with the spandrels of the arches, has been recently scraped, greatly to the improvement of the effect, as bringing out the fine hue of the stone and revealing some arrangements of stones of different colours. In the upper stage the Early English jambs still remain nearly perfect, and the mouldings of the original composition appear to have been worked up again into the rear arch of the large Perpendicular window which has usurped its place. There are here some good capitals, mostly pure Early English, though one, an inner one to the window, retains some Romanesque tinge. A passage runs along this window, approached by a staircase in the north-east angle of the choir, and is continued partially along the south side of the clerestory. Yet the string below it has been cut through apparently without any necessity; it terminates at one end in foliage, at the other in a monstrous figure.

The chapels east of the choir are remarkably extensive and complicated for a church of the moderate size of St. Davids, and no part of the building seems more constantly to have occupied the attention of the prelates who were successively benefactors to the cathedral. Their plan may be loosely described as consisting of a central portion continued from the main body of the church, with aisles continued from those of the choir, not extending to the east end. But it must not be supposed that these aisles are divided from the central portion by the same regular and continuous arcades which we have seen in the nave and choir, nor yet that the central portion itself forms one continuous architectural range. The whole is one vast mass of patchwork, the result of successive changes following fast upon one another, and exhibiting even less regard than usual to the conceptions and intentions of those who had preceded in the work.

Immediately to the east of the choir, but stretching a little further to the north so as to diminish somewhat from the breadth of the north aisle, is Bishop Vaughan's or the Trinity Chapel. This structure, together with the chapel immediately to the east of it, retains its roofs both internal and external, while the rest of the chapels remain completely uncovered. They may be considered as forming one division of the church, being of one height and width, and in their present form of one date. They are of the same height with the lower range of the east end of the choir, whose rich triplet they block while the upper window stands free above them. Bishop Vaughan's Chapel is an extremely fine specimen of Late Perpendicular, and that of the best kind, and is the more conspicuous as being the only portion of the cathedral of any merit or importance belonging to that style. It exhibits the same chasteness of design and delicacy of execution which distinguishes King's College Chapel, opposed alike to the meagreness of Bath Abbey and the corrupt forms and overdone ornament of Henry VII.'s Chapel. The arches, one on each side, which divide the chapel from the aisles, command admiration for the justness of their proportions and the purity of their detail, being well moulded, and having shafts with good capitals and bases; the stone screens also with which they are filled up increase the effect of elegant richness. It is much to be regretted that they should remain exposed to the effect of the weather, even comparatively sheltered as they are by the main body of the cathedral. The roof is of excellent fan tracery, consisting of two bays running north and south, with a small portion of panelled barrel vaulting at each end. The roof rises from shafts, of which the central ones at each end are corbelled off. The eastern one would have interfered with the altar of the chapel, the western with the doorway which then opened behind the high altar, and whose arch may still be traced. The whole interior of the chapel is lined with ashlar, except where the eastern triplet of the choir is blocked, some traces of which still peep through. The clerestory windows on each side are the least satisfactory part of the structure, on account of the straight lines employed, especially when

* From the *History and Antiquities of St. Davids*. Architectural Description of the Cathedral, by W. S. Jones, M.A., and E. A. Freeman, M.A.

viewed from the outside, where their peculiar form and proportions are not explained or excused by the line of vaulting with which they coincide internally.

The narrow space which continues Bishop Vaughan's Chapel to the east is separated from the aisles by a light and elegant couplet of Early English arches on each side. Though not dissimilar in general effect, they present several smaller diversities, and we shall see that they are most probably not exactly of the same date. The section of the piers, if we may apply that name to such delicate clusters, is not the same on each side. The latter has also in its capital a delicate form of the nail-head moulding, an ornament which occurs nowhere else in the church. Also the northern arch has, internally that is, towards the central space, a round segmental rear arch over the couplet, while the southern has an arch of construction going through the wall. Two low segmental arches divide this space from the lady chapel to east, which is not a straight continuation of it, but occupies only its southern portion, leaving a blank wall to the north. This part retains its roof, a rather plain vault of stone of Perpendicular date, contemporary with which is a poor clerestory window on each side, with a depressed arch and mere intersecting lines for tracery.

The greater part of the lady chapel is essentially Early Decorated or rather transition from Early English to that style, and the strings, shafts, &c., of the original fabric remain in many parts. But completely without and to a great extent within it has assumed the character of a Perpendicular building, so far as the dilapidations of later times have allowed it to retain any character at all. Large Perpendicular windows, those in the eastern bay wider than in the west, have been inserted in the walls, and these again have since been completely blocked. A Perpendicular vault has been added, which has since fallen to the ground, and the pier between the chapel and the space to the west of it has been grievously though, as it would seem, necessarily disfigured by a huge prop. The chapel is terminated at the east by a flat end between small semi-hexagonal turrets, ending, as well as the buttresses, in heavy pinnacles, and it has had an open parapet round it similar to that on the tower, but of this finish only very small traces remain.

The chapel aisles, as they may be called, on each side of the central space are a continuation of those of the choir, and stretch a little east of the entrance to the lady chapel. But, as it will be remembered that the latter does not occupy the whole width of the central space, a small part of the north aisle stands free with a void space between it and the lady chapel. This produces a most curious effect outside, the more so that the lean-to roof of the aisle has so far positively nothing to lean against. Here also the most noticeable features are the mutilated fragments by which we have to trace out the history of the fabric. They may generally be described as Early English with Decorated alterations; but while in the north aisle the changes of that date extended only to the ordinary patchwork of heightening walls, inserting windows and making preparations for vaulting, in the south the whole southern and eastern walls were completely rebuilt. The result is that, even in its ruinous state, we have the remains of a building of very great beauty and exhibiting the Decorated style to a greater advantage than it appears in any other part of the church. The roof is indeed gone, the windows blocked, the whole disfigured and confused by the great arched props which have been found necessary to support the tottering walls of the central space; still we have the well-moulded strings, the delicate octagonal and clustered vaulting shafts, and above all, their beautiful flowered capitals. On the north side we obtain through the blocking a slight glimpse of the tracery of the windows. The side windows have evidently intersecting lines, like the single original one in the nave aisles; but, from the superior elegance of design exhibited in this part of the church, one would rather expect them to be filled up with some pattern of arch and foil tracery than to be left in the meagreness of the mere intersecting form. The east window appears to have been of that elegant form which is intermediate between Reticulated and Flamboyant.

There now only remains to be described the extraordinary building attached to the east face of the north transept. The general effect of this has been already alluded to, and, considered as part of the arrangements of the cathedral, it is fully as unique as is its appearance in an external view. It is continued from the north face of the transept, which it slightly exceeds in point of elevation. The external work is Decorated; the east end is flanked by two flat buttresses of very singular character, which are terminated by rich pinnacles, now mutilated.

Equally singular is the buttress dividing its two bays on the north side; flat at the bottom, after its first stage its projection becomes angular, and so runs up the whole height of the wall, becoming much smaller in its upper portion; its pinnacle is quite destroyed. At the junction with the transept a staircase is attached in a singular and almost indescribable way to the upper portion of the broad pilaster at the north-east corner of the transept. The windows of this part of the church have been peculiarly unfortunate, every one having been either blocked or modernised. The latter has been the case with all in the lowest range—one to the east and two to the north, as well as with the east window of the second stage; but signs of their original form, not very different in size or shape from their degenerate substitutes, may be pretty well traced out, and in that in the second range the internal jamb remains identical with those of the windows in the south chapel aisle. The east end has a very strange appearance, having three windows over each other, and a niche, not unlike a window, above all; that in the third stage is a blocked spherical triangle. To the north all the windows in the two upper stages are blocked, namely, in the second, one of two lights in the eastern bay, and in the third a short window of one light cinquefoiled in each bay. The lower part of the wall is of ashlar, the occurrence of which is so rare in the exterior of this church; the upper is of rubble, excepting the buttresses.

Within, the lower stage, originally St. Thomas's Chapel, is now applied to the threefold, but not inconsistent, uses of a chapter-house, a library and a vestry. It is remarkable as being the only part of the church, except the porch, which possesses, or can have ever possessed, a Decorated vault, though nearly the whole of the aisles and chapels were clearly designed for vaulting at that very period. The vault rises from octagonal shafts with round flowered capitals; the bosses are richly carved; the two principal keystones contain one a head of Our Lord, the other a figure of the Saviour surrounded by angels with censers. There is also an exceedingly rich Early English double piscina. This chapel was originally approached from the north transept, through the most northern of the three arches occupying its eastern side, a space being left between its south wall and the north wall of the choir aisle. This is now filled up by a modern external staircase leading to the second stage, the original ascent from the interior of the church having its course thus far diverted, though the upper part still remains. The other staircase, adjoining the transept, is disused. This storey was the original chapter-house, and afterwards the grammar school, but it is remarkably plain, and contains nothing worth notice except a Decorated fireplace in the west wall, which has a small Early English bracket capital, one floriated, the other with the nail-head worked in on each side, probably to carry lights. This position of a chapter-house in an upper stage of a building would seem to be very rare if not unique, and even its shape—that of a mere oblong room—though common enough earlier and later, is singular, considering that its erection belongs to the very time when so many beautiful polygonal chapter-houses were built in different parts of the kingdom. The roof at present is a modern coved ceiling, which cuts into the triangular window in the third stage, so that now there is only one stage (besides the space between the inner and outer roofs) above the lower chapel. But this triangular window and the two lancets to the north originally lighted a distinct stage of the building, the upper window of all merely airing the roof. Both the old chapter-house and the room over it can in this case hardly fail to have had flat ceilings. The latter was used as the treasury.

The principal dimensions of the church are as follows:—

	Feet	Inches.
Length of nave	127	4
Breadth of ditto to centre of arcades	33	0
" aisles to ditto	18	3
Length of transepts	44	6
Breadth of ditto	27	3
Square of lantern, interior	27	0
" exterior	40 feet by	39 0
Length of choir	53	6
Breadth of ditto	30	3
" north choir aisle	15	0
" south choir aisle	16	0
Total external length	306	0
Height of nave within	45	8
" lantern within	67	3
" whole tower externally from level of porch door	116	0

Two kinds of stone were in use for the ashlar and en

riched work throughout the fabric. One is a fine sandstone of a rather slaty texture, quarried at Caerfai, of a purple or violet colour varying to deep red. Of this the whole of the ashlar, mouldings and fine work, prior to the Perpendicular period, consists with a very few exceptions. These exceptions are the eastern arches of the south, and probably of the north transept, a portion of the east wall of the presbytery, and the lower arcade of the lantern, which are built of oolite alternately with the purple sandstone, and the southern couplet of the entrance to the lady chapel, consisting wholly of oolite, with a few ashlar stones and ornaments of the same material in the lady chapel and in the north chapel aisle. Of the oolite, probably brought from Gloucestershire or Somersetshire, and varying considerably in texture, nearly the whole of the enriched Perpendicular work consists: the most remarkable exception is the upper east window of the choir, the tracery of which is wholly of Caerfai stone.

SOMERSET ARCHÆOLOGICAL SOCIETY.

THE fifty-eighth annual meeting of the Somerset Archæological and Natural History Society was held this year at Minehead.

Mr. G. Fownes Luttrell, the president, in his address said they had done him a great honour in electing him their president for the year. It was the second time they had conferred the honour upon him, and he only wished his knowledge of archæology and archæological subjects enabled him to be worthy of it. The feeling of reverence for antiquarian subjects created and fostered had been, he was glad to say, apparent in the neighbourhood of Minehead. There had been no wanton destruction but an eminent wish for preservation. There were several instances of that in the neighbourhood.

Mr. Henry Hobhouse said it was no less than seventeen years ago that they met at Minehead under the same presidency. He thought they must all agree that during those seventeen years steady progress had been made in that county, as he believed in other counties in England, towards interesting people in the past history of the county. Wherever they looked they saw it. If they visited the museum at Taunton, and remembered what condition it was in seventeen years ago, they would see a vast improvement. The collections, he believed, had been largely added to, and they had all been excellently arranged under the superintendence of Mr. Gray. In his (Mr. Hobhouse's) own part of the county a visit to the small museum at Glastonbury must interest everybody, for therein they saw the oldest relics in the country of an almost prehistoric civilisation. He remembered some years ago, when he was President of that Society, presenting a scheme for the preparation of a county history. Of course, that scheme had not been completely carried out, but there had been a large mass of material prepared which, he was sure, would be of great assistance to his friend, Mr. Bates, in his herculean task, one part of which he was glad to say had been completed.

In the afternoon, says the *Somerset County Gazette*, the members visited St. Michael's Church, Minehead, which was described by the Rev. Prebendary Hancock. The church is mostly of fourteenth-century work, the tower 87 feet high being later, dating from about 1500. The latter contains eight bells, and some curious sculptures high up on its walls, that on the east depicting St. Michael the Archangel weighing souls, Satan at one end of the scales fraudulently pressing down the beam, while the Virgin Mary at the other frustrates his efforts. The church contains nave, north aisle and chantry chapel. The principal objects of interest are the richly-carved oak rood-screen, the staircase and turret leading to the rood-loft, the Perpendicular windows, the Jacobean Communion table, the beautiful modern reredos, the "Jack Hammer" on the north end of the screen, once used for striking the hours on the clock; the stained-glass memorial windows, the organ, by Norman & Beard, with detached console; the tomb and effigy of an unknown priest, on north side of sanctuary: an ancient carved oak chest, with panels containing the arms of its donor, Richard Fitzjames, vicar in 1484; the glass case upon it containing a black-letter Bible, date 1639, and other books, formerly chained; a curious wooden arch leading into a chantry chapel, now the vestry, with an early piscina and credence shelf below; the hammered iron modern lectern, the ancient chandelier, the elaborately carved font, with its eight sculptured figures; the boldly-rising tower arch, 25 feet high; the clock, a gift by a late

churchwarden, and the brasses and memorial-stones in the tower and chancel. The churchyard contains the shaft and base of an old cross, a familiar sight in most Somerset churchyards, and occasionally by waysides.

Subsequently, a visit was paid to the Manor Offices, which boast considerable antiquity, some old houses near the church being also inspected.

In the evening a meeting was held in the town hall for the reading of papers and discussion. Lieut.-Colonel Bramble presided in the absence of the president.

The Rev. F. W. Weaver read a paper on "Cleeve Abbey." He dealt with the history of the abbey. He explained that there was a church at Cleeve before the abbey was founded, and this was the reason why the parish was called Old Cleeve. The abbey was founded between 1189 and 1191, and was a daughter of Revesby Abbey, in the county of Lincoln. There was formerly a chapel on the cliff by the sea, but this, and also one subsequently built, had fallen away with the cliff.

The Rev. W. H. P. Greswell spoke of the great erosion of the cliffs of West Somerset which had taken place, and remarked that the chapel of St. Mary, which stood on the cliff in ancient times, had utterly disappeared into the sea. Even in the last seventy or eighty years three lime-kilns on the cliffs had been washed away one after the other.

The Chairman stated that it was a small Cistercian order of monks who taught the people of England agriculture, and if it had not been for them we should have been very far behind in that respect. It was rather peculiar that all the Cistercian abbeys were dedicated to St. Mary.

The Rev. W. H. P. Greswell read a paper on "The Norman Conquest of Somerset." He pointed out that the conquest in Somerset began in the neighbourhood of Selwood, in the east of the county on the line of the great foss-way from Bath to Ilchester, and from Ilchester to Exeter. The great centres from which the conquest was effected were Castle Cary, Stoke Courcy Castle, with a smaller fortress at Nether Stowey, Montacute, with the fortress of Neroche, and last of all Dunster Castle. This constituted, to his mind, a sort of second quadrilateral, by means of which William the Conqueror exercised his hold over the country. He did not think that Taunton Castle was ever used as a Norman fortress at the time of the Norman Conquest, although of course it was founded many years prior by Ina, king of Wessex. Bridgwater Castle was of later date altogether. He thought that Stoke Courcy Castle had been very much underrated in this matter. It was certainly one of the great strongholds of the district in the time of Henry III., and earlier than that it was in charge of William de Falaise, who must have commended himself to the Conqueror. Montacute Castle was the centre of the earlier Norman settlement.

Mr. F. Bligh Bond gave a lecture on "Screenwork in the Churches of West Somerset," illustrated with lantern views.

On the second day the party left Minehead at 9.30 and drove to Porlock Weir—a route which enabled the excursionists to enjoy a grand view of sylvan and mountain scenery—where they alighted and, permission having been obtained, proceeded on foot through the beautiful grounds of Ashley Combe, the residence of the Earl of Lovelace, to Culbone, where the miniature church nestling amid lovely woodland surroundings was visited. So small is the edifice that the party had to enter it in knots, and a description of it was therefore given outside by Mr. Bligh Bond, of Bristol, in the absence of Mr. Chadwyck-Healey, K.C. Mr. Bond explained that the church took its name from the dedicatory Saint Culbone or Culbon. The ancient name of the place was Kitnor, derived from the Anglo-Saxon cyta, a cavern, and ore, the sea shore. The church claimed to be the smallest in England, it being 33 feet in length and 12 feet in width. The honour of being the smallest was, however, disputed. Although the church was so small it was very complete, having its nave, chancel and south porch, with chancel screen and pews, quite in the old style. The churchyard consisted of a quarter of an acre, and in it were the remains of a fourteenth-century cross, with foot at the base surmounted with an octagonal calvary. A double-light window on the north side of the chancel was thought to be Saxon, and the work looked like it. There was a very ancient font, also thought to be Saxon, but it might be Norman. The screen had something of the Devonshire type in its carving, being one of the earliest forms of screens, and originally there was a rood-loft which projected out westward. There was a little window in the north wall, which seemed to have been put

in to give light to the loft. Mr. Bond called the attention of the party to some linen panels existing on the screen and on one of the benches.

Porlock Church (of which the Rev. W. H. B. Bunting is the rector) was subsequently visited. Mr. Chadwyck-Healey, K.C., chancellor of the diocese of Bath and Wells, pointed out that the earliest building stood on the site of the present church, and was supposed to be not earlier than the twelfth century, but there was little or nothing of it left. It was suggested that the earlier church was burnt. It was restored in the Early English period, and the remains they had of it were the window in the tower, three lights at the east end and the piscina, the latter being covered by a marble memorial tablet until the restoration in 1888 and 1890, when it was discovered. During the Early English period the aisle on the south side had a lean-to roof. The aisle was added during the time the Harringtons were lords of the manor, probably about the middle of the fifteenth century, in which period the ornaments on the roof were also added. He referred to the screens which had existed in the church, pointing out that there was one which divided the parish church from the Harrington chantry founded in 1475. That chantry was contemplated by John, Lord Harrington, who went to France with the second expedition after the battle of Agincourt. The chantry was not actually founded in the church until the year mentioned, and it was not absolutely clear why the foundation was so long delayed, but it was suggested that it was delayed till after the death of Lord Harrington's widow, who died in 1471. The chantry remained until chantries were abolished in the first year of Edward VI. Lord Harrington and his wife were represented in the monument now in the church. Probably the effigies originally stood on the floor of the south aisle. They were evidently of an earlier date than the canopy over them, and they were in existence before the chantry was actually founded. Another reason why it was suggested they were earlier was that the figure of Lady Harrington, who was a daughter of the Earl of Devon, represented her as quite a young woman, as she was when her husband died. It was not known where the figures were carved, but it was suggested that they were worked by the hands of some one who carved somewhat similar effigies in Staffordshire. There was a strong resemblance, from the artistic point of view, to the effigy of Sir Hugh Luttrell in the church at Dunster, he having died in 1420. During the last restoration of the church some Purbeck marble fragments, with fifteenth-century mouldings upon them were found, and when measured they almost exactly fitted one or other of the figures. At the east end of the chancel was the base of an "Easter tomb," as it was described, and comparing it with one in Dunster Church he had every confidence that both were by the same hand. The recumbent figure in armour near the south door had given rise to much discussion. It was commonly called the Crusader, because the legs were crossed, but that was an entire misapprehension, as Crusaders could be found without that arrangement, so that the attitude of the legs being crossed was not typical of the time of the Crusaders. Who the figure represented it was difficult to say. It was commonly thought—and he (Mr. Chadwyck-Healey) believed there was foundation for it—to represent Sir Simon Roges, the last lord of the manor of Porlock of that family. Behind the chancel was a priest's vestry or small chapel, and there was a great deal of speculation as to what that little excrescence was to the church. There were many suggestions, but none knew what it was, and it was one of the many puzzles which the church afforded.

Lieutenant-Colonel Bramble put the figure near the south door down to 1280, judging from the armour. The crossed legs had nothing to do with the Crusaders. Some people thought the figure was represented as drawing the sword, but it was representing sheathing it, and his opinion was that the crossed legs was simply an attitude of rest and repose.

Mr. Chadwyck-Healey referred to the altar-tomb in the porch of the church, pointing out that originally it was on the west side of the church out of doors, but it had got neglected, and having perished very much by the weather it had been brought into the porch for preservation. There were various suggestions as to what it was. One suggestion, which he preferred to others, was that it was originally the high altar of the church, and was turned out, as so many stone altars were, at the Reformation. Another suggestion was that it was a dole table used in the church.

The party then visited Doverly Court, an ancient

dwelling-house of the fifteenth century in Porlock, which Mr. Chadwyck-Healey has had restored and devoted to parochial uses, though many of the antiquities of the place have been preserved.

Leaving Porlock the party drove to Selworthy by way of Bossington, passing *en route* the ancient West Lynch Church, and on arriving at Selworthy Church (the Rev. A. E. Buchanan being the rector) the building was described by the Rev. Prebendary F. Hancock, formerly rector of Selworthy and now of Dunster. The rev. gentleman, who has published a history of Selworthy, called attention to the number of chapels of which that church formed the centre. One of the chapels was used as a barn until twenty years ago, when it was restored as a chapel of ease, and another chapel at Tiddington was used as a shed and outhouse until about fifty years ago, when it was restored or repaired and made into a dame school. About a mile to the north-east of Selworthy Church was the shell of another chapel, and to the south-west the ruins of another chapel on the way to Cloutsham, and the question had occurred as to what was the use of those chapels, but they were no doubt used as votive chapels. The greater part of Selworthy Church was Perpendicular. A fifteenth-century door still remained at the flight of steps leading to the church. He drew attention to the font, with its curious movable covering carved in the seventeenth century, and expressed the opinion that the base was probably Norman, about 1180. He pointed out the delicate carvings in the roof of the church, and explained that having become very dilapidated they had been lately restored, the work being done by the Selworthy Carving Guild, which was carried on with the assistance of the County Council, but the carving class, he explained, was in existence before Mr. Arthur Acland brought in his Technical Education Bill. The chancel was approached by two steps, and the piscina in the chancel indicated that it had been raised one step for the making of vaults existing underneath. During the restoration of the church in 1878 a painting of the Virgin and Holy Child was discovered underneath the east window of the south aisle. The sacristy was said to be the oldest part of the church. At one time a screen ran across the church, and a portion of it still remained, and it was very beautifully carved coloured and gilded. The date of the north aisle had been put by Mr. Sedding at 1390 or thereabouts. He called attention to the carved gallery across the western end of the church, and the chamber over the south entrance converted into a canopied pew for her family by Mrs. Fortescue, the great-grandmother of the present Sir Thomas Acland. The tower of the church, only 40 feet in height, was very massive. The tower was evidently part of an earlier English church, being allowed to remain when the building of which it formed a part was taken away to give place for a larger one. The tower contained a clock chamber and a room above. Preb. Hancock directed attention to fifteenth-century glass in the transoms, to the curious bosses in the nave, all the figures being different and worthy of study, and also to coats of arms of the family of St. John. Perhaps the chancel of the church was rebuilt by one of the St. Johns. The party also had their notice drawn to an interesting monument by Chantry to the Acland family.

The Rev. E. H. Bates thanked Preb. Hancock for giving them such an interesting account of the church in which he ministered so long.

The party then proceeded through Selworthy Green, where are almshouses erected by the late Sir Thomas Acland, to the old tithe barn, where tea was partaken of.

On the way back to Minehead Bratton Court was visited, a very ancient house which has recently been restored by the owner, the Earl of Lovelace, though many ancient bits of the old house have been retained. The property is occupied by Mr. T. Lovelace, and the party were shown over the premises under the guidance of Mr. T. H. Andrew, agent for the property. There is a fine old gateway at the approach to the property, with an ancient lodge above, and this part has in no way been disturbed. The Rev. E. H. Bates made some observations regarding the house, and pointed out that it was one of the few remaining specimens of an old English manor-house. He drew attention to the buildings being built in square formation, so as to preserve the utmost security to the occupier in olden days, and pointed out the portion of the premises believed to be used as a chapel in former times. Inside the house was the original hall of the manor of Bratton, but though it had now been screened the hall once ran the whole length of the house.

There was a tradition, he added, that the room over the gateway was the study of Henry de Bracton, one time Lord Chief Justice of England.

Considerable interest was evinced in the many remaining remnants of the old manor, after which the party returned to Minehead, which was reached shortly before seven o'clock.

In the evening a *conversazione* arranged by the local committee was held in the town hall, when the members of the Society and many others were entertained. The local committee had taken immense pains to make the gathering a success, and their admirable efforts were highly appreciated.

On the third day the party first visited the hilly village of Old Cleeve, and at once proceeded to the church, where they were welcomed by the vicar (the Rev. G. Weigall), who also gave a very lucid and comprehensive sketch of the architectural character of his church. He pointed out that although the parish church was in danger of being overshadowed by its more fascinating neighbour, Cleeve Abbey, yet the history of the church was older than that of the abbey, for monasteries came and went, whilst the parish church remained. The church, in its main features, was undoubtedly fifteenth century, but there was certainly a church in existence in 1198, in the time of William de Romara. Probably a Saxon or Roman church occupied the same site, but to-day all trace had disappeared. The old cross in the churchyard was doubtless a preaching station, and may have been the spot on which the Gospel was first proclaimed in the village of Old Cleeve. The three rough stones in the south side of the church, and which were now used as gargoyles, were possibly relics of a much earlier church. There was an old chest discovered beneath the tower, and this certainly went back to the fifteenth century, or probably earlier. The hole in the lid seemed to prove that the Church was not unmindful of collections in that early day. The font was fifteenth-century work, and rather larger than the fonts usually were of that period. The embattled western tower was most graceful and imposing, whilst the roof of the nave was of the typical Somerset waggon character. The bosses were large and delicately carved. The corbels supporting the beams were carved in the form of angels holding shields. The chancel retained a hagioscope or squint. There was an interesting tomb, of the date of 1640, on the north side of the nave, but its identity was sphinx-like in its inscrutability. The pulpit was modern, as also the lych gate at the entrance of the churchyard. The flattened appearance of the capitals at the entrance to the chancel seemed to suggest that at one time there was a rood-screen, but to-day no trace of it could be pointed out with certainty. The church contained several memorial windows, the most interesting being the one at the western end, erected to the memory of William Leonard Halliday, his wife and daughter, and to Edward Vibart, his wife and four children, all of whom perished in the Cawnpore massacre in 1857. On the north wall of the church were traces of the well-known Devil's door. The chalice was dated 1683 and was worthy of inspection. Other interesting objects in the church, which is dedicated to St. Andrew, included a mechanical musical instrument for the playing of the organ in the absence of the organist. This clever contrivance seemed to be the forerunner of the modern pianola. Some interesting fossilised remains found in the parish were also kept in the church.

Lieut.-Colonel J. R. Bramble offered some interesting remarks on the tomb in the north side of the church, and said the figure was attired in the ordinary civilian dress of the fifteenth century. Such examples were hardly rare, but they were certainly scarce. The east window, with its reticulated tracery, was certainly uncommon in this part of the country.

A short drive through the considerable hamlet of Washford brought the party to Cleeve Abbey, one of the most perfect Cistercian abbeys in the country. The abbey is owned by Mr. G. F. Luttrell, of Dunster Castle, who devotes the admission money to the benefit of Dunster cottage hospital. Lieut.-Colonel J. R. Bramble, F.S.A., whose experience of the abbey extends over many years, explained the fascinating buildings in his usual charming and interesting manner. With him as guide the company in imagination were able to rebuild the tottering walls and see the abbey once more in all its ancient glory. Dealing first with the unusual but elegant gatehouse that stands to the north-west of the monastery, the learned Colonel showed how this formed the guesthouse long before the time of good country

inns. It was an exceptionally large gatehouse, having regard to the size of the abbey, which was a small one. The gatehouse, which bore evidence of much work by Wm. Dovell, the last abbot, carried the exceedingly ambiguous Latin inscription, "Porta patens esto, nulli claudaris honesto." Above a square-headed window in a large canopied niche was pointed out a finely carved crucifix, well preserved and resting on an angel corbel. Passing into the abbey proper Colonel Bramble, standing in the western alley of the cloister, traced the history of the monastic buildings to the delight of his auditors. He pointed out that Cistercian abbeys were very similar in construction, and though differing somewhat in the internal arrangement by reason of varying size, yet in external plan were always similar. Churches in Cistercian abbeys were always dedicated to St. Mary, and, in consequence, they never found lady chapels in addition to the church. As a rule the buildings were very plain, and in the early examples it was unusual to find any carving. The church, the foundations of which now only remain, was minutely described, and was shown formerly to consist of the conventual church, with short eastern limb, nave with aisles, and one or two chapels. On the east side of the cloister attention was directed to the particularly beautiful Early English dormitory in the upper stage of the building. Beneath the dormitory were arranged such buildings as the sacristy, vaulted chapter-house with its triple entrance, the day stairs, the monks' day-room or calefactory—the room with a fire. Near by was discovered the heraldic tiled floor of an earlier building, and Colonel Bramble related how, many years ago, he devoted three days to securing a correct copy of each tile. These tiles bore the heraldic design of many well-known families who had acted as benefactors to the abbey. On the south side many interesting apartments were explained, and above them much attention was devoted to the refectory, a room of much architectural beauty. The western side of the cloister included a buttress structure of two storeys, partly devoted to the use of the lay brothers. Colonel Bramble subsequently conducted the archaeologists through the many buildings which, in the dull light of the rainy day, looked all the more impressive and imposing. Lingering long and frequently at each little mound and tattered wall he pieced together the story of the abbey, and brought vividly to the mind the picture of the earnest monks living their quiet day in their peaceful Somerset home. The thoughts of the cunning builders were revealed at every turn, and it was with reluctance that the enthusiastic antiquarians quitted the entrancing pile, which time so surely is obliterating.

A visit was next made to the church of Withycombe. Mr. Bligh Bond briefly summarised its architectural virtues. He pointed out that the church was dedicated to St. Nicholas, and went on to say that he believed that the church was of very early foundation. The south doorway was Early English in character, one or two of the windows of the church were of the Decorated period, whilst there was also a good deal of Perpendicular work in the church. The present tower probably belonged to an earlier church and stood in a peculiar position against the south wall. There were two nameless tombs in the building. The church possessed a very fine screen, with particularly delicate and graceful vine enrichment. The register dated from 1669, whilst the chalice was of pre-Reformation times.

The Rev. E. H. Bates offered some interesting conjectures as to the identity of the tombs and dwelt upon some of the legends with which the parish is saturated.

Lieut.-Colonel Bramble gave it as his opinion that the tombs told clearly the tale of heart interments, which were not altogether uncommon.

Owing to lack of time Carhampton Church had to be omitted from the programme, but the party were able to catch a fleeting glance of the ancient stone building, which is in the Perpendicular style. The little village, which is crowded with interesting features, gave the now extinct title of earl and viscount to the Luttrell family.

In pouring rain the party were next driven to the delightful old-world village of Dunster. Alighting at the venerable church the excursionists were welcomed by the vicar (the Rev. Prebendary Hancock, M.A., F.S.A.), whose love of his charge has found expression in a bold chronicle of its vigorous history. The Rev. Prebendary Hancock, in the course of a clear exposition, dilated upon the history and chief points of architectural interest of the church, the chequered tale of which is demonstrated by its curious internal arrangement. He said doubtless there was a church in early English times, but they knew nothing of its

history, but between the years 1080 and 1100 Wm. de Mohun granted the advowson of the church to the monks of the abbey of Bath, the result being that a church was built. Having commented upon the more striking Norman remains in the church, the vicar went on to say the piers showed signs of fire, probably being an attempt in the restless days of Stephen to reduce the building by fire. The roof generally was of the usual Somerset waggon character, but over the south aisle it was flat and richly treated. One of the things that the Dunster folk were most proud of was the rood-screen of 14 arches. The screen, which was beautifully carved, was carried right across the nave and aisles, and this fact told of the story how the church became to be divided. Up to the fifteenth century the monks and parishioners used the same church, but owing to the unpopularity of the Benedictine order a dispute arose between the monks and people. Hugh Luttrell took the side of his tenants, and as the result of arbitration the eastern part of the church was granted to the monks, whilst the parishioners were allowed to retain the nave. The handsome screen was erected partly to mark the division, but also to form a chancel for the parish church. The tower was in the middle of the building and was of stately proportions. The original tower either fell into disrepair or the parishioners desired a more imposing one, and the result was that in the middle of the fifteenth century money was raised to provide a new tower. The work of erecting the new tower was entrusted to a John Mallice, of Stogursey. Having dwelt upon the many interesting features in the parish church, the rev. gentleman turned to the Priory church, of which the owner of Dunster Castle is the lay rector. He emphasised the most important parts of the Priory church, dealing in an interesting manner with the chantries, &c. In the monastic church were several stately monuments to the Luttrell family, including one of alabaster, with recumbent effigies to Sir Hugh Luttrell and Catherine (Beaumont), his wife, 1431. There were several memorial windows in the parish church. The vicar called attention to three very ancient chests in the church, one being probably of the thirteenth century. The party later examined the many objects of interest in the two churches, whilst a few, regardless of the rain, inspected the Priory ruins in the vicarage grounds.

The Rev. E. H. Bates briefly expressed the thanks of the Society to the Rev. Preb. Hancock for his able description of the interesting church.

On leaving the building the archaeologists at once made their way to Dunster Castle, the famous seat of Mr. George Fownes Luttrell. The castle is a fortress of great antiquity, and was formerly a military post of importance. The castle is built on a hill or tor, and forms the north-east extremity of a lofty ridge. The history of the castle dates from the time of the Domesday Survey, when it was held by William de Mohun, and it is said to have been the stronghold of Aluric in the reign of the Confessor. Through the fiery reign of Stephen the castle played no inconspicuous part, but the present structure is chiefly the work of Sir Hugh Luttrell and his successors. By reason of the irregularity of the plan and varying character of outline the castle forms a building of considerable picturesqueness. The entrance to the castle is gained through a bold tower dating from Tudor times. The party was warmly welcomed by Mr. G. F. Luttrell, Mrs. Luttrell and Miss Luttrell, and in small bands conducted over the magnificent interior, which is exceedingly rich in art treasures and historical records. The many spacious apartments were slowly traversed by the archaeologists, to whom was explained the many objects of interest with which this stately home is stored. The many paintings, family and otherwise, were inspected with critical enthusiasm, a curious picture, called *The Device*, demanding much attention. The grand staircase, the work of Italian carvers, was much admired, the massive carving representing hunting scenes, whilst a coin cunningly inserted in the woodwork gives the date of the work as that of Charles II. The ceiling in the dining-room is the work of the same Italian masters. The armour-room was especially interesting, containing as it does guns used in the Civil War, in which bitter conflict the castle figured prominently. Prince Charles's bedroom was shown, and also the narrow passage, ending in an alcove behind the great bedstead, in which the prince is said to have hidden from his pursuers. Amongst the many other interesting features in the house not the least to attract attention were the leather wall drapings, on which are painted pictures in the career of Marc Antony and Cleopatra.

THE ORDNANCE SURVEY.

A CORRESPONDENT of the *Daily Graphic* has described the object of two cannon half buried in the earth on either side of Hounslow Heath, of which photographs appeared in that journal. The cannon, he says, mark the extremities of the very first base line taken for the trigonometrical survey of Great Britain and Ireland, on which the Ordnance maps were originally based. Most people are aware that the Ordnance Survey Department, the headquarters of which is at Southampton, was constituted to survey the United Kingdom in order that accurate maps of the whole of the country might be prepared; but few have any conception of the magnitude of the task then undertaken, or of the means by which the work was ultimately accomplished. Although the whole of the country has long since been surveyed and the maps published, the physical features portrayed on the maps are continually being transformed, and the operations of the Ordnance authorities are now solely directed to revising the earlier editions of the maps in order that they may be kept up to date so far as possible.

The first step in the survey of a large area of country is to spread a web of triangles over its surface in order that the relative positions of numerous points may be ascertained to enable detailed measurements of the surface features to be taken. The form of a triangle, it need hardly be said, is chosen simply because it lends itself to very precise mathematical calculation. The operation of triangulating may be thus summed up. When the distance between two points on the surface of the country to be surveyed has been measured for a base, and the angles which this line forms with some third point, taken as the vertex of the triangle, have been observed, the length of the other two sides can be calculated. These two sides then serve as bases for other triangles, the length of whose remaining sides are in the same way ascertained. By thus extending a series of triangles over a country its dimensions are obtained with the greatest accuracy.

The first base line in connection with the survey of this country was measured by General Roy across Hounslow Heath, Middlesex, during the month of August 1784. The General used three kinds of rods, namely, (1) 100 feet surveying chains, (2) glass tubes 20 feet long, and (3) deal rods 20 feet long, the line being measured three times, once with each kind of rod. The length of the line by the glass rods was 27,404.0137 feet, and by the chain 27,404.24 feet. The results obtained with the deal rods were disregarded, as the rods were found to be seriously affected by the humidity of the atmosphere. With them the line was made to be about 2 feet longer than with the other two. Consequently the mean of the results obtained with the iron and glass rods was taken as the true length of the line.

When this base was again measured in 1791 by General Mudge with an iron chain its extremities were marked by sinking old cannon in the ground, the centres of the muzzles being the terminal points. These cannon are the ones which appear in the photographs.

The triangulation of this country was carried out in three stages, namely, a primary, a secondary and a tertiary series of observations. The sides of the triangles in the primary series averaged 35 miles in length, there being only 250 primary stations all told. Some of the triangles had sides over 100 miles long. For instance, a line from Slieve Donard, in county Down, Ireland, to Sea Fell, in Cumberland, 111 miles, was one of the sides of a primary triangle. By the aid of the common mirror or heliostat, when the atmosphere was favourable it was found possible to take observations with a theodolite at these great distances, but, of course, owing to the rotundity of the earth, mountain and hill tops only were mutually visible. The secondary triangulation was attached to the primary stations and the sizes of the triangles were reduced by it to an average of 5-mile sides. The tertiary triangulation which followed multiplied the triangles so that their sides averaged in length only 1 mile. The sides of the tertiary triangles were then actually traced on the ground, and surveyors afterwards came upon the scene with measuring chains and took the necessary measurements to enable a plan of the part within each territory triangle to be prepared. Subsequently the Hounslow base was abandoned for one on Salisbury Plain, which was longer and more accurately measured. Another base line, 8 miles long, was also measured upon the shore of Lough Foyle, in the north of Ireland, and it is upon the Salisbury and the Lough Foyle bases that the triangulation of these islands has been made to rest.

Although begun so long ago as 1784, it was not until 1851 that the primary triangulation of the United Kingdom was finished, and a little more than twenty years ago since the maps of the whole country were completed. The labour involved was, of course, enormous, for after the completion of the triangulation the chain was dragged through every county and parish, township, hamlet and demesne in the United Kingdom, and all the topographical features of the country, both natural and artificial, hill and vale, river and rivulet, roads, railways, woods, plantations, fences, buildings of every description, wells, pumps, isolated trees in fields, in rural districts, and pillar post-boxes, lamps, &c., in towns have received their allotted places on the maps.

TESSERÆ.

Canova.

SO long as he had no living rival in the public favour (it was ten years later that Thiorwaldsen's *Jason* gave the first promise of his future fame), Canova was compared by his admirers to the greatest masters of ancient and modern times; and it was by no means unnatural that the enthusiasm of contemporaries should be disposed to overrate the merits of an artist who like Canova knew so well how to flatter the taste of amateurs, and possessed in an eminent degree those qualities of heart and mind which win universal regard. But it is the privilege of great minds only neither to be intoxicated by success nor disheartened by adversity, and unfortunately Canova cannot be classed among their number. Indications that cannot be overlooked in reviewing his artistic career prove too clearly that he did not escape altogether the influence of the unmeasured flattery of his panegyrists, by whom he was constantly surrounded as a prince by his courtiers. On the other hand, the rare gentleness, modesty and simplicity of his character happily counteracted in a great degree the effects of this unceasing adulation. Many of his works were ranked with the antique. Connoisseurs who piqued themselves on their skill in all the refinements and mysteries of the art preferred his *Perseus* even to the *Apollo Belvidere*. According to them the beauty of this ancient masterpiece had been equalled, while its faults had been skilfully avoided; and when, to the shame of the despoiler, the *Apollo* was carried away to Paris, they ventured to assert that the loss was by no means irreparable. So little did the artist himself shun a comparison with the antique, that when occasion offered he placed the noblest works of Greece beside his own, and seemed to challenge a comparison. When, for example, his *Perseus* was exhibited for public criticism, or rather for public admiration, a plaster cast of the *Apollo* was placed on a lower pedestal beside it, and certainly to unpractised eyes played but an humble part when compared with the marble statue of the Gorgon slayer, aided by all the charms of exquisite finish as well as spotless material, and placed in the most favourable light. In like manner, Glycon's *Hercules in Repose* stood for many years next to Canova's frantic *Hercules*, hurling Lycus into the sea, in order as it should seem that he might place the merits of his furious rival in the most favourable light. Every impartial spectator must have felt the folly, to say the least, of courting such comparisons; but in the first case it was especially unwise, as the artist's misconception of the character of *Perseus* was thereby made the more palpably evident.

Roman London.

Conyers, an apothecary, one of the first collectors of antiquities, gave the labourers who dug the foundations after the Great Fire encouragement to save for him whatever they might find. From the north-east corner of St. Paul's, Fleet Ditch and Goodman's Fields he procured a vast quantity of Roman coins, pottery and utensils, but so mixed with articles of other and later periods as almost to confound inquiry. At the east end of St. Paul's were found pieces of green serpentine and porphyry, such as was used in Edward the Confessor's monument at Westminster, bone or ivory pins, glass beads, heifers' horns and Roman vessels of earth; and between Fleet Gate and Holborn Bridge figures of the Roman household gods, mixed with seals of the Norman period, coins of Vespasian with "Judea capta" on the reverse, spur-rowels, keys, daggers, jettons or church counters, and a coin of Julius Cæsar. From later discoveries better information has been obtained. Beneath the old church of St. Mary-le-Bow were found the walls,

windows and pavements of a Roman temple, and not far from it, 18 feet deep in adventitious soil, was the Roman causeway, above which the present ground has been considerably elevated. In 1711 a cemetery was discovered in Camomile Street, adjoining Bishopsgate. It lay beneath a handsome tessellated pavement, and contained many urns filled with ashes and cinders of burnt bones; with them were beads, rings, a lachrymatory, a fibula and a coin of Antoninus. This, as well as the Roman vault, opened on the rebuilding of Bishopsgate Church, was supposed to have been a burial-place after the establishment of Christianity. That the Romans had a fort as well as a treasury and mint on the spot now occupied by the Tower seems confirmed by a silver ingot, inscribed "ex officio Honorii," found with many gold coins of Honorius and Arcadius in the old foundations of the Ordnance Office in 1777. The ample discoveries that were made nigh the post-office in Lombard Street in 1785, as well as the beautiful pavement discovered by the India House, are additional proofs that London, under the dominion of the Romans, was a little Rome, not only encompassed with strong walls, but adorned with a prodigious number of solid, convenient and magnificent structures.

Damascened Work.

Metalwork of Arab, or so-called "Saracenic," origin is of two very distinct styles. The oldest and most important is of the genuine art, and the specimens that have come into the hands of collectors are generally of its best time, and from the country where it attained its highest excellence. These date from about the middle of the thirteenth century to quite the close of the fifteenth, and have been made chiefly for the kings and grandees of the two dynasties of Memlook kings of Egypt. Many of the men who executed these fine works were no doubt Egyptians, for the Coptic portion of that people have always retained much of the skill of the ancient Egyptians, and they readily adopted the art of their Mohammedan conquerors. But there is also abundant proof, both in the style of some of the specimens as well as written evidence in Arab histories, that skilled craftsmen were attracted to Cairo from all parts of the East, and also from the great cities of Italy, by the riches and liberality of the Memlook court. Objects belonging to this class are not found later than A.D. 1517, when Egypt was taken by the Turks, and the skilled craftsmen of Cairo to the number of some hundreds were carried by the conqueror to Constantinople. Damascened work was likewise produced in Persia, Asia Minor or Mesopotamia, and possibly Damascus. This school appears to have been the origin of a second class, mostly dating from at least two centuries later down to modern times, all the examples of which are inferior to the Egyptian, and exhibit more or less of the decadence of art. The more recent specimens bear inscriptions that appear to be ignorant copies of traditional sentences in common use on such vessels. This kind of oriental work seems to have been made, at least in late times, for the Venetian and other European markets, many bearing coats of arms. There is another class of objects, of rough execution and late work, unlike the preceding, but retaining some of the characteristics of the first style. Their inscriptions are, like those just named, mostly illegible. They perhaps come from Morocco.

Architectural Sculpture of Egypt.

When historic sculpture makes its appearance upon the walls of Egyptian temples it still remains intimately allied with the structural principle; it presents a kind of tapestry, covering the surface but not changing its nature. However minute the execution of his work, however exquisite his observation of nature, the Egyptian sculptor was ever ready to make large sacrifices to the monumental principle. He had marvellous knowledge of the forms which he interpreted, but he was careful not to insist upon all their details. He was content with a large and simple rendering, which, in spite of its archaic appearance, was never false. From this example of complete agreement between sculpture and architecture it results that other edifices seem to lose something of their unity, and our admiration is involuntarily offered towards the supreme expression of the unity of the three arts. This intimate connection between the two is the chief characteristic, the dominant quality of Egyptian architectural sculpture. Statues are sometimes colossal and sometimes diminutive; in the former case they are never allowed to disturb the leading lines of a monument; in the latter they never appear mean, nor take away any-

thing from the grandeur of the whole. All this appears simple enough when we are before the monuments which line the banks of the Nile. It seems to us as if the perfect result had cost hardly an effort, but it is a crowning merit in art to produce great effect without giving rise to any feeling of conscious effort or of pedantry. To those who know how much knowledge and intellectual labour are required to produce an artistic result which shall attract and hold the attention without tormenting the fancy, the magnificent architecture of Egypt must assuredly seem the most "concrete" whole on the surface of the globe.

Taste and Individuality.

The good and the beautiful were in the Greek language often expressed by the same word, and are by many regarded as alike expressing absolute and immutable principles, equally independent of human opinion and equally objects of philosophical inquiry. But, in truth, the object of the so-called philosophy of æsthetics appears, even in its highest form, to have far less of an absolute and immutable character than belongs to the objects of metaphysical inquiry. The beauty of an object appears to depend not so much on the character of the object itself as on the feeling of pleasure which it excites in the spectator, and this, again, on the accidents of his present constitution. The beauty of sensible objects appears to exhibit still more fully the marks of merely phenomenal and relative character. A slight change in the shape and refractive power of the eye would alter all our perceptions of the form and colour of objects, and, with them, the impressions of beauty and deformity derived from this source. And if the senses themselves are confined to the apprehension of phenomena, how can the beauty of the objects of sense lay claim to a higher character? Can we then assert that sensible beauty is a reflection and imitation of ideal beauty, in the same manner and degree in which our perceptions of moral duty aim at and imply a divine standard of right and wrong? Even the fluctuation in the opinions of various individuals and nations, though far from being a decisive criterion in any case, appears to be acknowledged by the general sense of mankind to be a test more conclusive in questions of taste than in those of truth or rectitude. The very name taste seems to imply something subjective and to a considerable extent arbitrary. The maxim "*De gustibus non disputandum est*" may be the exaggerated expression of a popular conviction; but, at any rate, it carries no such shock to the natural feelings of mankind as does the sophistical assertion that the distinctions between truth and falsehood, virtue and vice are based on convention and not on nature. Nor is it difficult to detect the foundation of truth which underlies the exaggeration. The maxim is true in so far as it virtually asserts that beauty is subjective not objective—an affection of the person who is conscious of it, existing only in and by that consciousness, not a permanent quality existing in things and capable of being expressed by a general notion. But it is exaggerated, in so far as it apparently denies the existence of a common sense of beauty among men of cultivated minds, by virtue of which similar affections will be produced in different minds by the same object.

GENERAL.

The Statue of Gainsborough by Sir T. Brock, R.A., which was shown at the Royal Academy this year has been placed in the sculpture hall of the National Gallery of British Art, Millbank.

Sir Arthur Rücker unveiled on Saturday a marble tablet which has been erected in Yattendon parish church in memory of the late Mr. Alfred Waterhouse, R.A., by the parishioners and many friends and old pupils. There was a large and representative gathering, and Sir Arthur Rücker delivered an address on the lifework of Mr. Waterhouse, declaring that his aims had been lofty and elevating.

Sir John Puleston, custodian of Carnarvon Castle, will shortly visit Carnarvon and discuss with an architect the alteration which may be considered desirable in connection with the King's restoration scheme. After its restoration the Castle will be used by members of the Royal Family.

The Council of Leipsic have voted the sum of 600*l.* towards the 2,000*l.* required for the Bach monument which is to be erected in the Thomaskirchhof, after the removal

of the statue of the philosopher Leibnitz which at present stands there. The sculptor is Professor Karl Seffner.

Mr. T. Francis Bumpus having completed his "History of the Cathedrals of England and Wales," the third and final volume has been published by Mr. Werner Laurie. The contents include Lichfield, Gloucester, Rochester, Carlisle, Oxford, and a number of the minor cathedrals. The book is illustrated with thirty-two plates in two colours.

The National Affiliation of Goldsmiths, Jewellers, Silver-smiths, Electro-plate and Britannia Metal Workers have sent a resolution to the Sheffield education committee urging that the only sure way to secure thorough efficiency in workmanship and a higher standard of art production in the trades represented by the Affiliation is to confine the teaching in our schools of art to those persons engaged in or working at the trade, either as apprentices or artisans.

Two Stained-glass Windows have been erected in St. Stephen's Church, Clewer, Windsor. The vicar, finding that the artist had put his name in one corner of them, insisted on its being instantly removed. In this month's parish magazine the reverend gentleman says it is just what monumental masons will do with tombstones if you let them—put their names on—but he never allows that sort of thing. A window or a tombstone, he adds, is intended for the glory of God and a memorial to a departed friend, not as an advertisement to a tradesman or an artist.

The Chester County Council recently requested the London and North-Western Railway Company to make alterations costing 600*l.* to the room in the Company's hotel at Crewe used by the Council for committee meetings. No agreement being arrived at on the subject the county committee have instructed the county architect to prepare and submit to a future meeting modified plans for a building with the necessary appurtenances in which the meetings of the committee can be held, and also a caretaker's house, at a total cost, exclusive of land, not exceeding 4,000*l.*

The North Side of Ripon Cathedral has just been adequately protected from the ravages of damp by work in cement concrete, carried out under the supervision of Mr. H. Williams. The gargoyles have been made to deliver the water from the roof over a much smaller area, and the broad flooring of cement concrete at the base of the walls effectually keeps out the moisture, which was finding its way into the interior of the building. It is hoped the work may be extended to the east end of the cathedral. The walls have also been underpinned. In the course of the work Mr. Williams came across what he believes to be the foundation of the old Norman cathedral, as the stone exactly corresponds with the stone in the Norman crypt.

The Design for the new buildings of the Boston Museum of Fine Arts has now finally been approved. It has been prepared by Mr. Guy Lowell in consultation with Messrs. E. M. Wheelwright, R. C. Sturgis and Professor D. Despradelle, and embodies the conclusions of a committee which with the staff of the museum has been at work on the subject for more than three years.

The Society for the Propagation of the Gospel in Foreign Parts have sold their premises in Delahay Street, which they have occupied for thirty-five years, to the Government for the sum of 27,500*l.* They have secured a site with an area of 6,000 square feet for a new structure in Wood Street near the building lately erected by the Ecclesiastical Commissioners. Designs have been prepared for the new premises, the cost of which will exceed 20,000*l.*, by Sir William Emerson.

The Board of Works recently leased from Berwick Corporation a section of the old fortifications, including the Bell Tower, the large stone fort fronting the sea, and two surviving fragments of the crumbling Edwardian walls. The Berwick Historic Monuments Association, of which Sir Edward Grey is president, has been formed for the preservation of the Elizabethan ramparts, and is now engaged in opening out the flankers of the bastions and clearing away the accumulated rubbish that has obscured them for a long period. These flankers are eight in number, and may be described as open quadrangular courts of masonry, measuring about 30 feet by 90 feet, extending between the curtains and the wings of the bastions, each comprising three walls of good ashlarwork about 15 feet high, while the fourth side is open towards the main ditch. These open courts seem to be peculiar to Berwick ramparts. The Association desires to restore the decaying stonework and open out the underground passages.

The Architect.

THE WEEK.

IN one of the late CHARLES KEENE's drawings a member of the hanging committee of the Royal Academy is supposed to be saying to a young artist whose pictures were not accepted:—"You'd be surprised, sir, at the accuracy and rapidity with which, from long practice, we can decide at a glance on the—ah!—merits of the pictures as they pass before us!" Confirmation of the old gentleman's statement is afforded by the official report relating to this year's exhibition. Out of 11,789 works received 8,806 were at once rejected, and practically the exhibition consisted of a selection from less than 3,000 works. In the catalogue there are 1,799 works of all classes; of that number, 203 were contributed by Academicians and Associates, and consequently there were less than 1,600 from those who do not possess a claim on the walls. As very few artists were able to exhibit three works, as allowed, it would appear as if a further reduction of the numbers sent by members of the Academy is indispensable in order to allow more justice to be done to outsiders.

THE late LOUIS FRANÇOIS BOITTE, who died last week at Fontainebleau in his seventy-sixth year, had not of late years opportunities to display his power as an architect, but he was greatly esteemed by his fellow artists. During several years he was afflicted with blindness, and a privation of that kind bears harder on an architect than on the majority of men. At one time it was anticipated that he had a great career before him. A pupil of BLOUET and QUESTEL, he won the Prix de Rome in 1859, when the subject assigned was a Palais de Justice. During the tenure of the appointment he prepared reparations of some Greek buildings. He was selected by PAUL DUBOIS, the sculptor, to design the architectural part of the memorial of LAMORICIÈRE in the cathedral of Nantes. In 1877 he was entrusted with the charge of Fontainebleau, and any restorations in the building since that time were carried out under his direction. He also served as supplementary professor of the history of architecture in the Ecole des Beaux-Arts.

JUDGING by reports of late meetings of Trades Councils, efforts will be made to compel corporations to expend larger sums on the building of houses for the working classes. In Birmingham it was said that the repairing which the housing committee had undertaken had the effect of increasing the rent of small property. In that city there are from 30,000 to 40,000 back-to-back houses, which is considered discreditable. The Corporation of Liverpool has been active in erecting cheap houses. But one of the speakers at the Trades Union Congress described them as monotonous and ugly, and destined within a few years to become mere slums. It might be imagined from what was said that there was no difficulty in obtaining a superior class of houses with land attached which could be let cheaply. Most of the houses which have been erected by corporations, although they do not produce any sensible profit, are considered too small and insufficient in their accommodation. But who was to bear the loss of a higher style of residences was not explained by the orators.

THE report of the Trustees of the National Portrait Gallery records the acquisition of a few portraits which have special interest for architects. One represents A. W. N. PUGIN, but there is uncertainty about the painter. A plaster cast of ALFRED STEVENS, the sculptor of the Wellington monument in St. Paul's, is taken from the death mask by Mr. REUBEN TOWNROE. An unfinished portrait of himself by G. F. WATTS

has been accepted. A crayon drawing of J. A. SYMONDS, author of the "History of the Italian Renaissance" and other works relating to the artists, is another addition. The Trustees state that owing to the congested state of the galleries, the difficulty of finding space on the walls for the proper exhibition of recent acquisitions continues to increase, and the attempt to maintain a chronological and historical arrangement of the portraits will soon become unavailing. The Trustees have been in further communication with the War Office as to the future disposition of the site now occupied by St. George's Barracks, but up to the date of this report no reply has been received from the military authorities. It cannot, therefore, be said that the Trustees have any immediate prospect of obtaining the extension of the gallery which has become of such urgent necessity. The number of students who applied for students' tickets during the year was fifty-three, and fifty-eight students had their tickets renewed. The total number of visitors to the gallery during 1905 was 168,769, which showed a satisfactory increase on every day in the week, the total being the largest since 1896, when the new gallery was opened. The total number of visitors admitted on Sunday afternoons during the summer was 13,411, giving an average of 432 per Sunday.

THE decoration of the apse of St. Cuthbert's parish church, Edinburgh, is too important an event not to be noticed. It is evidence of a further advance from the whitewashed walls which at one time were considered essential in Scottish churches. The principal feature of the decoration is a reproduction in high relief of DA VINCI'S *Last Supper*. The figures, which are almost of life-size, are in white alabaster, and the work is arranged in three divisions, separated by red pilasters. Coloured marbles have also been used in connection with the decoration. The roof of the apse has been adorned by painted figures. The designs were prepared by Mr. H. J. BLANC. The Rev. Dr. MACGREGOR, in the sermon delivered at the reopening of the church, said, as far as art could do it, they had symbolised the central facts of the Christian faith in that one apse.

UNDER the Waterworks Clauses Act, 1847, persons who construct waterworks are subjected to a special set of rules in cases where their operations bring them into conflict with mine-owners. If the owner of mines or his lessee wish to work any mines within 40 yards of the waterworks they must give thirty days' notice of their intention to do so. If on receipt of the notice the waterworks company think that the working will injure their undertaking they may stop it on the terms of paying compensation. If they do nothing the mine-owner may work his mines in the usual way, and is not liable for damage caused, provided that it is not caused by working the mines in an unusual manner. The effect of these provisions was discussed in the case of *The Mayor, &c., of Manchester v. The New Moss Colliery, Ltd.* In that case the plaintiff supplied Manchester with water under a special Act which incorporated the Waterworks Clauses Act 1847. For the purposes of their waterworks they had purchased land for a reservoir. The defendants, desiring to work their minerals, gave the notice required by the Act of their intention to do so. The plaintiffs took no steps to stop the working, which was therefore proceeded with. As the result, a subsidence was caused on account of which the action was brought. The Court of Appeal, reversing FARWELL, J., held that as the subsidence would have been caused whether the reservoir had been there or not, the plaintiffs could recover damages for the infringement of their common law right to support. The special provisions of the Waterworks Clauses Acts are alternative to, and not in substitution for, the common law rights of neighbouring landowners to support.

PUBLIC HEALTH IN LONDON.

THE monk FITZSTEPHEN, in his description of London as he saw it in the twelfth century, said it was more ancient than Rome, and the two corresponded in using the same ancient laws and ordinances. There were sheriffs instead of consuls, senators and inferior magistrates, and "also sewers and aqueducts in its streets." The connection may appear strange, but to FITZSTEPHEN the sewers and fountains were remarkable objects which testified to the existence of an organisation then unparalleled. Since that time sanitary works have become more general, but apparently it is the office of London to set an example in sanitation which other cities and towns can imitate, although they are never likely to surpass the works in efficiency.

It suggests the clear idea existing about the purpose of the works when we find that they are controlled by the Public Health Department of the Corporation. The report of the engineer, Mr. FRANK SUMNER, on the works executed last year is therefore an interesting document. In considering it we must remember that London in old days resembled ancient Rome in having narrow streets, although the advantages of broad highways were admitted. The result is that the conditions under which public works are to be executed are occasionally more onerous than they would be in a city laid out according to modern experience.

The immense traffic does not allow of much interference. If we remember that over a million people enter and leave the City daily, and that more than 300,000 pass the day within the City, the slightest impediment to their motion is resented. For instance, by-laws were made relating to the demolition of buildings. But it has been found that they can only be enforced with difficulty. Owing to the crowds in the streets building operations are more costly than in other places. Mr. SUMNER remarks that two new systems were introduced for cleansing the front of buildings: one by means of sand projected against them by a blast, the other by a steam jet. There is no city in the world where such operations are so desirable as in London, and every facility should be afforded. But, according to the engineer, "serious complaints have been received against both systems: as to the first, of the inconvenience to pedestrians caused by the sand falling on them, and in the other case by the dirty condensed water." In these, as in many other instances, each individual thinks only of himself or herself, and the fall of a grain of sand is resented as if it were an avalanche. The same spirit is manifested in the grumbling against street works. And from what is said it might be imagined that Corporation officials carried out works for their own amusement.

Although London is claimed to be the foremost city of the world, no less than eighty-one buildings were condemned last year as dangerous. Yet for purposes of improvement every square foot of ground is found to have extraordinary value. The improvements and finance committee had to expend 57,050*l.* during 1905 in purchasing property for which 79,964*l.* was claimed. At the end of the year claims amounting to 29,811*l.* were under negotiation. Those who talk about improvements of the streets as if they could be accomplished without difficulty should remember the price obtainable for small areas of land in the City.

London streets may be regarded as experimental stations for paving. The Corporation have in use granite, macadam, York stone, various kinds of asphalt, and wood. In some cases pavements have to be maintained by the contractors during a period of fifteen years. Lighting is also of a varied kind. In most of the main thoroughfares arc lamps are used. The cost of each is 26*l.* per annum. It was only necessary to light them on twelve days when there was fog or unusual darkness. Incandescent gas-lighting is deemed suitable for side streets. High-pressure lamps were erected of 2,000 candle-power, one in St. Martin's-

le-Grand and the other in Fleet Street, opposite Fetter Lane. It is stated that "the essential feature of this system is the compressing of the gas before it enters the burners to a pressure capable of supporting a column of water 10 inches high by means of a small hydraulic ram fixed in some convenient position. The ram is actuated by the water from the street mains, and the gas is taken from the services, and the pressure increased as required. The speed of the apparatus and the flow of the water is regulated to the exact requirement by means of a governor, or in streets where the gas company have high-pressure mains the services are connected directly thereto; this latter system for street lighting is preferable, firstly, on the score of expense, and, secondly, it not being likely to fail."

The water consumed by the Public Health Department is charged for at the rate of 6*d.* per 1,000 gallons. The total amount expended on water came to 4,372*l.* 5*s.*, of which sum 1,926*l.* 7*s.* 8*d.* applied to the washing at night of courts and carriageways. The quantity of water used for that purpose was during the year 61,953,459 gallons. The cleansing of the streets begins at 8 P.M., and before 6.30 A.M. practically the whole of the City is washed or cleansed by water. The work is carried out systematically, beginning with streets near markets or where business is resumed at an early hour. In the winter the use of grit to facilitate vehicular traffic during the day-time renders the flushing and washing rather difficult. To meet the difficulty the water is supplied in force through a jet and hose, and additional flushes are sometimes used. In winter when there is a possibility of frost less water is used, and sometimes street washing and flushing has been suspended. The main streets and bridges leading to the various markets are regularly gravelled to avoid as far as possible any loss of time in the produce arriving at its destination through bad travelling. House refuse has to be removed by 10 A.M., and to execute this work every available horse, van and man attached to the cleansing department must be utilised. In September 1904 the order for occupiers to place refuse on the kerb by 8 A.M. came into operation. There was some difficulty at first. But after a few months the advantage of the arrangement was realised, and many main streets are now cleared by 9 A.M. The number of *employés* on the cleansing staff is 727, including 193 boys. The work cannot be unhealthy, for only seven of the men died during the year. In connection with the cleansing six motor vans are used, each of which can move on an average 37 tons 13 cwt. The cheapest were obtained from the St. Pancras Ironworks. The Corporation possess property at Hornchurch, Essex, on which the refuse is deposited. A contract has been entered into for a concrete wharf wall fronting the river, 400 feet long by 23 feet 2 inches wide, with a return wall of 250 feet by 15 feet. The refuse will be brought by barges from a London wharf.

It is to be desired that the Corporation could be as successful in cleansing the atmosphere as they have been with the streets. Care has to be taken that no injury can arise from the immense number of overhead wires. The Corporation in 1899 undertook the supervision, and up to last year 22½ miles of wire were removed. In 1899 there were 260,000 spans crossing public thoroughfares, and last year the number was 699,300. It is pointed out that owing to the acids formed in the smoky City atmosphere the corrosion of exposed metal proceeds far more rapidly than is generally supposed, and the galvanising applied as a protection to pole-stays and cable-suspending wires does not last long.

It is to be hoped bronze castings on buildings will have a better fate and a longer term of existence. FITZSTEPHEN said that one would think, with HERACLITUS, that all things were in motion when one visited the horse shows of London. The words are:

now more generally applicable, for it must be said that the Corporation and their officers no longer follow an easy-going policy, and are striving with might and main to keep London ahead of the rest of the world.

THE GEOLOGY OF SLATE.

AFTER hearing about the destruction of San Francisco and Valparaiso the youngest child must realise that this earth, which appears so stable, is liable to convulsions from some force which is not visible. At the present time much is also said about the wasting of the land through the operation of the sea. A child who has received a few elementary lessons in geology would be excused if he maintained that the earth, especially as we see it in England, mainly owes its formation to a similar cause. Given unlimited time it seems an easy operation to remove the ground in one place and to transfer it to another. In other words, the navvies' labour in making cuttings and embankments on railways is a type of what has been done by aqueous force in imparting to the earth its present character. Included in that force we should be allowed to comprise the immense work accomplished by glaciers and other inorganic agencies.

If, however, the Neptunian theory were alone exemplified in the formation of the globe, the surface would present a very monotonous character to the inhabitants. All that can be done by water is limited in constructional power. It would not be a pleasant spectacle to have immense plains resembling the sands on the coast, even if they were occasionally varied by the footprints of the beings which traversed the surface. A large expanse of clay gratifies the eyes of agriculturists, for its unvarying character is suggestive of fertility. But a country or a district which could show nothing else would not, in our day at least, be visited by pleasure seekers or by landscapists if any could exist under such conditions. Fortunately for the modern inhabitants of the earth, although at one time the exhibition was marked by terrible destruction, igneous forces like those which were in operation at Valparaiso and San Francisco have given a marvellous variety to the appearance of the earth's surface. Granite may be modern as well as ancient in its manifestation. But wherever it occurs it has put an end not only to monotony of appearance, but to the regularity of stratified beds. The newspapers have related tales of horror about what happened in America. But to a geologist, and especially to those among them who consider themselves to be Plutonists, the destruction on the American coast must seem as only the puny efforts of a force that may be decaying, or was able to put forth only an infinitesimal degree of power. When one thinks of the dynamic force which was needed to twist and fuse every cubic inch of a mountain, and by which the neighbouring strata from their contortions suggest a crisis in the earth's existence, the mere unsteadyings of the foundations of a few skeleton structures seems unworthy to be classed among geological phenomena.

We may also measure the extent of the force that once prevailed by its effect on what are now called metamorphic rocks. There are, among other varieties, some resembling rough glass, and we may therefore conclude that they owe their origin not so much to a mechanical force, although that was also in operation, as to immense heat accompanied by chemical operations. The power which was required to produce trap and basalt further shows that in the interior laboratory of the globe it is possible to accomplish a great many novel and surprising operations.

It is necessary to recall these facts if we would understand the nature of an ordinary roofing slate. Clay slate is to be found in the lowest strata we have in England, that is to say, in the Cambrian. We need not consider the question which once gave rise to very angry disputes as to whether SEDGWICK'S Cambrian

is not still older than Cambrian. The Skiddaw slates are evidence that in the North of England, as well as in Wales, clay slates were produced by similar causes. Nor need we investigate the problem of the origin of the fine clay or silt of which they are in great measure composed. The chief fact remains that clay slate is of incalculable antiquity.

There is a wide difference between a slate and a slab of clay slate. The latter sometimes contains fossils. But it is very doubtful whether a fossil is to be discovered in a true slate. If trilobites or annelids existed in the days when the globe was young, all traces of them were likely to disappear in the operations necessary for the production of slate. The characteristics of a slate are so peculiar we cannot suppose that the same kind of process was often employed under other circumstances. We once saw a definition by a so-called practical man, according to which a slate was a bluish fossil stone, very soft when dug out of the quarry, and therefore easily cut or sawed into thin long squares to serve instead of tiles for the covering of houses. We must expect to meet with a large amount of nonsense in all that relates to the application of geology. But the above description is ridiculous. What makes the slate so useful in building is that nature was beforehand in preparing it, and that great masses of slate rock were subjected to some sort of treatment which resulted in the property commonly known as cleavage. What is perhaps most remarkable about it is that the cleavage was not always uniform. It is possible to find slabs of good size which will serve for roofing if the timber which supports them is of adequate dimensions. But the genuine slate has been so well prepared it can be split to the thinness which makes it such a valuable commodity in the market. Slates may be obtained which are one-eighth of an inch in thickness and which are as close-grained as a plate of steel. By modern machinery marble can be cut for veneering equally thin. However, the thin slate is produced owing to its fissility by the use of very simple tools.

We have just compared a slate to a steel plate on account of its closeness. There are other resemblances between them. The tensile and compressive strength of a steel plate, bar or angle-iron can be calculated to a nicety. It is assumed that steel is competent to withstand either force. Now, it is noteworthy that some of the physicists who studied cleavage arrived at the conclusion that it was owing to immense compression in one direction and immense tension in another. We know with girders that, when loaded, the strain assumes the form of a curve, and it is very remarkable that DARWIN, who could not have anticipated the experience of engineers, came to the conclusion from what he saw in South America that cleavage planes were likely to follow great curves, which were, however, of such radii that any view of them which could be obtained must appear straight. The use of the word "plane," although theoretically a fallacy, was in reality borne out. The force employed to produce cleavage was so intense that the minute particles of which a rock was composed were rearranged. Formations are made up of a variety of rocks, and the cleavage force acted on all indiscriminately. One very curious result is that if any of the beds should be fossiliferous the fossils are distorted, and are sometimes a puzzle to palæontologists.

It is impossible as yet to make out the changes which have been produced on the American coast through the recent disturbances. Apparently there was only a slight upheaval in some places and a slight depression in others, although the consequences were so serious. The scientific commissions appointed to investigate the subject will no doubt increase our knowledge. Man is the heir of all the ages, and in a wider sense than is commonly supposed. It may be presumptuous to believe that all the revolutions of geology were accomplished for our special benefit. It is, how-

ever, certain that men have had the ability to turn them to account. What a fearful destruction of fresh-water beings is testified by every block of Purbeck marble! And the common use of the word bone-bed shows that even ignorant quarrymen could not close their eyes to what is undoubted historic evidence of the existence of organic life formerly of which the utility did not cease with death. "The dust we tread on was once alive," is no mere poet's discovery; it expresses a geological fact; and thus in marbles remains of living beings enable us to ornament our buildings. It was believed by BISCHOFF that all marine limestones are due to the powers of organic life, and from what was calculated by DARWIN respecting the agency of the earthworm in the formation of soil, BISCHOFF's theory now appears less incredible than when it was first expressed.

ENGLISH CATHEDRALS.*

IN his description of Gloucester Cathedral Mr. BUMPUS tells us that when he first entered the building WESLEY'S "Te Deum" in E burst forth, and that he and his friends sank for preliminary devotions into stalls which were pointed out by a venerable verger. The incident is characteristic of much to be found in the three volumes relating to the cathedrals of England and Wales. To tell of all he felt and all he saw to the people of his native village was the ambition which was never realised of OLIVER GOLDSMITH, and when a writer can supplement his observations with a record of his feelings he goes far towards making his pages a success. Ordinary guide-books can furnish particulars of the history and arrangements of particular buildings. But knowledge of that kind, however useful and interesting, is rarely sufficient to captivate a reader. We may compare the area of the base of the Egyptian Pyramid with the area within the railings of Lincoln's Inn Fields. But we would gain a nearer approach to reality from a few words of a sensitive writer relating the impressions which the first sight of the Pyramid made upon him. From Mr. BUMPUS'S pages we can imagine the impressiveness still retained by the old buildings, and its operation on one worshipper at least; and we may suppose there are many others equally susceptible to form, purpose and history. On that account we must not expect uniformity of treatment. Mr. BUMPUS often prefers one part to another, and he is within his rights to make that part stand out more prominent.

The third volume treats of the following subjects:—Lichfield, Gloucester, Rochester, Carlisle, Oxford, Llandaff, Bangor, St. Asaph, St. Davids, St. Albans, Ripon, Manchester, Truro, Southwell, Newcastle, Wakefield, Liverpool, Birmingham and Southwark. Much else besides the architecture is noticed in each case. Thus it is pointed out that "in few cathedrals in England are certain of our older anthems with their elaborate solos and verse parts given with so fine an effect as in that of Lichfield." Visitors are reminded that they should attend morning service on a Sunday, Wednesday and Friday to hear the chanting. One of the priest vicars was the Rev. THOMAS HELMORE, whose name will be ever associated with Church music. In describing Gloucester Cathedral WALPOLE'S story is introduced of Mrs. COTTON'S pew, which contained two troughs of a birdcage with seeds and water. The good lady believed that her daughter's soul passed into a robin redbreast, "for which reason she passed her life in making an aviary of the cathedral at Gloucester. The Chapter indulge this whim, as she contributes abundantly to glaze, whitewash and ornament the church." The anecdote throws much light on the treatment of cathedrals in the eighteenth century. The description of Oxford Cathedral allows Mr. BUMPUS to say a few words about Dean ALDRICH, who was an architect and a composer as well as a logician:—

Aldrich, styled by Macaulay "a polite though not profound scholar, and jovial, hospitable gentleman," issued in 1691 a small treatise on logic, "Artis Logicæ Compendium," which long continued the popular textbook. As an architect he designed the Peckwater quadrangle at Christ Church, All Saints Church in the High Street, and in all probability the chapel of Trinity College in conjunction with Wren, and wrote "Elementa Architecturæ Civilis ad Vitruvii Veterumque Disciplinam," translated in 1789 by Rev. Philip Smyth, Fellow of New College, under the title "Elements of Civil Architecture according to Vitruvius and other Ancients." As a musician Aldrich was a prolific composer of services and anthems, many of which are still in use in "quires and places where they sing." His well known catch, "Hark, the bonny Christ Church Bells," first appeared in 1726 in the *Pleasant Musical Companion*, also his "Smoking Catch, to be sung by four men smoking their pipes, not more difficult to smoke than diverting to hear." The Dean's passion for the fragrant weed is illustrated by a story of a student who betted that he would find him smoking at 10 A.M., and who lost his bet because Aldrich was not smoking, but filling his pipe.

The Welsh people are musical, but Mr. BUMPUS has not been able to say anything about their cathedral services—possibly they are less important than in England. There is a similar omission in the account of St. Albans. Southwell, however, possessed six vicars choral, six singing men and twelve choristers—a large choir for a parish church. Choral service is now performed twice daily. There can be little doubt that in the planning of many cathedrals arrangements were made to increase the effect of chanting the services, and under altered conditions the tradition continues to be respected. In giving attention to organs, vicars choral and choristers Mr. BUMPUS is not introducing foreign matter, although in other books on cathedrals architecture alone is considered. The three volumes now form serviceable guides, which also can be read with interest in the intervals between the visits to the cathedrals.

TOURS IN ENGLAND, 1768-9.

AMONG the manuscripts at Gorbamby, near St. Albans, belonging to the Earl of Verulam, are a diary of a northern tour through a part of England in 1768, and another relating to a journey through the Midlands into Wales in the following year. The manuscripts are not signed, but it is believed the traveller was the third Viscount Grimston, who was in 1790 created a peer of England and an earl in 1809. It is evident from his accounts that his lordship was able to appreciate architecture, especially as manifested in the country residences of his friends. At the time there was a desire to have large mansions, for Blenheim and Castle Howard, with other buildings, had superseded the regard for the older style of buildings which was so long in favour.

The writer of the diary started from St. Albans on August 18, 1768. The first mansion he notices is Wooburn Abbey (Woburn), belonging to the Duke of Bedford. He describes the house as "situated in a bottom, fronted by 10 acres of water, back of the house defended by a grove; entrance of ditto a hall, on one side of which a bedchamber and dressing-room, on the other coffee-room; above stairs seven grand apartments, viz. dining-room, drawing-room, state bedchamber and dressing-room, French room and dressing-room, picture gallery; the whole house ornamented with silks, stucco and gold." On the next day he came to Castle Ashby, the seat of Lord Northampton, which in his eyes was without beauty or anything to recommend it. Lord Strafford's house at Boughton was old and not worth observation. Evidently the traveller set out with a prejudice against antiquity.

The streets of Nottingham, with the exception of the market-place, he says, were rather narrow; the latter was spacious and full of good buildings. The castle raised on the summit of the rock on the south-west of the town commands a prospect of the whole town, the river Trent and the four counties near adjoining; the castle itself is of stone, rooms lofty and but ill furnished; a terrace surrounds the whole, and in miniature nearly represents Windsor Castle. He remarked that many of the poor inhabitants on the east of the town, by scooping out the rock, make use of it for houses; the cellars in this town are remarkable by being

* *The Cathedrals of England and Wales.* By T. Francis Bumpus. Third Series. (London: T. Werner Laurie.)

dug a great depth into the rock and extending themselves a considerable distance.

Two miles from Nottingham was Wollaton Hall, which he visited. It is said to be a stone Gothic building with four towers and a tower raised in the middle. The offices were built of brick fronted with stone. In Derby he found the streets regular and making a good appearance.

Four miles from Derby was Kedleston, belonging to Lord Scarsdale. As it was a new building it was sure of the Viscount's admiration. He speaks of it as a most noble modern-built house of stone, with twenty-six windows in front; the entrance is a large hall supported with twenty pillars of Derby marble, many of them one entire piece; on the right of the hall, eating parlour, ornamented with pictures by the best hands, pier glasses, &c.; beyond this, print gallery; on the left of the hall a music-room, dimensions 24 yards by 16, most elegantly adapted for the purpose; beyond this drawing-room, ornamented with all the power of art; beyond this a complete library, each room filled with noble pictures, both of landscapes, sea-pieces and portraits. The park was not laid out, but it was anticipated by the traveller that "the grandeur of the house, the beauties which there must be in the park when finished, and the civility and politeness of the possessor unite to make it the best worth seeing and the most agreeable seat in this part of England."

At the time there were three hundred people employed in a silk manufactory in Derby. The Viscount's journey was by Ashbourne, Okeover (where a large brick house had been built by Mr. Okeover which contained a *Holy Family* by Raphael), Buxton, Disley, to Manchester. He describes Manchester as very handsome, full of good houses, well paved, and carrying on a great trade in tapes. But the chief attraction was the new Bridgewater Canal, cut through, in many places, the solid rock for the distance of 37 miles, for the convenience of water carriage. This work, he considered, would be justly called one of the wonders of the world, exceeding in magnificence, use and grandeur every work of that kind, and proving indisputably the judgment, caution and courage in making the attempt of the noble contriver. The traveller was disappointed when he found that the Duke of Bridgewater, who could carry out so remarkable a work, only built a small house at Worsley for convenience rather than magnificence. Returning from Manchester to Disley, Chatsworth was visited. It is said to be "a square stone house and windows in front, which appears magnificent; the inside of the house not answerable to the grandeur of the outside. The furniture old and principally tapestry; the park, which would be naturally barren and dreary, is made agreeable by plantations and water. This place is principally remarkable for water-works which were made by the first Duke of Devonshire."

The road by Bakewell, Matlock, led to Hardwick Hall, "the house itself very old and built after the manner of a castle," and to Newstead Abbey, belonging to Lord Byron. It is described as "of a very old date and carries the appearance of an abbey. On the front is a very large and fine piece of water, flanked on each side with a fictitious battery; above this on a rising piece of ground is a building to represent a castle, with four great guns on a rampart; on each side of this a large plantation. Near the house is a cascade which is supplied from this water and is intended to lose itself in another behind the house of yet larger extent. This water is made more beautiful by a number of small vessels being stationed on it. The rooms in the house are very small and ill proportioned, but this is abundantly made up by the very fine collection of paintings, and the taste that is shown in placing them to the greatest advantage."

Passing through Sherwood Forest the traveller came to Welbeck, belonging to the Duke of Portland. The house is of an old date, but at the same time very habitable and rather magnificent. The pictures are almost all family paintings by the best hands. The park is very extensive and, in some parts, is much beholden to art for its beauty. The next stopping-place was Worksop, belonging to the Duke of Norfolk. According to the Viscount, "the appearance of the house is most superb, being built with stone. Twenty-four windows in front at present, though there is an intention to add two more wings. The front prospect is a fine piece of water, with a lawn prettily interspersed with a plantation of firs. The inside of the house will be equal in magnificence to the outside, but is at present without the proper furniture, excepting one room which is filled with family pictures and hung with the finest tapestry." Clumber, which was Lord Lincoln's mansion, was not

finished, but promised well. There were nineteen windows in front, the middle a bow and two projecting wings. Thoresby, the Duke of Kingston's, was also unfinished, but appeared adapted for convenience rather than magnificence, the quality most desired in a lordly mansion by Lord Verulam.

The tourist arrived in York on September 6. He admired the gates, and the cathedral, castle and assembly room were worth seeing. The cathedral was allowed to be a most noble Gothic building, of immense length, the windows all of painted glass and well preserved. He was evidently surprised at seeing the communion-table raised above "the common level" by twelve steps. The assembly room had existed for half a century, and was designed by Lord Burlington, but the traveller either did not know nor was it generally understood that the design was an adaptation of one by Palladio, for we are told "the assembly room fronts London Street; this room is, of its kind, the most magnificent in England, designed by Palladio, the architect; it is 120 feet in length, 40 feet in height and the same in breadth, supported by forty-four Corinthian columns of York stone and illuminated by forty-four large glass chandeliers. Parallel to the great room, half its length, is a tea-room, made use of in winter to dance in; beyond this is a concert-room, and to conclude the whole is a very good kitchen." Although Castle Howard had been erected from Vanbrugh's designs about seventy years earlier, the traveller was not apparently acquainted with that vast structure. He records that "the entrance into the park is through a magnificent gateway, on each side of which is a stone building made use of as an inn. From hence an avenue, with double rows of trees, in the middle of which an obelisk, on the right hand of which is the house. The north front is a magnificent hall, with a cupola, on each side of which hall is a long range of building. The approach is up a grand flight of stone steps; in the hall are many antiques, brought over by the late Lord Carlisle. On the cupola is painted the Fall of Phaëton, over the chimney Hercules, on each side of the hall the Four Seasons. The rooms are very numerous, very small in proportion to the size of the house. The furniture is of an old date, but exceedingly superb. Every room that will admit of it is filled with antique busts, urns, vases, mosaic pavement, Roman tiles and every curiosity that could possibly be procured by the late Lord Carlisle. Indian chests and cabinets, the most rich, in which ornament rather than convenience has been consulted. From the house you are led through some wood walks to the temple, which is a single room with a cupola on the top, built on Ionic columns. This room is made use of sometimes to drink tea in. From hence you are carried to the mausoleum which was built for a repository of the remains of the Howard family. This building is of a circular form surrounded with a low stone wall. In the lower room, or rather vault, niches are cut in the wall for the reception of the coffins, six of which are filled up. Above this another room, made use of to perform the burial service in; this has a very grand and rich cupola for its roof. The whole is supported by Corinthian columns of immense size. From this building you have, on one side, a view of a stately stone bridge built over a large piece of water; on the other side a most extensive wood limits the prospect. The whole park is ornamented with variety of small buildings and great quantity of plantation."

Another new mansion was Duncombe Park, of which he says:—"The front of this house built in the Ionic order looks on a spacious lawn, limited on each side by a sloping wood. The other front built on four Ionic columns is approached to by means of a flight of steps, and looks on some pleasure ground laid out, some time since, into walks; from hence there is a noble terrace formed by nature and assisted by art. At the end of this walk is a temple with a dome prettily ornamented with frieze [frieze] in pure gold, with four niches in the wall filled by as many statues; the whole is supported by Ionic columns. The entrance into the mansion house is a hall ornamented with Corinthian columns, a handsome light ceiling and four antique statues. The dining-room is handsome and filled with the best of pictures by Carlo Marratti, Guido, Titian and some of later date. Beside this is a drawing-room, bed-chamber, dressing-room and saloon, all of them furnished with the same kind of ornaments." Studley Royal, then belonging to Lord Grantham, was found to be of stone built on four Ionic pillars. Harewood House, designed by Adam, was then in progress. It is described as "built on Corinthian columns, with two wings with thirteen windows in

front. The whole makes a very grand and magnificent appearance. The rooms are to be finished in the most superb style, and in the manner Mr. Lascelles goes on, bids fair to be one of the most magnificent buildings in Yorkshire."

Leeds is said to be "very large and populous but exceedingly dirty, ill built and as badly paved." The Cloth Hall measured 118 yards by 67 yards, was lighted by 167 sash windows and contained 1,589 stands. Wakefield and Barnsley were next visited, and three miles from the latter was "Wentworth Castle, a seat belonging to Lord Strafford, situated in a park four miles in circumference. The house is a noble building with fourteen windows in front. In the centre are five Corinthian fluted columns which add great magnificence to the appearance. One front is taken up entirely with a long gallery filled with the best pictures. In the other apartments convenience and grandeur are both of them consulted. Lord Strafford himself is his own architect and contriver in everything." Sheffield was described in the same words as Leeds, but it was more disagreeable through the excessive smoke from the great multitude of forges. Birmingham was well paved, and had many good houses in the upper part of the town. The buildings in Coventry being ancient, the town made but a mean appearance in his lordship's eyes. In returning his route lay through Daventry, "a large dirty market town not famous for anything in particular," Towcester, Fenny Stratford, Dunstable to Gorhambury, where he arrived on September 23. The six weeks' tour strengthened his lordship's former opinion "that, though each county may boast of its own particular excellences, yet, considered in the whole, none can exceed the beauty or be preferred to that regular uniformity which is to be met with in every part of Hertfordshire."

It would be interesting to know whether after examining so many larger residences he was as contented with Gorhambury as with Hertfordshire. It was a new house, for on October 25, 1784, there is the following entry, "Took possession of our new house at Gorhambury on this day, after having been employed in building it seven years the second of last month." The bill of the architect has also survived, and the following is a copy of it:—

1775. September.—Account of Joseph Saunders, 252 Oxford Street, London:—

To making working drawings for a summer-house at Gorhambury, going down there and setting out ditto, &c.	£10 10 0
To surveying the house, giving instructions for shering (<i>sic</i>) it, taking the plans of it, &c.	15 15 0
To making designs for a new house at Gorhambury, making four drawings of ditto, &c.	52 10 0
	£78 15 0

The account relates to preliminary work. Whether Joseph Saunders was allowed to superintend the work and was paid further sums is not known.

In the following year Lord Verulam on August 8 started on another journey. From Oxhey, near Bushey, he went to Moor Park, which formerly belonged to the Duke of Monmouth, and was then considered as the best piece of brickwork in England, with a very excellent garden annexed to it. It was afterwards settled on the Duchess of Monmouth, who sold it to Benjamin Heskins Stiles, 1720, who improved it by building a south front of Portland stone with colonnades; the north front, in row, equal to the south. "The inside of the house has been much ornamented with painting and modern furniture by Sir Lawrence Dundas, who purchased it of Lord Anson, whose father bought it of Mr. Stiles." Geology was in 1769 in its infancy, and it is recorded that from a hill near this place many shells of sea fish have been dug at different times. The next house which was visited was Bulstrode, near Gerard's Cross, a jointure house of the Dowager Duchess of Portland, and which contained some good paintings. Thence he proceeded to West Wycombe House, the seat of Lord Desperer. The front was described as of the Corinthian order and elegant; the back front is a cloister, supported above by Corinthian, below by Tuscan pillars. There were many valuable pictures in the salon. On the second day he reached Stowe, of which the following notes were taken:—

"Mr. Pope gives his opinion of this place very justly in two lines, viz. :—

Here order in variety you see,
Where all things differ, yet where all agree.

If a y house can claim the epithet of magnificent, it must be this; if any garden that of beautiful, it must be this at

Stowe. Nature has given sufficient water, which has been improved and properly formed by art. The entrance into these Elysian fields is so ornamented by a view of the house at a distance and beauties of the garden on each side that it must immediately captivate the mind of the beholder. The walk round is computed to be five miles, but the variety of pleasing objects, particularly of temples, obelisks, pavilions, &c., &c., takes off the tedium so much that it appears to be much less. These buildings, which are mostly dedicated to the heathen gods, or to some of his departed friends, have each of them their inscription, which shows in their application the good taste of the person who chose them. The mansion is a square stone building, which has since been enlarged by two wings in which are the most superb apartments. The approach is by a noble flight of steps ornamented with stone balustrades. A mean and incomplete description of this place would be unworthy of it; a proper one is out of my power to give. I therefore must refer my reader to a small book we purchased at Buckingham which will give an adequate idea of the unparalleled chain of natural and artificial beauties of this place."

From the last sentence we may suppose that the traveller's diary was, like other literary productions in those days, allowed circulation among his friends.

Oxford came next. It was entered by Balliol College, and the traveller therefore did not at first receive that noble impression which a sudden view of the High Street generally gives to strangers. He described the principal colleges and other buildings. In conclusion, he says "this University is governed very much in the same manner and by the same rules that Cambridge is. The genius of the two Universities is much the same, except that Oxford prides itself rather more in its independency and glory in not giving way to a compliancy with the measures of a court." Blenheim was next reached, but the crowds of visitors made a minute description an impossibility. The opinion was expressed that the architect, Sir J. Vanbrugh, finished it in as high a manner as his genius could point out. The tapestry, which represents the old Duke's victories, is the finest in England, perhaps in the world. The pictures, which have been culled from the choicest of the best masters, are inimitable, and would entertain, if not improve, every spectator that had sufficient time allotted. But this building, erected by the munificence of the public, is to be run over in the space of an hour, which rather tantalises than satisfies the curious eye. Lord Bathurst's house at Cirencester Park is said to have great beauty on account of its regularity, and indeed on account of the embellishments and size may justly claim to be styled magnificent. The hall is well proportioned, and ornamented with paintings of horses by Wootton and a very beautiful antique Roman coffer, with other sculptures. The Corinthian pillars add much to its elegance. There are many convenient and elegant apartments which are ornamented with excellent pictures.

The two Woods had almost recreated Bath in a style which was most pleasing to eighteenth-century amateurs. According to Lord Verulam, "the Circus, which may be called a model of the famous Circus in Rome, is a most elegant and noble building; the Corinthian, Ionic and Doric orders have a good effect, but the regular symmetry of the whole is the principal foundation of its beauty. Queen Square, Milsom Street, the two Parades are justly admired. The great success that has attended the Circus has inspired a number of people so much with the spirit of building that a select body of them have engaged in erecting another range of houses beyond the Circus, which from the form of it is to be called the Crescent. This, if it is completed, will in beauty or elegance vie with any other building in this place or indeed elsewhere." Bristol, on the contrary, did not find approval. It was said to be very disagreeable, the streets particularly narrow and dirty, and the noise of the trucks, which were without wheels, was annoying.

The Wye was found to be romantic beyond description. Tintern Abbey was wonderfully beautiful, and time seemed to have made little alteration on it since it was first destroyed. Monmouth and Raglan Castle were also visited. At Pontypool there was an iron manufactory and also one for japanning. It is stated that the Pontypool arch, which has a span of 140 feet, was erected by Edwards at a cost of only 500*l*. Wales could not offer to the traveller as many examples of the new style of mansion as were to be seen in the district visited in England. But the scenery offered compensation. They found their way to St. Davids, and the account of the appearance of the cathedral on September 10 will have interest for our readers:—

"The palace and cathedral are now mere ruins, but still have the remains of ancient grandeur. Part of the palace was erected by Saint Patrick (*sic*) for the reception of King John in his journey into Ireland; a monument to this saint is still showed here. This place was once an archbishopric, but has been since translated in [to] the bishop's palace. They show a kitchen which, by the number of fires, seems calculated to supply all the luxuries of eating. A statue of King John and Queen Mary is yet seen over one of the portals belonging to the palace. The cathedral is a most noble and sacred pile of building, though it must now boast more of its antiquity than beauty; it is 300 feet in length. The choir part is the exact size of the tower. The bishop's throne is particularly neat and beautiful; the mosaic pavement round the altar-piece is worth observation. St. David's shrine is to be noticed. Bishop Vaughan's Chapel is immediately behind the altar and is remarkable for the beauty of its architecture. The roof yet remains unhurt by time. This is the place in which it is said the penitents confessed their sins. St. Mary's Chapel, greatly esteemed by our famous antiquarian, Brown Willis, is immediately beyond the other; a relic of St. Peter's head is here presented (*sic*) as are also some other monuments of the bishops of St. Davids. In the church is the tomb of Edmund, Earl of Richmond, father to Henry VII., and also of the famous Owen Tudor. St. David was said to be the father of King Arthur, and lived to be 146 years of age; he was bishop of this place sixty-five years."

The errors in the history of the place suggest the remoteness of St. Davids and the indifference of Englishmen in general to the buildings. Lord Verulam was also too confiding to believe that Inigo Jones was once called Unner ap Jones and "was introduced into the world by Sir Robert Wynne of Llanrwst."

After a month among Welsh mountains it must have been a relief to the amateur when he entered Cheshire and saw the noble prospect which gave an idea of the fertility and richness of the soil of England. In describing Chester he says that "the rows or piazzas, first formed in that manner the better to oppose any enemy that entered the town, run along the side of the streets before all the houses, and have a very particular appearance; the upper storey of each building projects into the street, which makes this covered way. The great use of it now is to keep those that walk free from the rain. The shops are all held under these covered ways and do not appear to the open street. Chester is a very large and opulent town, beautified with many good buildings." Eaton in 1769 was only a small house within a good park.

On the road to Liverpool it was observed that in the neighbourhood of Prescot many of the merchants of Liverpool thought it a pretty spot for their summer habitations, and decked them out in all the little gaiety of a Chelsea villa. In Liverpool the traveller had to submit to a common experience, for it rained almost incessantly while he was sightseeing. He admired the Exchange, the new church of St. Paul, which cost 14,000*l.*, the docks, &c. But the streets were narrow and the houses, built of brick, were more calculated for convenience than for magnificence. He believed Liverpool vied with London in riches and opulence. The merchants appeared as if they intended to engross the business of the kingdom.

Knowsley is said to consist of a long front with nineteen windows. The collection of paintings was much injured by want of care. Crewe Hall, belonging to Mr. Crewe, was found to be a square of very old date which in its day was very superb. It was more to be admired for its antiquity than elegance or convenience. In the drawing-room, which was modernised and hung with paper, were some good paintings.

Trentham and Ingestre were among the mansions seen. Birmingham was admired for the improvements carried out about that period. From the town the traveller made excursions to Hagley and Warwick. He arrived at Gorbunbury on October 28 after an absence of eleven weeks and three days.

SURREY ARCHÆOLOGICAL SOCIETY.

THE annual outing of the members of the Surrey Archæological Society commenced at Lgham Park, permission to inspect which had been granted by Mr. C. S. Stevens, where Mr. H. E. Malden briefly described the earthworks and ditches, which, though possibly prehistoric

fortifications, were in extremely good preservation, owing to their having been strengthened and improved in the thirteenth century. The residence, which is of seventeenth-century date, was then visited, the chief features noted being its fine mantelpieces and carving.

Half an hour's drive, says the *Surrey Advertiser*, brought the party to Crowhurst Church. A paper was read by Mr. P. M. Johnston, who first drew attention to a large and ancient yew in the churchyard reputed to be at least 1,500 years old, and probably therefore marking the site of a pre-Christian meeting-place and cemetery. The church consists of a nave and chancel and a small south aisle, the only entrance being through a porch on the south side. The nave is only 33 feet 6 inches by 17 feet 9 inches, the chancel 21 feet 3 inches by 13 feet 9 inches, and the aisle 17 feet 3 inches by 8 feet 9 inches. The present nave and chancel may represent the shell of a stone-built Norman church, but there are no features visible of earlier date than the last decade of the twelfth century, to which period the aisle, with its entrance doorway and door, belong. The font, which is of beautiful design, is probably of the early thirteenth century, and the church contains some remarkable monuments, chiefly representing members of the Gaynesford family, Mr. Johnston stating that there was no more interesting tomb carving in Surrey.

Before leaving this district a visit was paid to Crowhurst Place, a timber house which dates from the fifteenth century, and is surrounded by a moat which comes quite up to the kitchens. Mr. Ralph Nevill, who described the house, said he considered this was the best specimen of Domestic architecture in Surrey. It belonged to the Gaynesford family—a family of considerable importance from 1340 to about 1700—and the hall and other parts date from the early part of the fifteenth century. Sir John Gaynesford, who had married into the Poyle family, became possessed of the Poyle estates at Guildford, and was buried there. The Sir John Gaynesford who held the property in the time of Henry VIII. seems to have wished to emulate his royal master, who is said to have stayed here sometimes on his road to Anne Boleyn at Hever Castle, since he achieved six wives, and that without the help of the headsman. He had twenty children, but Crowhurst Place eventually came to Erasmus, a son of the sixth wife. The daughters married into good families, and no doubt carried with them portions of the extensive estates. There are several coats of arms in the windows, showing the alliances with De la Poyle, Wakehurst, Covert and others. The house possesses a remarkably fine hammer-beam roof of the early fifteenth century, and had originally a louvre in the centre, by which means the smoke made its way out, the hall being then open to the roof.

Lingfield was the next point. A visit was paid to the fine old parish church, the architecture of which was described by Mr. John Oldrid Scott, who stated that the tower and western portion of the church were of the fourteenth century and the rest of the building fifteenth century. The church contains a splendid series of monuments and brasses, many in memory of the Cobham family, and a description of these was read by Mr. R. Garraway Rice. An opportunity was afforded of inspecting the guest hall, close to the church, by kind permission of Mrs. C. Forster Hayward, whose family will be remembered by many of our readers as former residents of Godalming and who have done much good work in restoring this interesting building. The guest hall was built in 1431 by the third Lord Cobham and much of the original work remains. The banqueting-hall, with its gallery, was inspected with great interest, and was aptly described by more than one of the ladies as a "gem."

Permission to inspect Blockfield, a moated house of the fifteenth century, having been granted by Mr. H. Jeddere Fisher, Mr. Philip M. Johnston spoke of it as one of the most remote houses in the most remote corner of Surrey, and said that, from its style, its date was probably between 1480 and 1500. Only a brief stay here was possible, and the party were then smartly driven to New Place, Lingfield. The inspection of this interesting seventeenth-century house had to be reluctantly abandoned.

The Education Committee having been informed that at the present time there are slight differences in the fees charged at the several schools of art controlled by the London County Council, a uniform scale has been drawn up and will come into force at the opening of the new session.

NOTES AND COMMENTS.

THE site of the Royal Infirmary in Manchester becomes by purchase the property of the Corporation. The sum expended will be 400,000*l.*, which is to be paid in four instalments. The Infirmary authorities have been urged to expedite the completion of a sufficient portion of the new Infirmary to accommodate 300 patients, in order that the ground might be made over to the Corporation at the earliest possible date. It is not, however, likely that the ground will be available until the end of 1908. A part of the site will enable the Corporation to carry out street improvements in the neighbourhood. Another part will be used for the erection of a new reference library, for the building in King Street used for that purpose has been sold for 161,465*l.* It is considered desirable that a new art gallery and a museum should also be erected. The special committee therefore recommend that the Council should, in a more definite form than has as yet been done, allocate the Infirmary site to the public free libraries committee and the art gallery committee, subject to the completion of the necessary street improvements, and to sanction the preparation, under the direction of the special committee, of plans to be hereafter submitted to the Council.

It is generally believed that PETER PAUL RUBENS was born in Antwerp in 1577. There is an inscription to that effect on the house he had erected and in which he died. But one of the Antwerp advocates has made a discovery from which it would appear that RUBENS was born in Cologne and passed nine years of his childhood in that city. The document in question is a genealogical tree of the artist's family going back to 1528. RUBENS has occupied so remarkable a position among artists, for he was an historical character as well as a painter, his biography has been often investigated. RUBENS himself wrote, "I have a great affection for the city of Cologne, where I was brought up until I was ten years of age." According to SMITH's catalogue, a stone tablet was inserted in the front wall of a house in the Rue de l'Etoile, on which was inscribed that PETER PAUL RUBENS was born there on June 29, 1577, and that JOHN RUBENS, his father, died there in 1587. JOHN RUBENS was a lawyer, and he fled to Cologne in 1568 on account of the religious wars in the Netherlands. It is believed he was imprisoned, but in 1578 he was living in Cologne. It is, of course, an honour for any city to be able to claim a great artist like RUBENS as a native.

"QUAINT and Historic York" is the title of a series of twelve plates reproduced from drawings by Mr. E. RIDSDALE TATE, with notes by Mr. GEORGE BENSON (London: B. T. BATSFORD). York presents an immense number of subjects which must always give pleasure to archaeologists, and some of the most characteristic are shown by Mr. TATE. The lantern of All Saints Church is believed to have been the original of St. Dunstan's in Fleet Street, London. Stonegate is a street which rivals any in Canterbury. Monk Bar, Bootham Bar, Micklegate Bar and Walmgate Bar are not surpassed by any portals in England. As Mr. BENSON says:—"The walls at York are unique, being embattled and surrounded by a ditch or moat, so that little imagination is required to recall the ditches filled with water and archers in basinet and with bows in hand pacing the ramparts." Photography has made York as well as other towns familiar, but neither large nor small plates can supersede such drawings as those of Mr. TATE, with their thorough attention to detail.

THE memorial to the late PUVIS DE CHAVANNES, the wall-painter, which M. RODIN has in hand, will not follow conventional lines. M. BONNAT executed a portrait of the artist (in return for a painting which we were allowed to reproduce), and it suggests that PUVIS DE CHAVANNES's figure was well adapted to be a subject for a statue. It is now supposed, however, that Paris

possesses too many figures in modern costume, and that there should be some limit to the representation of sartorial work. M. RODIN therefore proposes to show the bust of the wall-painter as placed on a stele. By the side of it will be a laurel tree, from which a youth typifying Painting is removing a branch in order to place it before the bust as a token of homage. There is originality in the idea, for although palms and laurels are among the properties of French sculptors, there is no precedent for the introduction of a tree.

THE session of the Architectural Association will formally commence on October 5, when at the annual general meeting Mr. R. S. BALFOUR will deliver his presidential address and the prizes will be delivered. Papers on the following subjects will be read at the fortnightly meetings:—"The Architecture of the Roman Empire" (illustrated by lantern views), by Mr. ALAN POTTER; "Axiality in Architectural Composition," by Mr. H. STANNUS; "The Difficulties which Beset an Architect in London, with special regard to existing legislation," by Mr. W. WOODWARD; "Architecture of Sicily" (illustrated by lantern views), by Mr. W. HOWARD SETH-SMITH; "Regent Street," by Mr. M. E. MACARTNEY; "Training and Workmanship," by Mr. G. C. HORSLEY; "Spanish Architecture" (illustrated by lantern views), by Mr. A. N. PRENTICE; "Sanatoria," by Mr. EDWIN T. HALL; "Westminster Cathedral," by Mr. J. A. MARSHALL; "Theatres," by Mr. FRANK T. VERITY. A paper will also be read by Mr. TEMPLE MOORE.

THE syllabus of the classes of the Borough Polytechnic Institute is satisfactory for several reasons. It is evidence that education of a general as well as a special kind is obtainable at cheap rates in districts which for a long time were supposed to be outside the pale of all but a humble class of teaching. Excellent premises have been erected, there is a large staff of teachers, and the subjects are those which are essential to everyday life. The Institute can claim to be a *studium generale*, but with an amplitude beyond the imagination of the Mediævalists who first used the phrase.

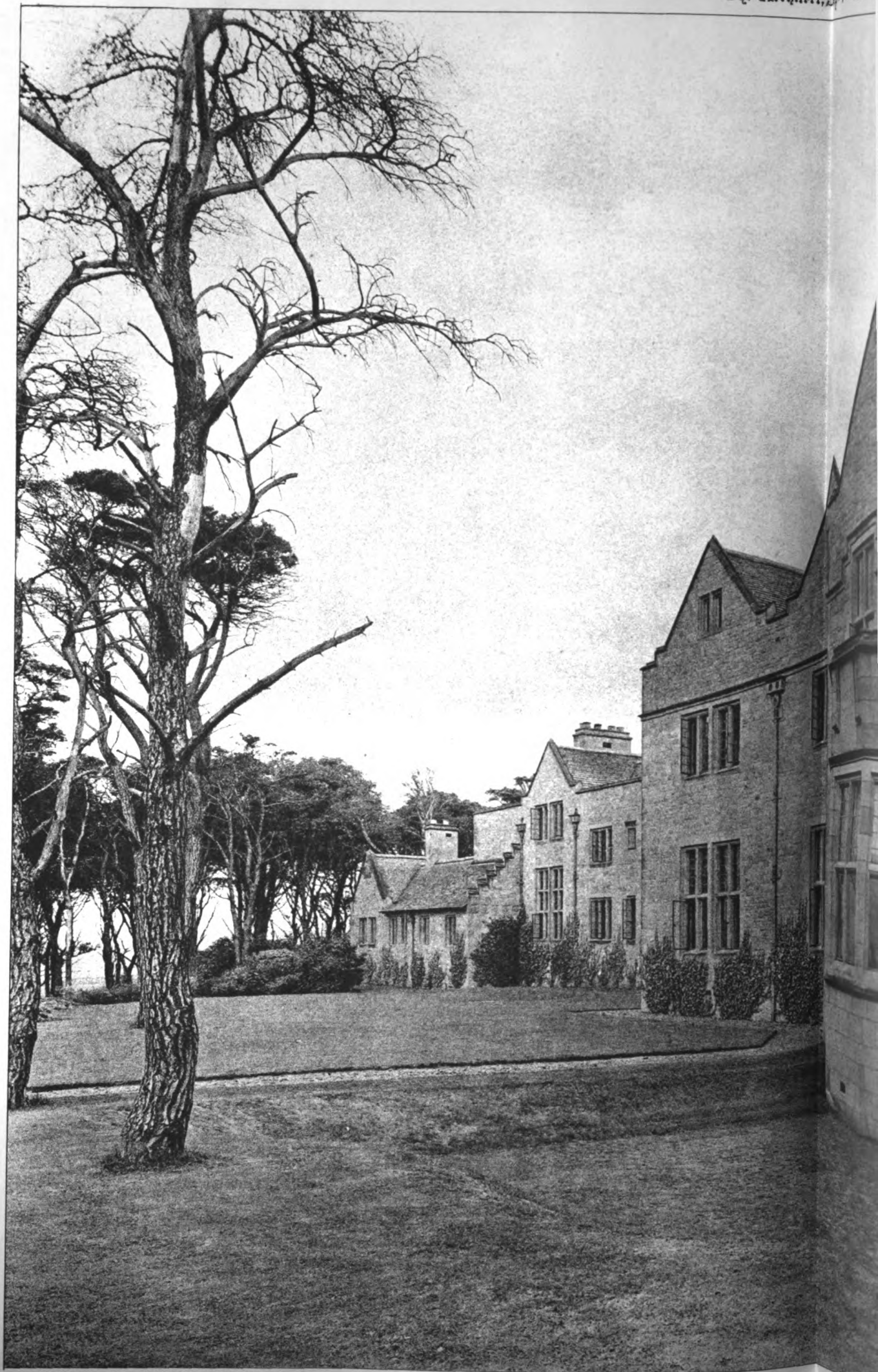
A POINT of some importance has been decided by RIDLEY and DARLING, J.J., upon the construction of section 91, subsection 1, of the London Building Act, 1894. It is provided by the subsection in question that where a difference arises between a building owner and an adjoining owner in respect of any matter arising with reference to any work to which any notice given under this part of the Act relates, the matter shall be submitted to the arbitration of surveyors, and that "they shall settle any matter from time to time during the continuance of any work to which the notice relates, in disputes between the building owner and the adjoining owner, with power to determine the right to do and the time and manner of doing any work, and generally any other matter arising out of or incidental to such differences." The question arose, in the case of ADAMS v. Mayor, &c., of St. Marylebone, whether this section gave the surveyor power to award consequential damages to an adjoining owner on account of loss of trade during the continuance of operations of the building owner. The Court decided that the surveyors appointed under this section could only consider questions of structural damage. It was pointed out that provisions for getting compensation for such consequential damage as was here sought to be recovered were contained in other sections of the Act. This section dealt only with differences of opinion as to structural questions.

ILLUSTRATIONS.

NEW PREMISES, NO. 27 MADDOX STREET, W.

LANTEROS-BY-POWELL, AFTER RESTORATION.

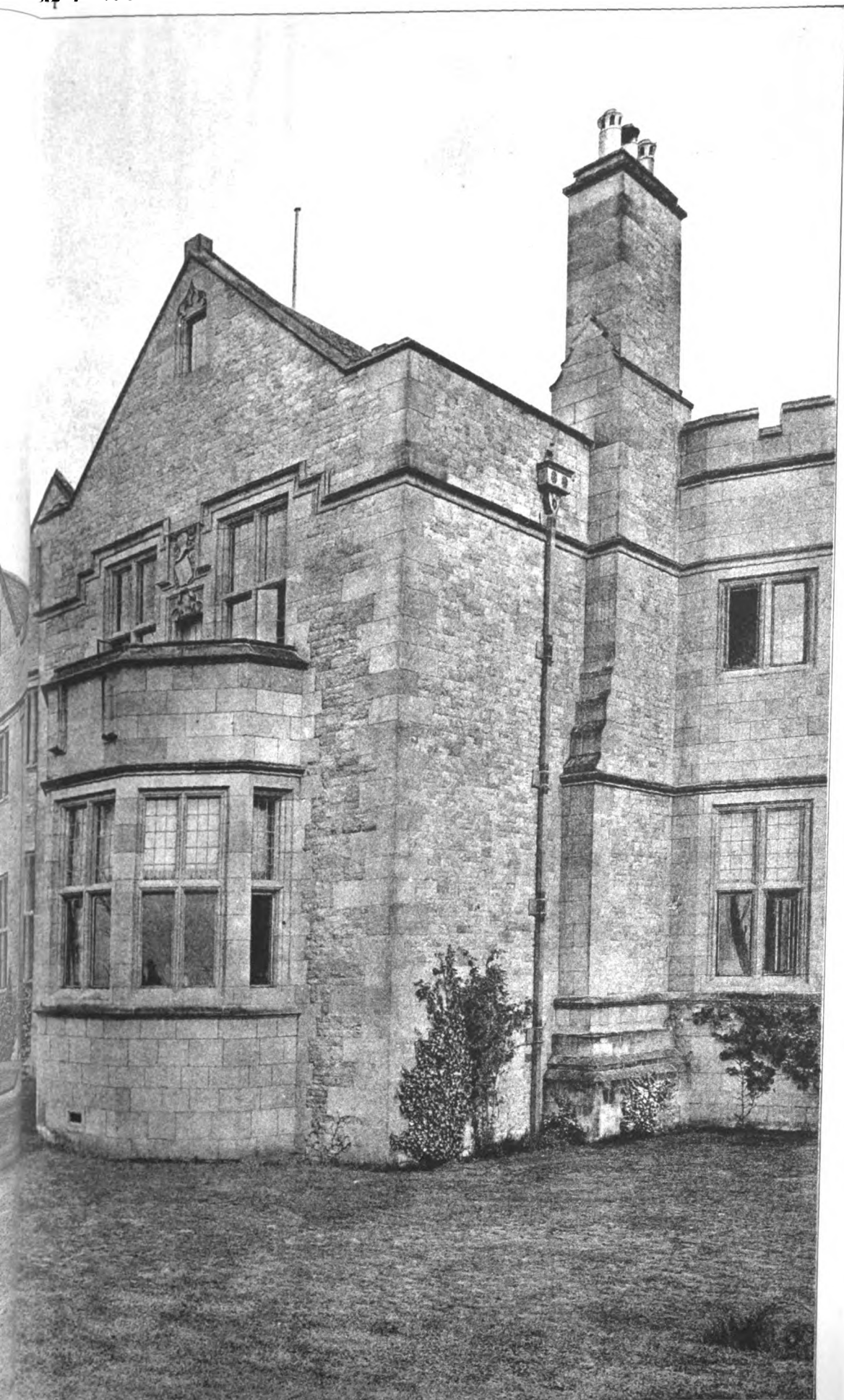
CARLE KEMP, NORTH BRIDGEMAN.



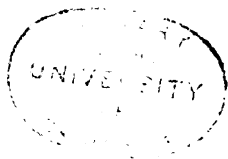
PHOTOGRAPHED BY BEDFORD LEMERE & CO. 147, STRAND, W.C.

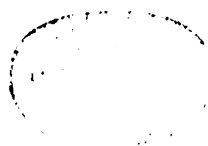
"CARLE KEMP," NORTH BERWICK.
JOHN KINROSS, Architect.

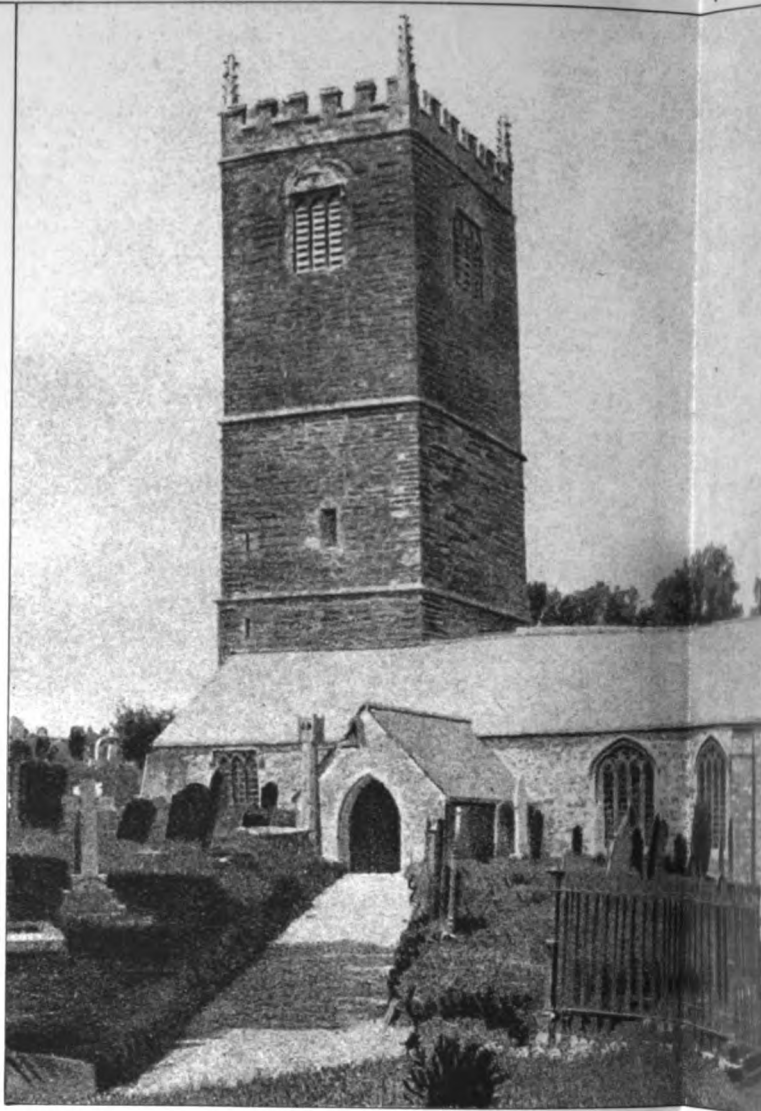
Sept 7th 1906.



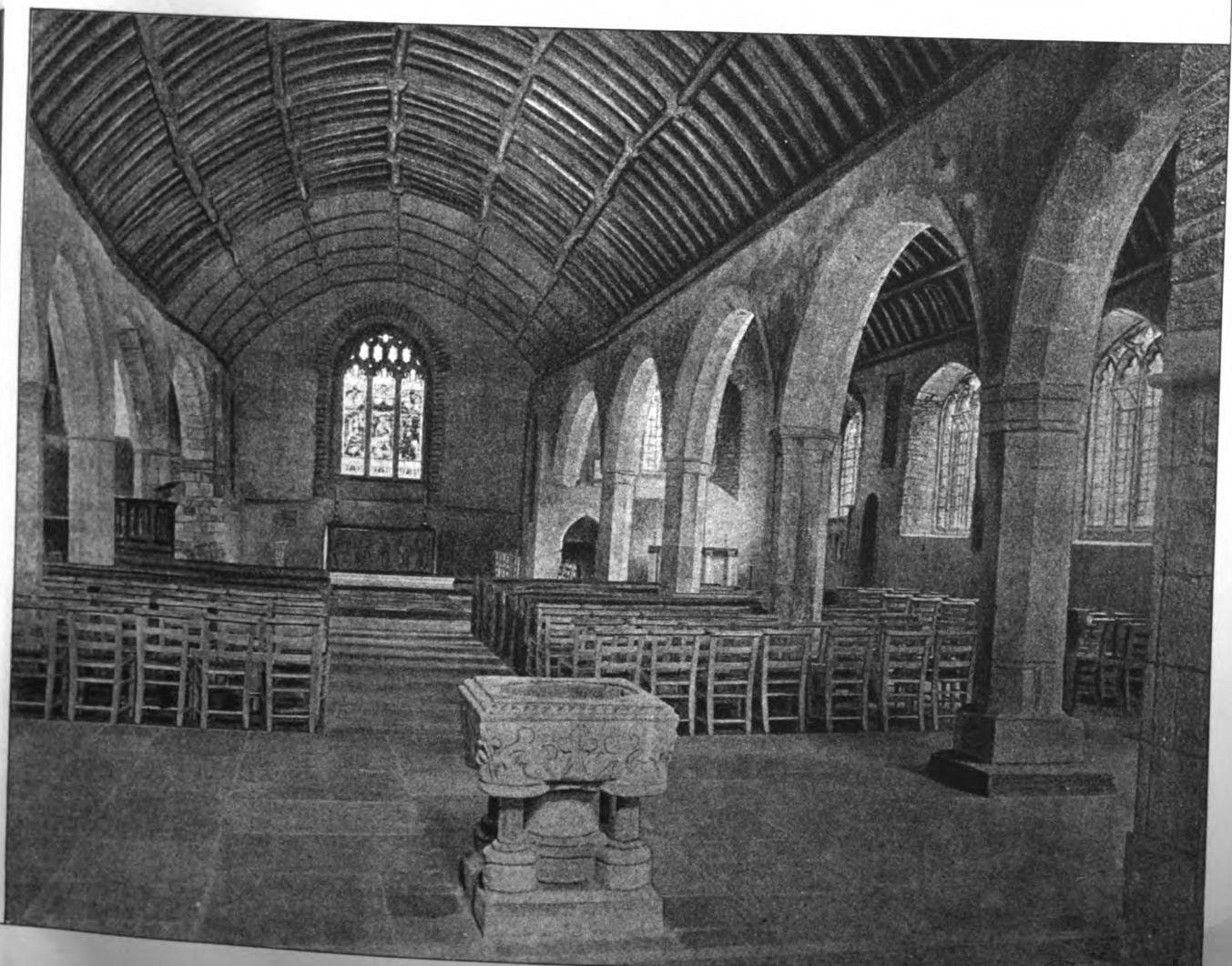
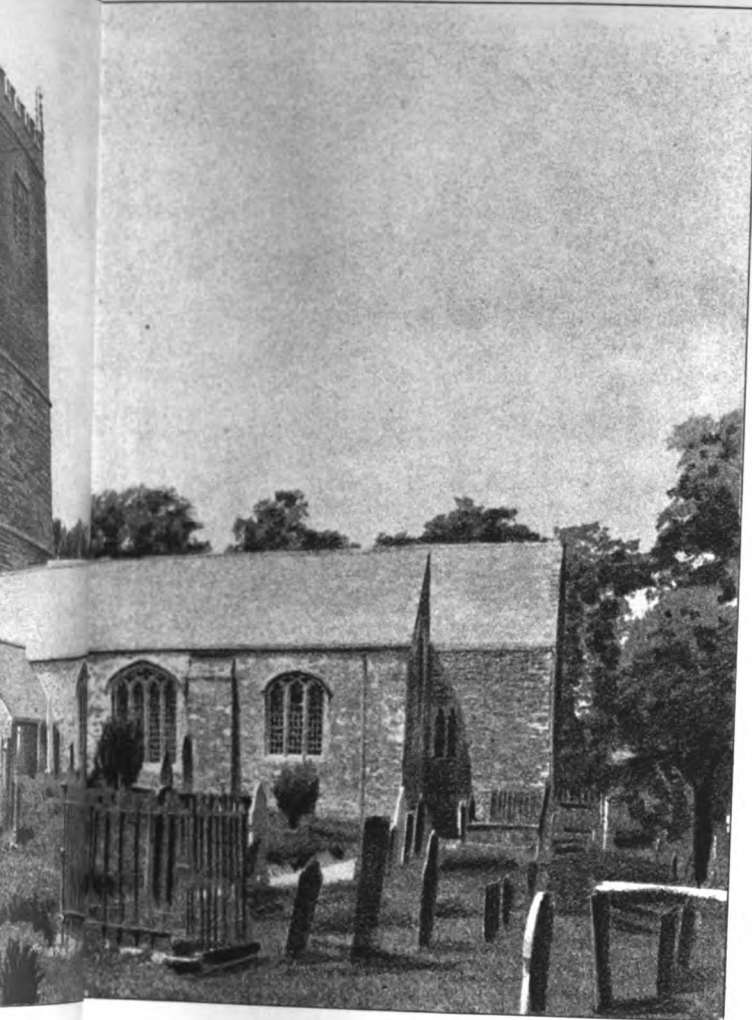
"INK" PHOTO SPRAGUE & CO. LTD. 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.







Sept 7th 1906.



AFTER RESTORATION.

LANTERNE, R.I.B.A., Architect.

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The Architect, Sep^r 7th 1906.



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NEW PREMISES, NO. 27 MADDOX STREET, W.

E. KEYNES PURCHASE, F.S.I., Architect.

The Architect, Sep 7th 1906.



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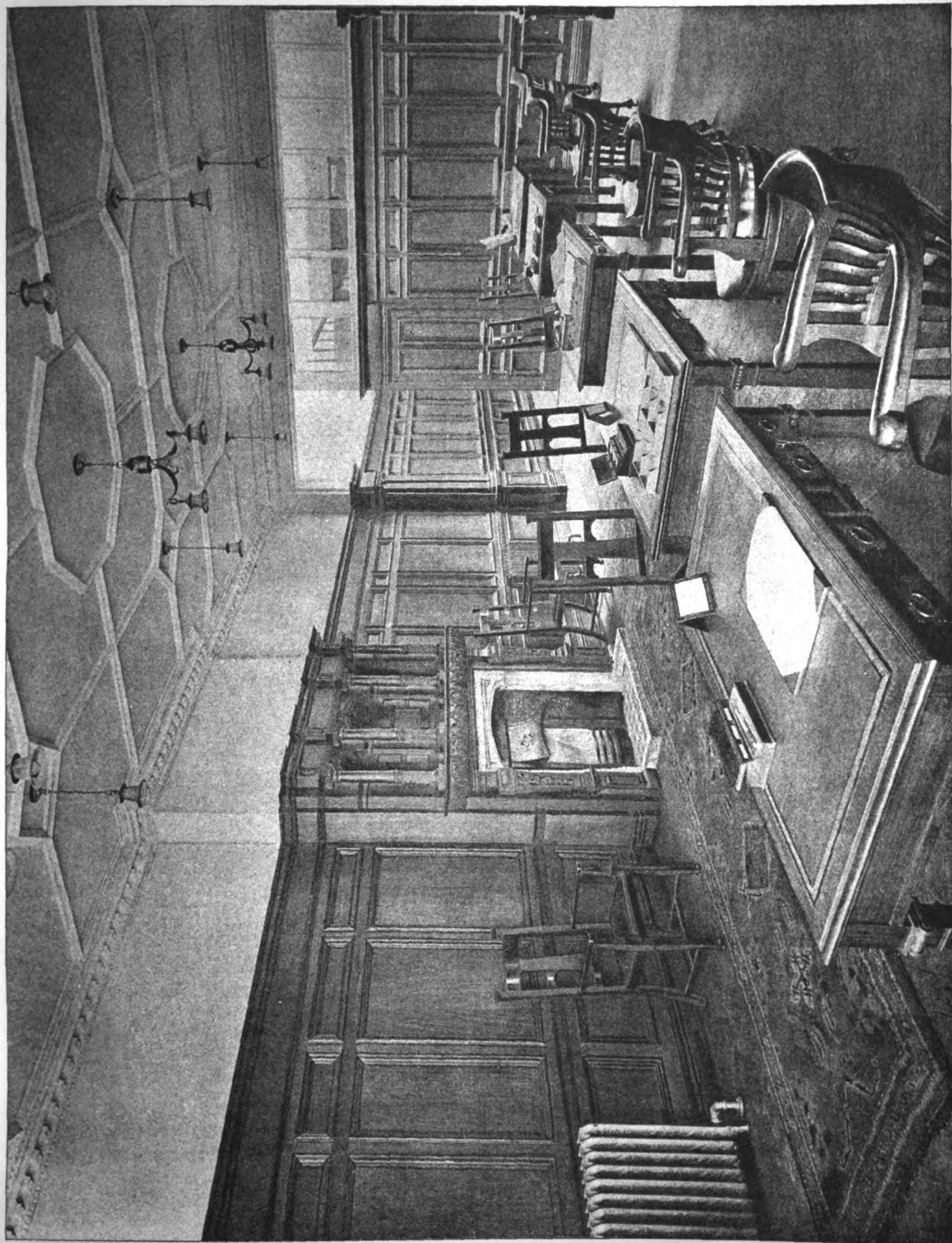


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ST. DAVIDS CATHEDRAL.*

(Continued from page 151.)

THE historian of St. Davids is fortunate in the commencement of the portion of his work which relates to its architectural history in not having, as in so many instances, to combat any received opinion attributing an exaggerated antiquity to the building. Even Celtic nationality has shrunk from attributing so vast and magnificent a fabric to the early native princes and bishops, and it would require no great amount of acumen to show the impropriety of applying the term "Saxon" to the buildings of a country which was never subjected to the internal sway of the Saxon kings. At all events, antiquaries from the days of Godwin downwards have been content to attribute the earliest portions of the existing fabric to the time of Bishop Peter de Leia, who was consecrated in 1176, and who is recorded to have rebuilt his cathedral after it had "bene often destroyed in former times by Danes and other pyrats, and in his time was almost quite ruined." There is, of course, no probability of any remains existing of the probably small and rude British structure which may have preceded the Norman invasion, but it does not at first sight agree with the ascertained history of other cathedrals to find not only no certain traces at present, but no distinct record preserved of the erection of any structure between the consecration of the first Norman bishop in 1115 and the re-edification under Peter de Leia, to which we undoubtedly owe a very large portion of the present church. It is, however, necessary at this stage of the argument to draw attention to a statement on which it is only wonderful that more theories have not been built up as to the existence of a Norman structure prior to the present one. In the "Annales Menevenses," which are for a long space of time our principal and, indeed, most invaluable guide to the architectural history, we find a "dedication of the church of St. David" recorded as having been celebrated in the year 1131, during the episcopate of Bernard, the first Norman prelate. But as the architectural world has been informed by Professor Willis in his lecture at Wells, such a "dedicatio" does not necessarily imply any building or rebuilding immediately precedent, and in this case we have a ready explanation in the formal canonisation of St. David at this time by Pope Calixtus II., which would naturally be celebrated by some such ceremony in his own church. Besides, this sort of implication is hardly the way in which so important a work as the reconstruction of the cathedral would have been recorded in a document which, with all its brevity, generally enters far more into particulars.

Even if it should be contended that a church was erected here between 1115 and 1180, the fact is of comparatively little consequence, as the reconstruction of the building, which commenced in the latter year, is undoubted, and no traces remain in the present church which there is any inducement to refer to an earlier period. The work of this date we may safely infer from the "Annales," as well as from the evidence of the building itself, involved a complete destruction of whatever was then standing whether of British or Norman origin. It certainly had no such influence on the present cathedral as the small building erected by Urban has so conspicuously had upon the existing church of Llandaff. But on the whole the amount of evidence both intrinsic and extrinsic seems in favour of the belief that no such intervening structure ever existed, and that the large and splendid edifice of which the nave still remains was the immediate successor of the small and dilapidated cathedral of the native saints and primates.

And we may indeed imagine that there were many circumstances about the see of St. Davids which may well have damped even the proverbial church building ardour of a Norman prelate. The utterly unsettled state of the half-conquered country would throw many obstacles in the way of great architectural undertakings, and the church of St. Davids after its frequent destructions may well have laid desolate for a while, just as that of Bangor did from similar causes in a much later and more civilised age. Besides, the character of Bishop Bernard as transmitted to us by Giraldus seems rather against the supposition that he at least would be disposed to rival the great works of the day in England, or even those of his contemporary

Urban at Llandaff. When we remember the stately pile which owes its origin to the labours of Ralph Flambard, one would not regard ordinary moral obliquity as supplying any *a priori* difficulty; but alienation of the revenues of his see and a restless hankering after some higher preferment are certainly not the qualities which one would expect to result in the foundation of a cathedral church.

The church of De Leia appears to have exactly answered to the present main fabric of the cathedral—the nave, choir and transepts, with their aisles, but exclusive of the subordinate chapels. Of these the nave and the western arch of the lantern still exist, and the remainder appears to have been rebuilt on his plan and to a great extent in imitation of his structure. Godwin, therefore, is fairly justified in saying that he "may in some sort be said to have built the church which now standeth." The extent of his church eastward appears to be shown by a small fragment, the only one east of the western arch of the lantern which can be assigned to this date, but this is one of no small importance. The east walls of the choir aisles, between them and the chapel aisles, though much altered by successive insertions, yet appear in the most essential parts of their masonry to be contemporary with the nave. Yet this part of the church is full of difficulties on any supposition. The wall exhibits below the present roof-line the earlier one, which, as we shall presently see, it retained till the fourteenth century, resting against the same point on the choir walls, but of much steeper slope, and consequently involving much lower walls in the aisles. Below this is a round arch looking just like one of those traced out for vaulting, and below it the arch of a round-headed window, blocked and cut through by the arch leading into the chapel aisle. If this be a vaulting arch there would be *prima-facie* evidence in favour of the belief that it must belong to a structure anterior to the present choir, afforded by the fact that the arches of the latter rise far above it, and consequently no roof of which it formed a part could possibly have co-existed with them. But, on the other hand, we shall find the same difficulty occurring where the two discordant elements are clearly contemporary, and there is even reason to believe that in some parts of the church the intention of vaulting was given up by reason of the impossibility of carrying out the contemplated design. Yet there is good reason to believe that we here have a relic of the earlier choir contemporary with the nave. For this arch, unlike the other arches of only contemplated vaulting throughout the church, is not merely traced against the wall, but is a real moulded rib. And, moreover, it has evidently been tampered with during the transitional rebuilding; it has been patched with a moulding of somewhat different section and made to rest on a much later capital, one of the most advanced of the second date, having a round abacus. The first fact certainly seems to prove both propositions—that this arch belongs to Bishop de Leia's work, and that it was altered during the Transitional changes. One can only conceive it retained at that period in order to give greater effect to the window below.

This fragment then seems sufficient to prove that the extent of De Leia's choir was identical with that at present existing, and that the east end was flat. It also, as being a moulded rib, does not prove, but certainly tends to encourage the belief that the choir aisles of this period were actually vaulted. Whether this be so or not, Peter de Leia certainly set, both in the aisles of his nave and in the nave itself, an example which seems to have found many imitators among the subsequent benefactors of St. Davids, namely, that of tracing out lines of vaulting which from some cause or other they failed actually to accomplish. It is not improbable that in his case the failure was connected with an original miscalculation in the design. His vaulting shafts exist all down the aisles, and at the east end the arch springing from them is traced out; but it seems quite impossible that the system thus suggested could ever have been carried out, as the apex of the arch against the east wall falls very much lower than that of the pier arch, so that a vault of the strangest and most uncouth kind would have been the result. One can only suppose that in planning the nave the effect which the vast width of the pier arches would have upon the vaulting—which, as usual, was left for the last thing—was altogether forgotten.

Nor was the design for sexpartite vaulting, which was traced out over the nave itself, characterised by a greater degree of wisdom, as the apices of the lateral cells were made much lower than those of the transverse arches, as we see by the present ceiling, whose impost coincides with

* From the *History and Antiquities of St. Davids*. Architectural History of the Cathedral, by W. S. Jones, M.A., and E. A. Freeman, M.A.

the apices cutting off so much of the western arch of the lantern. Had such a vault ever been carried into execution the effect would have been extremely unsightly.

The evidence afforded by the appearances at the east end of the choir aisles, and, indeed, by the vaulting system generally, is sufficient to show that the original aisles had very much lower external walls than at present, and consequently very much steeper lean-to roofs. The original roof-line comes almost exactly to the same point as the capitals of the later vaulting shafts. Externally, on the north side, we may suppose that the wide lower portion of the pilasters represents their original supports, and that they were heightened as we now see them when the aisle walls were raised. The single one of the same width throughout is a no greater difficulty, whether we think it was originally narrower than the others or was altogether constructed at the later date. At the junction of the north aisle and north transept there is also a piece of projecting ashlar (looking at first sight almost like a flat respond with the spring of its arch), which agrees with the first height of the aisles and is probably a member of the same set of pilasters. At the north-west angle internally there is an appearance somewhat like a flat pilaster, most probably a small portion of De Leia's wall, left when the upper part was rebuilt of a smaller thickness in the fourteenth century; connected with this is some change or patching in the strings which it is not easy to account for, nor, indeed, to ascertain the date or character of one of the strings, so completely is it defaced. At the corresponding point on the south side is another pilaster ranging with the later vaulting shafts, and which doubtless was designed to act as one of them; yet it is probably a portion of De Leia's work connected with the staircase turret which then, as now, occupied the south-west corner of the nave. It rises higher than De Leia's vault, but not higher than his wall, and as the vault was never completed, shows no mark of any roof against it.

How long the work commenced in 1180 took before it was completed we have no means of ascertaining. There is, however, reason to believe that it was still in progress about the year 1190, as in a document executed shortly after the death of Henry II. a contribution to the works then going on in the cathedral was allowed as a substitute for going to the Crusade. Perhaps, indeed, as a portion of the church is spoken of as "new" in 1220, we may venture to infer that it had not been brought to perfection very long before that time. So great a work would doubtless be spread over a considerable space of time, and it may not even have been accomplished during the episcopate of De Leia; but that the whole nave at least was erected from the design commenced by him can admit of no doubt. The whole is clearly of a piece throughout, with the exception of the western pair of arches. These, it will be remembered, are pointed, and exhibit some differences in detail from the others. What is especially remarkable, the bases of their responds do not present at all the same confirmed Early English section as those of the piers; but there is no reason to believe these arches to be either earlier or later than the rest. The base employed is very common throughout the church, being the prevailing one in the vaulting shafts of the nave, and if miscalculation of the ground or any other cause, accidental or designed, required these arches to be narrower than the rest, the natural mode of preserving comparative uniformity would be to bring them to the same level as the others in point of height by the employment of the pointed arch. For it must be remembered that the pointed arch was freely used in contemporary buildings, and we have it even here both in the triforium and in the contemplated vaulting of the nave. Hence we are not driven to suppose, as we otherwise might easily have done, that this form of arch was introduced as a novelty into this part of the nave, which would naturally be the last portion of the church brought to perfection.

Of De Leia's west front we are left to patch up our account from the indications still remaining in the wall and from some old and not very accurate engravings. That the aisles had at their west ends round windows of some sort is clear, but there may be some question as to their date. It would seem, however, from Grose's engraving, copied by Mr. Manby, that the lower half of each was blocked and common Perpendicular or other tracery, perhaps contemporaneous with that in the north clerestory, thrust into the upper part. Taken together with the splay at present existing in the north aisle, this may afford evidence that the round windows are original. The angles of the aisles and of the nave itself had quadrangular turrets, the former

certainly and the latter in all probability terminating in pinnacles. The turrets of the aisles must have contained staircases lighted by loops or small windows towards the west; those of the nave were adorned with blank arcades in two tiers corresponding with those of the windows. The arches of the lower arcade were pointed; the upper ones are doubtful. There was a great doorway in the centre under a semicircular arch of several orders; how adorned there is no evidence to show. Above this there were, as we have said, two tiers of windows. The lower tier consisted of an arcade of three equal semicircular arches, probably resting on engaged shafts and pierced by long narrow windows which seem to have had round heads. Over this we have a composition of five unequal lancets. Finally, there is a single lancet set in the gable. We may perhaps conclude from the contemporary evidence of Archdeacon Yardley that this composition of lights, with the probable exception of the single lancet in the head, which must have been meant to air the roof, was under a single containing arch, and that may have been the present rear arch of Mr. Nash's window.

... The next important event recorded by our annalist is the fact that in the year 1248 the church was very much damaged by an earthquake. To this cause we can hardly fail to ascribe the insecure and bulging condition of so great a part of the church, especially of the north side of the nave. But it must also have made itself very severely felt in the eastern part of the building. Possibly the tower or part of it may have fallen on the roof of the choir, as it can hardly fail to be at this time that the clerestory of that portion was altered. The alterations in the side windows were made, even at so late a period, in strict imitation of the former work, but at the east end, where the architect was less fettered by precedent, he produced a design in the usual fashion of the age. Besides the traces still remaining there is documentary evidence to prove the existence of a round window in the gable. It would be very possible, though not absolutely necessary, to attribute also the Early English arcades in the lantern to this age, especially if we suppose a second fall of the tower.

The chapels east of the choir were originally commenced during the Early English period; but we have not such direct evidence as to the exact date of those portions which must be assigned to this age as we have for the earlier and the later portions of the cathedral. They seem to have been built to a certain extent from a uniform plan, and yet even in the Early English details themselves we see changes sufficient to induce us to suppose that the work was commenced at a much earlier period and spread over a long space of time with considerable intermissions. A great part was probably erected in connection with the repairs rendered necessary by the earthquake of 1248, although some portions seem earlier than that event. Notwithstanding numerous subsequent changes, enough is still preserved to show their general plan, though some parts remain in a state of no little obscurity. This general plan consisted then as now of a continuation of the choir aisles on each side of the central space, which is prolonged beyond them to form a lady chapel, but the latter in its present form was a somewhat later addition and apparently not contemplated in the original design of this period. Of the condition of the space immediately east of the choir now forming Bishop Vaughan's Chapel it is not easy to speak at this period. The description given of it in George Owen's MS. History, as "*vilissimus sive sordidissimus locus in tota ecclesia*," a designation which it is said to have continued to deserve up to the days of that prelate, is very remarkable and not very intelligible. But the idea conveyed by it, although sufficiently vague, agrees excellently with the manifest fact that, till that period, it clearly never entered so to speak into the design of the church; buildings were formed all round it, with no further reference to it than to exclude it from all account.

The Memorial to Dean Hole now being set up in Rochester Cathedral will be unveiled on the 29th inst. It consists of a recumbent figure of the late dean in statuary marble (exhibited at the last Royal Academy exhibition), the work of Mr. F. W. Pomeroy, A.R.A., which rests upon an altar tomb or base of alabaster designed by Mr. C. Hodgson Fowler, F.S.A., the cathedral architect. The memorial is at the southern extremity of the south transept, close to the lady chapel.

THE ARBOR LOW STONE CIRCLE.

SEVERAL of the members of the North Staffordshire Field Club, under the leadership of the Revds. C. F. L. Barnwell and F. C. R. Jourdain, lately visited the stone circle at Arbor Low, Hartington Church and Beresford Dale. At Arbor Low an inspection was made of the imposing and impressive monument.

It should be stated, says the *Staffordshire Advertiser*, that the whole of the stones forming the "circle"—it is not actually circular, but was described as pear-shaped—lie prostrate and partly sunk in the turf, and the question of whether they ever occupied any other position appears to be a debatable one. The circle is surrounded by a fosse, or ditch, with an outer vallum or rampart and a tumulus at the highest point. There are numerous barrows in the locality.

Mr. C. Lynam remarked that though he had visited the place many times he had never been there without finding at least a fresh breeze blowing. The early archæologists, the Batemans, did work there, and dug on the enclosure and the tumulus. They found some flints and two pieces of pottery. Recent explorers had found that they left Arbor Low in a very rough state and apparently cared little what became of it. The British Association had now taken up the study of this remarkable work, and for two successive years they had engaged Mr. St. George Gray, a gentleman who worked under General Pitt-Rivers for eleven years. Mr. Gray made a most accurate survey of every point within a certain square enclosure surrounding the work at Arbor Low, with the result that they now had a perfect map and sections of the place. Mr. Gray also made six excavations, some across the fosse and some across the vallum, and one or two by the side or in front of some of the stones. But he was not quite satisfied, and was asking that he might trench the whole of the interior. Whether that would be allowed him or not remained to be seen. Mr. Lynam exhibited Mr. Gray's map. The surface of the present fosse was by no means the surface of the original fosse, because it had had tens of centuries to silt up. The fosse was really cut into the limestone all the way round. He added that though the stones themselves were not in a circle, the vallum was a true circle on the top. Mr. Lynam refrained from any more detailed remarks at this point, as he feared the members would feel the cold wind, but later in the day he read a summary of the report of Mr. H. St. George Gray upon his investigations, explaining that Mr. Gray was employed by a special committee appointed by the British Association to investigate ancient British remains of this character, and which committee comprised Dr. Garson (chairman), Mr. H. Balfour (secretary), Sir John Evans, Mr. C. H. Read, Professor Meldola, Mr. A. J. Evans, Dr. Munro and Professor Boyd-Dawkins. During the six weeks that the excavations were in progress no metals were discovered nor any traces of fictile ware that could be assigned to the date of the construction of Arbor Low. Six excavations were cut through the fosse, two cuttings were made through the vallum, four patches of trenching were dug in the interior and in the small dyke to the south-west; 7 feet of rampart and 1½ feet of ditch were excavated. The number of relics found was certainly disappointing, and yet, on the other hand, Arbor Low not having been a habitation, and from negative evidence not appearing to have been a place of sepulture at a period closely following its construction, more relics could not perhaps be expected under the circumstances. Nothing Roman had been found except three small fragments of what appeared to be Romano-British pottery just below the turf in the interior. Dr. Cox wrote in 1884:—"I have been myself convinced after the closest and most unprejudiced study that the date of Arbor Low is subsequent to the Roman occupation of Britain, and that it was erected as a trophy of victory on a spot where a commander fell or where the crisis of a battle was decided." Flint scrapers were frequently found during successive ages down to and including Roman times, but here they were found deep in the silting of the fosse, only in association with other rude stone implements and chipped flint arrow-heads of Neolithic form, but of a variety found also in later periods. The majority of the implements found at Arbor Low appeared to be of chert, which was only what would be expected, seeing that it was indigenous and an excellent substitute for flint. Arbor Low was of such precise age as the barbed arrow-head might have assigned to it, having been found on the bottom of the deepest portion of the fosse. This form, being usually recognised as a late development in Neolithic flintworking, pointed to

the probability of the construction of the fosse and vallum not being assigned to a date earlier than the late Neolithic period, although, judging from various "finds" of Neolithic arrow-heads of barbed form, they might perhaps have been in use in some districts about the middle of the Neolithic period. However, there were no indications that this arrow-head might have reached its position at a date long subsequent to the formation of the fosse. On the other hand, it was well known that the tanged and barbed type of arrow-head was very frequently associated with Bronze age "finds." The existence of stone implements to the exclusion of bronze did not necessarily establish a Neolithic age for a monument such as this; yet considering the amount of excavation done the absence of bronze had some significance. If Arbor Low was actually constructed in the early Bronze age we should not expect to find any abundance of the then precious metal. On the south-west vallum a Bronze age tumulus was constructed, undoubtedly from material derived from the original monument of Arbor Low. No bronze was found here or in Gib Hill just over a thousand feet distant, but their other contents pointed to a Bronze age culture, probably not particularly late. If the "finds" from this tumulus on the vallum of Arbor Low were to be regarded as belonging to the early Bronze period, then "the probability of the circle being of the Neolithic date is much increased." Their conclusions, in the present state of their knowledge, had to be deduced on somewhat meagre evidence as regards the quantity and nature of the relics found. The date of the construction of the Arbor Low stone circle should be located in accordance with the evidence derived from these explorations, within the period covered by the late Neolithic and early Bronze periods—in other words, the period of transition from stone to bronze. The date of the construction of Arbor Low appeared to tally precisely with Mr. Rowland's deductions as to the date of the erection of Stonehenge, from evidence derived from his excavations there in 1901. The Bronze age, according to most authorities, commenced in Britain *circa* B.C. 1800, so Arbor Low might be reckoned at from B.C. 1900 to B.C. 1600. With reference to the skeleton found in the centre of the circle, Mr. Lynam quoted the following observations by Dr. Garson:—"The skeleton is that of an adult male. The osteological characters show that the individual was not of the type found in interments of the Neolithic period, neither do they point to his being of the Bronze age type, though he was more nearly allied to it than to the former. On the other hand, there are no characters about the specimen which would preclude its being much more recent, even that of a person interred only about 100 years ago. The extended position in which the body had been laid decidedly supports the view of the interment being of more recent date than the Roman period, to which I consider the weight of the evidence afforded by the osteological character also points."

The Rev. F. C. R. Jourdain spoke of the great advance made in regard to this subject in the last thirty years. Sir John Lubbock read a paper to the British Association on that spot in 1879, and admitted that he did not know the object of the monument, and Mr. Cunningham, opening a Wiltshire barrow, said, "I don't know—nobody knows, and nobody will know." To-day, however, he thought they could begin to see daylight. They no longer regarded the interment which had taken place there as the *raison d'être*. There were formerly two parties holding different views of these stone circles. One party thought they were burial-places, and the other temples. Sir John Lubbock tried to show that it was a natural transition from a dwelling-house to a burial-place, and from a burial-place to a temple. About 1891 Sir Norman Lockyer went to Egypt and proved that the temples were carefully oriented, so that the rising and setting of certain stars and that of the sun at certain seasons could be watched along the axis of the temple by a priest. This was independently suggested by Nissen, of Bonn, and references also occurred in inscriptions. If, as seemed probable, Sir N. Lockyer's researches were on the right line, the objects for which it was done were three, viz.:—(1) To determine the time at night; (2) to observe a star rising or setting heliacally, *i.e.* about an hour before sunrise, on great festivals, so that when it was necessary to do anything at sunrise they could be prepared; (3) to determine the time of year, when the sun had reached a particular point. Thus they could tell the exact day of any particular year when a great festival was due. In the earliest time the year began with May, but it was afterwards altered to the solstitial year, beginning on the longest day, June 21. In regard to the Egyptian temples, they had

very dubious information as to when the buildings were erected; but where it was known, the date coincided in a wonderful way with the results obtained theoretically. As instances, he gave a temple which was, as far as they could tell, founded 6,300 years ago and restored 5,100 years ago, and the theory gave the respective dates as 6,800 and 5,000 years ago, and a second case in which the date was fairly accurately known as 4,333 years ago, and the theory gave 4,400. The same theory was tried in Greece by Penrose with excellent results, because the dates of buildings were more exactly known from other sources. The third stage was the application of the theory to our stone circles in England. It was difficult to say at once what the axis was, but if they took a line from the centre of the circle to one of the outlying barrows they did get an axis, and if they did the same in respect of several barrows they got several axes. By calculation they could find out what stars were rising and setting along these axes. In explaining the theory, Mr. Jourdain said if they first measured off the exact angles of the outlying stones from the centre, then measured the angular height of the sky-line across this line with a theodolite, with these two and the latitude they could calculate the declination — *i.e.* the distance from the equator of the body observed along that line. This declination was always changing. By tables which went back 6,000 years it was possible thus to ascertain the age of the circle. The principle had been applied to about eight British circles (but not yet to Arbor Low), and, roughly, the dates ranged from B.C. 1000 to B.C. 2300. As happened in Egypt, they began as May temples and ended as June ones. He did not mean that they could get an exact date for each circle. They could take one line of observation and find out when it was laid out, and then take another and find out when it was laid out, some hundreds of years later, just as they could go into a church and pick out the different periods of architecture. According to the number of axes they got a number of dates, and they might infer that these circles were laid down very carefully, very gradually and very slowly. This was an enormous step in advance of 1879, and he thought it was a reasonable theory to account for these circles. The quantity of actual remains found at Arbor Low was small. If they imagined that it was used as a kind of observatory the whole thing was perfectly clear. No doubt the astronomers dwelt there. The results of recent research showed that there was a distinct connection between Egyptian temples and these circles. Probably the priests who worked in those stone circles in England received their first training in the same school as the Egyptian and Grecian priests did. One reflection that these things suggested was the enormous amount of care used in the selection of these places and the skill with which the outlying angles were laid out. It was all very wonderful, considering the paucity of scientific instruments and aids then possessed by the people. A vast amount of astronomical research and preparation must have taken place. He reflected that the outstanding stones must have been illuminated at night. Cæsar said, "The Druidical priests were in the habit, not only of carrying on investigations of their own, but also of handing it on to their youth." These investigations only tended to show how true his words were. One could not study these things without an increased respect for the abilities and patience and attainments of our fathers.

Mr. T. Arthur Matthews, of Ashbourn, an engineer who has given much care to the study of the Arbor Low circle, was present, and laid before the Club some remarkable facts which his researches had brought to his knowledge within the last few months. Mr. Matthews said he met Mr. St. George Gray there during that gentleman's examination, but the information he was able now to communicate had been gathered since that time. He explained that he was intensely interested in the subject and pursued it as a hobby. Mr. Matthews went into considerable detail of a technical character, but the facts which he stated and upon which he based his theories, included the statement that Arbor Low was almost exactly due north of Stonehenge, and even more exactly 2 degrees of latitude north of Stonehenge. The site of the circle rose considerably to the north, and one of the outer stones was due north from the centre. His observations led him to attach great importance to the angle of 30 degrees west of north — which was as XI. on a clock face, if XII. were due north — and also that of 30 degrees east of north. He pointed out a semicircular dip in the line of hills which gave a view of more distant peaks, and said the line 30 degrees west of

north crossed that indentation, whilst if the line were continued over 100 miles it crossed the stone circle of Lang Meg, Cumberland. In both directions from Arbor Low along this line there were also long lines of barrows situated at intervals. A similar line drawn from Stonehenge took them to the great Druidical district of Anglesey. He made no comment upon these facts, but simply stated them as such. He also noticed that one of the stones was pierced with a hole, and he had ascertained by measurement that if that stone were standing, as he believed it once was, that hole came directly in the line of 30 degrees east of north. Mr. Matthews produced a drawing to scale of the central stone, and asked if any of the company saw a likeness in the shape to any particular object. A member of the party at once suggested the sacred bird of Egypt. Mr. Matthews was glad someone else had seen the resemblance. It resembled exactly the Egyptian Hawkhead god. Mr. Jourdain had ascertained that the Hawkhead god was Ra, the Sun god. Mr. Matthews added that he thought there was no doubt also that the indentations forming the beak were artificially worked.

Mr. Lynam remarked that it had hitherto been agreed that no tool had been used on any one of the stones, and after an examination of the stone he thought there was nothing to prove that it had been artificially shaped. Mr. Matthews, however, entertained that view. Mr. Lynam added that Mr. St. George Gray would be extremely glad of the information Mr. Matthews had communicated.

Mr. Matthews added that he thought the selection of that site was a matter of constant observation for probably one hundred years.

"SPECIFIC PERFORMANCE."

A REMARKABLE judgment was recently given in the Appellate Division of the Supreme Court, New York, which suggests the difficulties of architects in dealing with the subdivisions of American municipalities. Messrs. Horgan & Slattery, architects, were directed by the Armoury Board of New York to prepare plans and specifications for an armoury building. They prepared preliminary plans and estimates, which were approved by the Board on January 23, 1901. Application was made to the Commissioners of the Sinking Fund for an appropriation of 500,000 dols. to carry out the work. On March 8 they authorised the Armoury Board to take such steps as were necessary to enter into the contract, and the sum applied for was appropriated. On April 3 a resolution was passed by the Board directing Messrs. Horgan & Slattery to prepare "detailed plans and specifications in accordance with the plan which has been adopted by the Armoury Board and approved by the Commissioners of the Sinking Fund for an armoury building for the 69th Regiment," and directed that they be submitted for approval to a committee of that Board appointed therefor.

The plans were duly prepared, and on November 19 a formal contract was entered into for their preparation at the usual commission.

When tenders were received they were found to range from 666,394 dols. to 744,394 dols., exclusive of architects' fees. The Armoury Board rejected the plans of Messrs. Horgan & Slattery and arranged for a competition. The architects sought to recover fees, and were awarded 2½ per cent. on 450,000 dols., with interest added and 5,000 dols. for damages. The City of New York appealed on the ground that the Armoury Board had no authority to enter into a contract, and that the work to be performed was not carried out. The Appellate Division in their judgment say:—

We think it must be held, under the doctrine of this court that the Armoury Board had no power to incur an indebtedness for architects' fees, which the city became liable to pay, until it had been authorised to incur such indebtedness by resolution of the Commissioners of the Sinking Fund. The resolution of those Commissioners, passed March 8, 1901, did give the Armoury Board authority to employ plaintiff, which authority they exercised by their resolution of April 3 following, directing plaintiff to prepare detailed plans and specifications for the erection of the proposed armoury. It is only for services performed by plaintiff after this time that the city is liable, if it is liable at all.

It was not necessary to let the contract for the preparation of plans and specifications for the proposed armoury by competitive bidding. The services required scientific

knowledge and skill, and that character of service need not be obtained by bids. Nor was it necessary that the Armoury Board enter into a written contract with the plaintiff for the performance of such services. That might be done by resolution and subsequent direction.

The plans and specifications were prepared after April 3, and before the written contract which was not a necessity. If the plaintiff substantially performed its contract, which we think was to furnish plans and specifications for an armoury which could be erected within the sum of 450,000 dols., then it is entitled to recover therefor the customary price, which was proven to be 2½ per cent. upon the cost of the building. This, however, the plaintiff did not do. The resolution of March 8, appropriating the money and giving authority to the Armoury Board to proceed and hire plaintiff, limited the cost of the building to 450,000 dols. Plaintiff says it did not know of this limitation until the written contract of November, after the plans and specifications had been furnished. The resolution was a matter of public record, and the plaintiff was dealing with a municipality and should have ascertained the limitation of cost. Besides, plaintiff's chief architect, prior to April 3, in discussing the preliminary plans with the chairman of the Armoury Board committee, to whom he announced that the proposed armoury could not be erected short of 600,000 dols., was told by such chairman that the Board never allow more than 500,000 dols. at the outside for its erection. This was actual notice of the limitation, which plaintiff's plans and specifications far exceeded. The bids for erection were the final test of the cost, and all of them exceeded the limitation by nearly 200,000 dols. If there was a limitation within which plaintiff must reasonably come, and within which it was bound to come, the excess cost was so great that it cannot be said that plaintiff substantially performed its contract.

An architect employed to furnish plans and specifications for the erection of a building is entitled to remuneration therefor, if they are made in accordance with the directions of the owner. He cannot recover, however, where the owner stipulates that the plans and specifications shall be for a building not to cost over a specified amount, if the plans and specifications made are for a building substantially exceeding that sum.

The plaintiff failed to bring itself within this proper and salutary rule, and therefore should not have been permitted to recover under its first cause of action.

There cannot be said to have been an acceptance of the plans and specifications by the Armoury Board, notwithstanding they did not meet the restriction as to cost of erection.

That fact could not be determined until the bids were received and it was thus found what the cost would be, and it is quite doubtful if the Armoury Board would have the power to bind the city by the acceptance of plans not in conformity with the contract, and the cost stipulated by the Commissioners appropriating the money. If any other reason were needed for the reversal of the judgment it is found in the charge of the court, which was a substantial direction of a verdict for the 2½ per cent., the defendant being permitted to except to whatever the court said on that subject.

As to the second cause of action, it is manifest that the plaintiff in no sense showed such a substantial performance of its contract as to entitle it to damages for breach of hiring. It furnished no plans and specifications from which an armoury costing within 450,000 dols. could be erected, nor did it conform to the plans already made to a building costing within that sum. The Armoury Board, therefore, on disclosure of the cost as shown by the bids had the right to reject the plans and to dispense with the plaintiff's services and terminate the contract. Here, too, the court erred in charging the jury that there was no ground for the discharge of the plaintiff, to which the defendant excepted.

The plaintiff complains that it was not asked to alter the plans so that the cost of erecting the building would come within the stipulated amount. It was for the plaintiff to perform its contract and to show that it has so done before it asks damages for breach by the other party.

It is quite evident that the plaintiff performed a large amount of work for which it would be just that it should receive some compensation, and we have endeavoured to find some ground upon which plaintiff could recover the fair value of the work and labour which it performed. The resolution of March 8 empowered the Armoury Board to employ an architect. By the resolution of April 3 that Board employed plaintiff. It was necessary for the Armoury Board to obtain accurate information with respect to the kind of armoury that should be erected. Preliminary

sketches might and might not be accurate with respect to disclosing the cost. Plaintiff did a large amount of work in elaborating the ideas of the Armoury Board with respect to the proposed armoury, and finally by its labours demonstrated that the building could not be erected within the sum provided. The necessity for a larger appropriation was finally recognised by the Commissioners of the Sinking Fund, and they increased it, and the armoury in the end was erected at about the cost called for by plaintiff's plans. The work performed by the plaintiff was of value to the Armoury Board, and thus to the city, in the final determination as to the style and character of the armoury. Equitably it would seem that the plaintiff can and should be permitted to recover the value of these services performed up to the time of receipt of the bids, not, however, upon any percentage as to cost of erection, but upon a *quantum meruit* for the actual value of the services in fact performed. It is probable that this sum ought to be limited to the usual charge for preliminary sketches, which would be only 1 per cent. We do not mean to hold that the plaintiff is entitled to absolutely recover the 2½ per cent. upon the cost of erection, or a sum equal to that amount; but if it can recover at all, it should be permitted to recover what it paid out to its clerks and assistants in preparing the plans and specifications, together with a reasonable compensation for the time spent by its chief architects and the advice which they gave to the Armoury Board.

TRANSVAAL COLLEGE COMPETITION.

THE Council of the Transvaal University College recently sought designs from South African architects for the proposed new buildings of the college.

The buildings were to cover the whole of Plein Square, although it is only intended at present to proceed with the erection of the eastern wing at an estimated cost of 80,000*l.* Twenty-eight architects competed, one sending two designs. The Council secured the services of Mr. T. E. Collcutt as assessor, and he visited South Africa for the purpose.

In his report dated August 6 Mr. Collcutt says:—

As the assessor appointed by your Council to examine and report on the relative merits of the designs submitted in competition for the building of the University College, I now beg to say I have made a careful and exhaustive examination of the several plans and elevations, the result being that I award the premiums in the following order:—

I award the first premium to design No. 1, the second to No. 14, the third to No. 23, to fourth to No. 28, the fifth to No. 19, and the sixth to No. 18.

I have examined the estimates submitted with the above designs, and I am of opinion that any one of them could be carried out for the sum of 80,000*l.* There are twenty-nine designs submitted in the competition by twenty-eight architects, one architect having sent in two designs. The total number of drawings illustrating the twenty-nine designs is 270.

Before making the above awards, I carefully studied the conditions issued by your Council, and also the series of questions asked by some of the competitors, and the replies thereto. These questions and answers, I am informed, were communicated to all the competing architects. After careful consideration of the several plans, I have arrived at the conclusion that very few, if any, of the competitors have succeeded in producing a satisfactory scheme dealing with accommodation under schedule A (which, it may be stated, relates to the wing that is to be first erected).

On the other hand, many of the competitors have dealt in a satisfactory manner with the building scheme for the whole site, but always excepting the block allocated to the accommodation in schedule A. I am of opinion that the area apportioned for schedule A is inadequate, and therefore it has been impossible to devise a really satisfactory plan.

From the above remarks it may be gathered that the premiated plans show many defects, but similar defects are to be found in all the other designs submitted.

It gives me pleasure to state that many of the designs, besides those selected, are of considerable architectural merit, and I venture to express the feeling that your Council, by adopting the first premiated design, have the opportunity of seeing a building erected which will be worthy of a great city.

The successful architects are:—1. R. Howden. 2. G. A. H. Dickson & McCowat. 3. Stucke & Bannister. 4. I. H.

Till & A. E. Till. 5. McIntosh & Moffatt. 6. Leck & Emley.

All the successful architects practise in Johannesburg.

Mr. Howden has practised in Johannesburg for eight or nine years, having come to the Rand from Australia. Amongst buildings which he has designed are St. George's Presbyterian church, Noord Street (which cost 20,000*l.*), Bree Street Congregational church, and residences for Messrs. Hoyle, Bleloch and Jas. Mackay.

CARNEGIE LIBRARIES.

A MEMORIAL from the architects of Dundee relating to the Carnegie branch libraries has been sent to the Town Council. They object for the following reasons to placing the work in the hands of the burgh engineer and city architect. Through Mr. Carnegie an opportunity has come to the city to erect important public buildings, and it is fitting, they say, that these should commemorate in a most worthy manner his generous gift. Your memorialists are not aware of any single instance in which a city official has been entrusted with the carrying out of such work, and public opinion and municipal authorities in other cities have been entirely against this procedure. Keeping in view the importance of careful and thoughtful planning in a library building, and recognising that it should be of a monumental character and give an artistic expression of its purpose, it is desirable to extend the area of thought brought to bear upon its design, so that the best results may be secured. The incentive of competition is without doubt the best method of securing this desirable end. Without reflecting on the burgh engineer's merits as an architect, they would point out that with so many official and administrative duties, along with the supervision of work of an intricate and practical nature, it is not possible for him to give the necessary amount of reflection and study which such buildings demand, and, if placed in his hands, he must necessarily delegate the greater part of the work to irresponsible assistants. Even in the interests of true economy they would point out that if the work of designing and carrying out these libraries is done by the burgh engineer, the attendant expenses would be actually borne by the ratepayers of the city instead of by the donor. In the full hope that these reasons will meet with the approval of the Town Council, the memorialists point out that to conduct this competition properly it is of first importance that a professional assessor should be nominated, who would draw up the necessary conditions in conjunction with the city officials, and would undertake the sole responsibility of selecting the best design, keeping in view the total sum to be expended in each case. The attention of the Council is drawn to the regulations for architectural competitions issued by the Royal Institute of British Architects, which will act as a guide in this matter. It was further intimated that a deputation would attend the Council meeting on Thursday and be heard in support of this memorial. The memorial is signed by Messrs. J. Donald Mills, Thos. M. Cappon, John T. Maclaren, George Alex. Pyott, Charles Mann, George A. Harris, P. H. Thoms, R. Blackadder, George Jamieson, Richard G. Murray, William Salmond, Charles G. Soutar, William Forrest, Edward Tough, Johnston & Baxter, James Findlay, Leslie Ower, James Lowe, James Foggie & Son, James P. Bruce, W. Clark, James Sibbald, Godfrey Shepherd, David L. Allan, R. Hunter, William Gauldie, R. Gibson.

THE ROMAN WALL EXPLORATIONS.

AT a meeting of the Newcastle Society of Antiquaries last week Mr. F. Haverfield, D.C.L. (vice-president), read a paper entitled "Notes on Mural Problems." In this he criticised severely the explorations of the Roman wall during the last half-century. For instance, he said, the mile castles had been generally accepted as belonging to the period of the fourth century, but, so far as he could ascertain, no pains had been taken to identify coins or pottery found near them with that period, and in that respect the exploration of the Roman wall had failed in a scientific sense. Half a century ago it was the finest example of its kind in existence, but that could be no longer said. In conclusion, he remarked that the Roman vallum still thwarted the efforts of archaeologists as to its specific reason, and they had never been able to find a satisfactory reason for retaining walls or artificial hills being erected, sometimes to the north and sometimes to the south of the wall.

RESTORATION OF CARNARVON CASTLE.

ONE of the architects of the Board of Works has been commissioned to pay a visit of inspection to Carnarvon Castle this week, for the purpose of preparing a report with a view to the continuance of the scheme of restoration which has been in progress for many years. This step is the result of correspondence which passed between Sir John Puleston, constable of the castle, and the Board of Works a few months ago. It is also known that the King is evincing personal interest in the project. His Majesty, while Prince of Wales, visited the castle in 1894, and the Queen on the same occasion ascended to the dingy chamber in the Eagle Tower, which is reputed to be the birthplace of the first Prince of Wales. The present well-preserved condition of the castle is a monument to the enterprise and industry of the late Sir Llewelyn Turner, who, during his long tenure of office as deputy constable, applied all the visitors' admission fees to the work of restoration. One tower was re-roofed and otherwise rendered habitable, enormous breaches were repaired in others, and a large number of fresh steps and newels were placed in other parts of the building. Latterly the present deputy constable (Mr. Charles A. Jones) took in hand the completion of the coping-stone along the imposing north front of the structure. It is generally expected that the Government may see its way to make a substantial grant at an early date to carry on the work, and in return it is probable that the fees collected for admission will henceforth have to be transferred to the Government.

WINCHESTER CATHEDRAL.

WINCHESTER CATHEDRAL is now almost entirely under architectural supervision as to its exterior, and the interior beyond the chancel is a mass of scaffolding, and judging by the gigantic struts or supports of timber shoring up the eastern chapels and the mass of materials lying all round the building, it is not too much to say, says the *Hampshire Chronicle*, that Messrs. Thompson's workmen have come to make a long sojourn in and around the vast historic structure. The original estimate of 30,000*l.* for repairs is, we fear, far too small. The state of the walls of the transept and De Lucy's aisles, the vaulting of the latter, the necessity of repairs at the west end and other matters, will absorb as much again or more.

Over eight centuries have passed away since Walkelin completed his immense cathedral church. His tower fell in 1107, when it was rebuilt, and rests on the most massive piers in England. Happily this fine example of Norman architecture stands firm and requires no attention—at least we believe so. The transepts are both shaky as to their northern and southern gable walls. The latter, even to the eye of the mere passer-by, is much out of the upright—as much, experts say, as from 3 feet to 5 feet. The former is being examined and tested by Messrs. Thompson's experts, who find the top of the walls defective, and there are evidences of bulging and overhanging. In order to test whether there is any "movement" in the masonry, strips of plaster of Paris are being placed on the weakest spots, which will be carefully watched to see if cracks appear. If so prompt attention must be given them.

The interior of the south transept has always shown evidences of settlements of very long standing, which do not appear in the other transept. In both the varied styles of the window arches indicate the different builders, Norman, Decorated, Perpendicular, so that the walls have often been tampered with. The trial hole in the north wall of the nave aisle has been carried down to the gravel, 18 feet altogether, including 12½-feet foundations, chalk under them, and peat, but the crack in the wall above ground here does not indicate any modern subsidence or danger of it. At the west end, where scaffolding is being erected, the chief work is to make good defects in stonework erected fifty years ago, which was not of a durable kind. A large projecting screen of boards has been erected to protect the entrances to the nave and aisles and the public.

Altogether the work necessary at the church is a very serious responsibility for the Dean and Chapter, and we hope that the Cathedral Fabric Fund will be equal to the emergency. The cathedral is a national historical monument, equal in its character to the metropolitical church of Canterbury or Westminster, and we feel sure that the devotion and veneration of our day will not fall short of that which animated our Catholic predecessors of all ranks and the great master builders of the past.

GERMAN CERAMIC INDUSTRIES.

AN interesting report on German ceramic industries has been prepared by Sir William Ward, consul-general. The German industry and trade in ceramic ware, including bricks, has largely increased during the last thirty years, and the indications point to further expansion. Common clays which can be utilised for brickmaking, and also those which can be used for the manufacture of common earthenware goods, are of frequent occurrence in almost every part of Germany. The rather superior kinds, and those which turn white after burning, are also common, but highly refractory clays are of rare occurrence. There are no very recent statistics available for obtaining a correct idea of the annual extent of the production of the various branches of German ceramic industry. The latest statistical returns are those furnished about five years ago, at the time of the preparation of the new German Customs tariff. These statistics were supplied to the Government by German manufacturers, and they may have been, in some instances, overstated, in order to give more importance to the respective branches of industry, and in some instances understated by manufacturers, who were afraid that their figures might be used as a basis for increased taxation. Taking, however, these returns, the total value of the various productions of ceramic industry, exclusive of those of brickmaking, in Germany in 1897 was 5,575,099*l.* The total value of porcelain ware alone amounted to 2,511,600*l.*, so that the total value of all ceramic productions of the more ordinary description, namely, stoneware, earthenware, tiles, &c., amounted to 3,063,499*l.* The total number of ceramic works, exclusive of those for brickmaking, established in Germany in 1898 was 939, whilst the total number of workmen employed in them was 71,983. The total number of brickmaking works in Germany, according to the last official census of 1895, was 16,431, and the total number of hands employed therein 219,860. Amongst these brickmaking works about 7,500 employed each not more than 5 persons, about 8,000 employed between 6 and 50 hands, and the remainder, namely, about 850, employed 52 hands and more.

If we compare the preceding figures with those given by the official census for 1882, it will be found that whilst the total number of hands employed in the German ceramic works, exclusive of brickmaking works, in 1898 largely exceeded the number employed in 1882, the total number of the works had considerably diminished in 1898. This proves that the German porcelain and pottery manufacturers had come gradually to the conclusion that in order to cope in a profitable manner with the increasing demand, as well as in order to meet foreign competition successfully, it appeared judicious to concentrate their efforts by reducing the number of smaller works, and carrying on the work in factories established, wherever possible, on a large scale.

As regards the prominent centres in Germany for brickmaking and for the various descriptions of ceramic industry, these are as follows, viz:—

Brickmaking, in view of the widespread presence of clay deposits in all parts of the country which are suitable for this industry, is carried on all over Germany, excepting of course in the mountainous regions, such as the Hartz Mountains, Thuringia, the Bavarian Highlands, the Silesian Mountains, &c. Earthenware drain pipes and other pipes: Manufactured chiefly in the district of Bitterfeld in Saxony, Münsterberg (Silesia), in the Lausitz district, in Rhenish Prussia, in the Palatinate, &c. Refractory bricks and earthenware for technical purposes: In Silesia, Hesse and Rhenish Prussia. Earthenware goods (faience): In Altona-Hamburg, Annaberg in Saxony, Bayreuth, Saargemünd, Nürnberg and Strassburg; and other kinds of earthenware vessels in Nassau, Bamberg, Bonn, Freising, Mettbach, Regensburg, &c. Stoneware tiles, &c.: At Annaberg, Aschaffenburg, Höchst, Mettbach, Bonn, Wittenberg, Zell, &c.; and stoneware vessels especially in Lorraine, Rhenish Prussia, the Saar Valley, &c. Fireproof stoneware (chamotte), crucibles, clay pipes, &c.: In Hesse, Silesia, Pomerania and Saxony. Stoneware: Remarkable for its light colour, at Mettbach; and stoneware vessels and tiles, with brown and white glaze, in Silesia. White earthenware goods: In a large number of places, and more especially in Saargemünd, in Schramberg, Dresden, &c. Terra-cotta ware: In Saxony, Thuringia, Charlottenburg, &c. Majolica: At Berlin, Meissen, Dresden, Hanover, Mayence, Frankfurt-on-Main, Nürnberg, Hildesheim, Munich, &c. Architectural ornaments: At Bitterfeld, Charlottenburg, Meissen, in Alsace, Treves, Aschaffenburg, Offenburg, &c.

In addition to the well-known porcelain works which belong respectively to the Governments of Saxony and

Prussia, namely, at Meissen and at Berlin-Charlottenburg, and which have done so much for the general improvement and development not alone of the porcelain manufacture, but of the entire ceramic industry of Germany, there are at present about 200 private porcelain factories in Germany, and in addition to these more than 1,000 other establishments occupied in painting, colouring, gilding and otherwise "finishing" porcelain ware, but, as a rule, not employing more than twenty workmen. Whilst the Meissen and Berlin porcelain works manufacture chiefly articles of luxury, most of the German private factories produce porcelain ware for daily or technical use. The centres of the private porcelain industry and of the finishing of porcelain ware are in Thuringia, Silesia, Dresden, Berlin, Lower Bavaria, Baden and in the Saar Valley.

Sir William Ward attributes the remarkable development in the export trade of German ceramic ware to foreign countries largely to the constant efforts made towards increasing the quality of the goods produced. The increase in quality which has taken place in German ceramic ware during recent years is attested by the fact, based on official statistics, that the average export value, which was about 12*s.* per cwt. in 1891, rose to 18*s.* per cwt. in 1900. Apart from the opportunities which are offered in Germany by other technical schools of a more general character for acquiring a theoretical knowledge of ceramic industry in its various branches, there are at present four special technical schools for this industry, namely, at Hohn, at Bunzlau, at Lanbau, and at Landshut, all of which are situated in the midst of the industries which they are intended to promote. Their aim is to afford a thorough combined theoretical and practical workshop instruction, and to train young persons for future positions as owners, managers, foremen, painters or modellers in the various branches of ceramic industries. The schools are maintained by subsidy, and are under the supervision of the governments of the German States in which they are situated. The statistics show that whilst, on the one hand, Germany imports from the United Kingdom large quantities of unglazed and glazed bricks, glazed earthenware pipes, muffles and capsules, as well as of ordinary white stoneware, Germany, on the other hand, exports to the United Kingdom much larger quantities of coloured, painted and gilt stoneware, and more especially white and coloured porcelain ware, in particular of coloured table services and of fancy porcelain.

DEFECTS OF TIMBER.

THE committee of the American Society for Testing Materials on standard specifications for the grading of structural timber have prepared a report on defects occurring especially in yellow pine and Douglas fir.

Structural Timber.—The term structural timber includes all such products of wood in which the strength of the timber is the controlling element in their selection and use. The following list of products were recommended for consideration as structural timbers:—Trestle timbers—stringers, caps, posts, mud sills, bracing, bridge ties and guard rails; car timbers—car framing, including upper framing and car sills; framing for buildings—posts, mud sills, girders, framing and joists; ship timbers—ship timbers and ship decking; cross arms for poles. It was recommended to omit for the present the following products:—Railway ties, poles, piling, car flooring and mine props. The following products were not considered to come within the work of the committee:—Vehicle woods, tank stock and packing-box materials.

Standard Defects.—The standard defects included in the following list are mostly such as may be termed natural defects, as distinguished from defects of manufacture. The latter have usually been omitted because the defects of manufacture are of very minor significance in the grading of structural timber:—(1) A sound knot is one which is solid across its face and which is as hard as the wood surrounding it; it may be either red or black, and is so fixed by growth or position that it will retain its place in the piece. (2) A loose knot is one not firmly held in place by growth or position. (3) A pith knot is a sound knot with a pith hole not more than $\frac{1}{4}$ -inch in diameter in the centre. (4) An encased knot is one which is surrounded wholly or in part by bark or pitch. Where the encasement is less than $\frac{1}{4}$ of an inch in width on both sides, not exceeding one-half the circumference of the knot, it shall be considered a sound knot. (5) A rotten knot is one not as hard as the wood it is in. (6) A pin knot is a sound knot not over

$\frac{1}{2}$ -inch in diameter. (7) A standard knot is a sound knot not over $1\frac{1}{2}$ -inch in diameter. (8) A large knot is a sound knot more than $1\frac{1}{2}$ -inch in diameter. (9) A round knot is one which is oval or circular in form. (10) A spike knot is one sawn in a lengthwise direction; the mean or average diameter shall be considered in measuring these knots. (11) Pitch pockets are openings between the grain or the wood containing more or less pitch or bark. These shall be classified as small, standard and large pitch pockets. (a) A small pitch pocket is one not over $\frac{1}{4}$ of an inch wide. (b) A standard pitch pocket is one not over $\frac{3}{4}$ of an inch wide or 3 inches in length. (c) A large pitch pocket is one over $\frac{3}{4}$ of an inch wide, or over 3 inches in length. (12) A pitch streak is a well-defined accumulation of pitch at one point in the piece. When not sufficient to develop a well-defined streak or where the fibre between grains—that is, the coarse-grained fibre usually termed “spring wood”—is not saturated with pitch, it shall not be considered a defect. (13) Wane is bark or the lack of wood from any cause on edges of timbers. (14) Shakes are splits or checks in timbers which usually cause a separation of the wood between annual rings. (15) Any form of decay which may be evident either as a dark red discoloration not found in the sound wood, or the presence of white or red rotten spots, shall be considered as a defect. The measurements which refer to the diameter of knots or holes are considered to be the mean or average diameter in all cases.



The “Auld Brig o’ Ayr.”

SIR,—In view of the extension of time granted by the Town Council of Ayr in which to report and submit to a public meeting a scheme for raising the sum of 10,000*l.* required for the preservation of the “Auld Brig o’ Ayr,” which extension of time expires on October 1 next, and until such public meeting is held, the arrangements for which are now being made, the voluntary committee, which has adjusted a working agreement with the Town Council of Ayr, in response to offers of assistance made by various societies and individuals, think it desirable and beg to give notice that subscriptions for this purpose will be received and duly acknowledged by Mr. W. J. Pollock, Bank of Scotland, Ayr, and that after the said public meeting has confirmed the said committee in office, added thereto, or elected a new committee, the said subscriptions will be published by the committee then placed in charge.—Yours, &c.,

R. A. OSWALD, Sir JAMES COATS, Bart., Hon.
HEW DALRYMPLE, GEORGE YOUNGER, M.P.,
ROBERT ANGUS, T. G. ARTHUR, WALTER
NEILSON, W. H. DUNLOP, JAMES KENNEDY,
HEW MORRISON, LL.D., DAVID SNEDDON,
J. C. HIGNET, JAMES A. MORRIS.

Honorary Architects.

SIR,—I should feel grateful if some of the more experienced readers of your valuable Journal would give me their advice on a point of professional etiquette.

Whilst spending my holiday at my paternal home I met two members of the building committee for a contemplated new chapel, and they suggested that I should offer my services as “honorary architect,” hinting that although I should not be paid the usual 5 per cent., I could still get the “customary trade discounts.”

I should like to know what is an “honorary architect.” None of the architects under whom I worked as pupil and assistant acted in that capacity as far as I know, so that I have had no experience of the practice.

I should feel obliged for information as to whether an “honorary architect” is usually paid for out-of-pocket expenses, and whether he does receive the “customary trade discounts.”—Yours, &c.,

YOUNG PRACTITIONER.

The Fund for the restoration of Winchester Cathedral, exclusive of Mrs. Ryle's Women's Fund, amounts to over 26,600*l.*

GENERAL.

The Awards have been published in connection with the competition for cottage models and designs which were on view at the recent agricultural show at Bredon's Norton. Mr. C. E. Bateman, of Birmingham, the assessor, awarded the prizes as follows:—For designs illustrated by models: First prize (15*l.*) to Mr. Henry Weaver, Gloucester; second prize (10*l.*) to Messrs. Hugo Bird and Robert Browne, Brentwood. For designs illustrated by drawings only: First prize (10*l.*) to Mr. A. Dennis-Thacker, Birmingham; second prize (7*l.*), to Messrs. Sam Cooke & Norman Twist, Birmingham. Mr. Bateman considered that the competition was very interesting, and had produced some good designs.

Mr. McCarthy, the city architect, has been instructed to prepare plans for a technical institute in Dublin, which will be adapted to the building and printing trades.

An Exhibition of works by Albert Bartholomé, the sculptor of the great memorial “Aux Morts” in the cemetery of Père-la-Chaise, Paris, is to be held in the winter in Berlin.

A Garage for motor cars will be among the additions to the Elysée, Paris. The Chamber voted 8,000*l.* for alterations to the palace.

The Stone Circle at Brodgar, Orkney, is being preserved under the direction of Mr. Myers, architect. All the cracks are filled in with cement. A concrete base has been laid down for the watch stone.

The Designs for the technical school, Burnley, which were prepared by Mr. Pickles, borough surveyor, have been approved by the Board of Education. The cost will be over 60,000*l.*

The Lancashire Asylums Board have resolved to proceed with the erection of a block to accommodate 100 patients on the site recently purchased at Whalley, together with an administrative block suitable for an asylum for 2,000 patients. The special committee considered the relative merits of an asylum built on the “block system” and the “villa system.” In the opinion of the architect a complete asylum on the villa system would cost probably between 15*l.* to 30*l.* a bed more than an asylum on the block system. The Board have postponed deciding which system will be adopted for the entire scheme.

Mr. W. H. Goss, of Stoke-on-Trent, a well-known potter, who at the International Exhibition of 1862 won the award for the manufacture of articles in ivory porcelain, and was the inventor of the coloured enamels used in heraldic pottery, died on January 4, leaving property which has been sworn at 59,603*l.* gross. By his will, testator gives to the Mayor and Corporation of Stoke-on-Trent two old oak chairs and two large old oak cabinets containing his collection of antiquities and curios and certain works of art for their museum, they providing a room or rooms for the reception thereof. Should they not agree to such terms, the same offer is to be made to the Mayor and Corporation of Hanley.

The Council of the Glasgow Archæological Society were recently informed that the president of the Society (Mr. J. D. G. Dalrymple) proposed to establish in Glasgow an archæological lectureship on the lines of the “Rhind” lectureship, in celebration of the jubilee of the Society, which is to be commemorated by a banquet in the Windsor Hotel on Friday, November 2. Mr. Dalrymple proposes that the appointment should be in the hands of the Council of the Society, the honorarium to be 50*l.* for five or six lectures, to be delivered in the University. The Council unanimously resolved to record its deep appreciation of the public spirit of the President.

The Liverpool Cathedral site now presents an appearance of subdued activity, betokening steady progress in preparation for the erection of the superstructure. The staging erected for the chapter-house foundation stone-laying has, remarks the *Diocesan Gazette*, been removed, and masons may be seen at work on the plinth of the lady chapel. Some idea may even now be gained of the busy scene which will greet the visitor's eye at no very distant date when the works are in full progress. Electric cranes and other machinery, including three electric saws for cutting the stone, occupy suitable positions on the ground, and as the stone is cut it is passed on to the masons to be dressed and shaped. We are rapidly approaching the most interesting stage of the cathedral building operations yet reached.

The Architect.

THE WEEK

We published last week the memorial of the local architects to the Dundee Town Council relating to designs for the branch libraries which are about to be erected. A deputation of the architects appeared before the Council, and Mr. T. M. CAPPON acted as their spokesman. It is proposed that the designs should be prepared by the burgh engineer. But Mr. CAPPON contended that the duties of the office were too manifold for him to give attention to the subject, and the work would have to be delegated to irresponsible assistants. In other towns the designs were obtained by competition or prepared by architects who possessed special knowledge of libraries. It was on æsthetic grounds, as well as being citizens and ratepayers, that the architects appealed to the Council to make arrangements by which the libraries would acquire a monumental character. One member of the Council in reply pointed out that, if the competition system were adopted, it would be necessary to employ an assessor and to give premiums to those whose designs were placed second and third. That would mean an outlay of 900*l.*, which would not be approved by the ratepayers. Eventually eighteen members decided in favour of employing the Corporation official, while only seven voted for competition. From the result it will be evident that the crucial test which is employed in such cases is that of economy. An architectural assistant or two may be employed, and by the aid of that machinery public buildings can, it is believed, be properly designed. It is also recognised that an assessor must necessarily be a stranger, and probably the architect who obtained the first prize might likewise be one. To give outside architects 1,000*l.* as a share in the spoil, as one councillor expressed it, is especially obnoxious to the Scottish mind. But the speaker would, no doubt, become excited if he found that Scotsmen were excluded from competitions in the South.

It is generally known that a theatre existed on part of the site of the ancient Abbey of Blackfriars, close to where the publishing office of the *Times* now stands, and not far from the office of *The Architect*. The building was probably erected by JAMES BURBAGE—that wonderful joiner and actor—who was the first to put up a theatre in another part of London. His sons, CUTHBERT and RICHARD, carried on his business, and RICHARD was the most famous tragedian of his time. The late J. P. COLLIER professed to have discovered several important documents relating to Blackfriars Theatre and its proprietors, of whom SHAKESPEARE was one. Unfortunately, it is impossible to distinguish between genuineness and fabrication in any of COLLIER's discoveries. Quite recently Mr. JAMES GREENSTREET found among the unindexed documents in the Public Record Office several which related to the theatre, and now Professor WALLACE, of the University of Nebraska, has informed the *Times* of other discoveries by himself. Investigators are always apt to overvalue old documents, especially when they relate to buildings. BURBAGE, it is believed, employed "the wooden O" in planning his theatres; and it is supposed that form prevailed during the Elizabethan and Jacobean period. But Professor WALLACE says:—"From the evidence of documents now available, it is possible for an architect to reproduce the general structure and many details of both the exterior and interior of the Blackfriars Theatre. The building was a stone structure erected in two sections. One section adjoined the Pipe Office, the place where the rolls of State parchments large as drain-pipes were kept. It was full two storeys high, with dormer windows in the third storey and a garret above. The roof was steep, with gable-end facing north on Pipe-Office Yard (now Playhouse Yard).

The number, location and use of the various rooms in this section is given by different documents. The main section containing the auditorium and stage of the theatre was on the south. This section was two storeys high, and had originally a low or flat roof. But BURBAGE in remodelling it changed the shape of the roof and built certain rooms above the great hall. There were also 'cellar' or basement-rooms which were used for apartments. The auditorium proper occupied about half of the available space of the building." He calculates that it had a seating capacity of 500, and was the most fashionable and aristocratic theatre in London. Professor WALLACE intends to publish the documents *in extenso*, and they are likely to cause some excitement when they appear.

ANOTHER reservoir in connection with waterworks has to be abandoned. The Leeds City Council obtained in 1901 an Act which among other powers authorised the construction of what was called the Colsterdale reservoir. A new waterworks engineer was subsequently appointed, and from an examination of the site faults were found which would make the work risky. He asked to have the aid of an expert (Mr. H. ROFE), and a joint report was prepared in which it was recommended to erect the reservoir in a different position. Money has been expended without advantage. But it is considered that the alteration will save the ratepayers over half a million of money. The Town Council have approved unanimously of the recommendation. It must be expected that in dealing with foundations defects will arise which no foresight could have avoided. Tests can be made by boring and digging, and the sections of the Geological Survey yield exact information about strata. But all this is not sufficient. In engineering works this additional outlay is generally accepted like an unforeseen loss in trading. But whenever defects arise in foundations for buildings then clients, whether public or private, are sure to ascribe the necessity for additional outlay to the negligence of the architect. There ought at least to be as much allowance in the less costly case as is granted with respect to the numerous reservoirs which have lately involved ratepayers in extraordinary works in order to avoid catastrophes.

LAWYERS sometimes profess to have a difficulty in deciding on the manner in which an architect's claim is to be presented to the Courts. But the tactics adopted in an American case, as explained in the *American Architect*, are unmatched among English precedents. The plaintiffs, Messrs. PACKER & THOMAS, architects, of Boston, sued the National Bank of Commerce and Commercial Realty Corporation for about six thousand dollars, balance unpaid of their account. It might be considered a simple affair, especially as the defendants' plea was that the building was delivered to them two hundred days later than the stipulated time. But there are no less than seven heads in the declaration prepared by the plaintiffs' lawyers. The first is that suit is brought for "goods bargained and sold by the plaintiffs to the defendants." The second, that it is for "work done and materials provided by the plaintiffs for the defendants, at their request." The third, that it is for "money lent by the plaintiffs to the defendants," and so on, "money" being referred to in three other counts. But nowhere does it appear that the claim rests upon the exercise of professional knowledge and skill. The lawyers and perhaps their clients appear to be sternly materialistic and not at all sentimental. How it happens that architects have been lending money to their clients, unless in the shape of car-fares on some inspection trip, we cannot imagine. One thing appears plain from the language of this declaration: the architects can have no intention to set up a plea of ownership in the drawings made by them, since these obviously must have been amongst the "goods bargained and sold" by them.

THE WHITEHALL CEILING PAINTINGS.

THE proposal to expend 2,000*l.* on the restoration of the ceiling paintings in the Banqueting-hall of Whitehall will, of course, create some interest in a work which is known to the majority of people only by repute. It must be considered as somewhat anomalous in character, for it is not adapted for the adornment of a royal chapel unless for the gratification of worshippers who could look on King JAMES I. as a sort of demi-god,

Aloft we view the Bacchanalian king,
Below the sacred anthems daily sing.

But when the arrangements for the work were entered into, it should be remembered that the great room or hall was not employed as a chapel. The Banqueting-hall, as everyone knows, is only a fragment of a palace having a façade of nearly 1,200 feet in length. There were to be seven courts with different names, each being treated in a different manner. In the Persian Court, Persian warriors and Persian ladies were made to support Doric and Corinthian capitals. But the project was beyond the resources of the king, and a second design was made on an economical scale and of an inferior character. If the original design were carried out, Whitehall would bear comparison with the Louvre and would be one of the great buildings of Europe.

It is well to remember that when JONES designed the ceiling he divided it into nine compartments, the central one being an oval. There is no evidence whether he intended that the spaces should be filled in with paintings. JONES was a painter both of landscapes and figures, and the beautiful pageantry of the Court masques was due to his hands. Whether after consultation with the architect or not is now doubtful, but in 1621—*i.e.* four years before the death of King JAMES—a desire was expressed for RUBENS to paint the ceiling. This is evident from a letter written by the painter, in which he says:—"As to His MAJESTY and H.R.H. the PRINCE OF WALES, I shall always be very pleased to receive the honour of their commands, and with respect to the hall in the new palace I confess myself to be by a natural instinct better fitted to execute works of the largest size rather than little curiosities. Everyone according to his gifts. My endowments are of such a nature that I have never wanted courage to undertake any design, however vast in size or diversified in subject." At the time the order was given the Banqueting-hall must have been in an unfinished state or extraordinary expedition was used in its erection, for the hall in the ancient palace of Whitehall stood until January 1619, when it was burned, the fire being attributed to a couple of labourers.

RUBENS was living in Antwerp, but as he was a diplomatist of high rank he was well known to ambassadors from England, to various continental countries and to political agents. He arrived in London in 1629, and then more definite arrangements were drawn up about the pictures. He made sketches of what CHARLES desired while here and he commenced the works on his return to Antwerp, where, it is believed, he had the assistance of JORDAENS. The sum which RUBENS was to receive was 3,000*l.*, to be paid before August 1634. On August 1 BALTHAZAR GERBIER, who was one of the agents of King CHARLES, and was afterwards ambassador in Brussels, informed the king that Spaniards, Frenchmen and others were talking maliciously about the great works which Sir PETER RUBENS had made for His Majesty's Banqueting-house, and which were lying in Brussels as if for want of money. GERBIER wrote still more freely to Sir TOBY MATTHEW, begging of him to urge the Lord Treasurer to send the money at once in order that the rumours about the pictures being, as it were, in pawn might be removed. GERBIER's interference was not considered satisfactory. But he defended his action by saying he was a royal sentinel and bound to relate what he heard while on watch.

Not until the following year was GERBIER instructed to send over the paintings. Then difficulties arose with respect to customs; for apparently Holland as well as England would not allow them to pass without paying toll. In those days customs were often farmed, and the men who held them were not disposed to look on anything as sacred. RUBENS said that in Zealand the toll would be five or six per cent. on the value of the pictures, unless some in authority would forego their rights. One adviser said that in law RUBENS was bound to deliver the pictures in England, and therefore should pay all tolls and customs out of his own purse. RUBENS got out of the difficulty by declaring that the state of his health did not permit him to take charge of the transport of the pictures to England. The paintings, from being rolled up during a year, were injured, and it was found necessary to retouch them and to mend the cracks in the canvas. CHARLES, we suppose, had raised sufficient money and offered to defray all expenses. Then GERBIER implored RUBENS to obtain for him some repose by giving information as to when the pictures would be in a fit state to be packed for England. But RUBENS was deliberate in his mode of acting and left GERBIER without a reply. The envoy was afraid he might be blamed, and he therefore wrote to the king explaining that he was not responsible for the delay, and that as soon as RUBENS was ready the pictures would be despatched for London. At one time RUBENS thought of waiting until the pictures were placed in position, when he would cross over to London and retouch and over-paint them. Then he changed his mind, fearing that the gout would prevent him working in England, and he thought it would be preferable to do the work in Antwerp. GERBIER is next informed that all the pictures are finished except one which could not be dried for eight or ten days. But at last they were delivered and despatched to the agent at Dunkirk. Then the man in whose charge RUBENS had placed the cases fell ill, and it was not until the end of 1635 that the pictures were received in London. It does not appear that RUBENS was paid his 3,000*l.* until the end of June 1638, when the last instalment was made over.

The subject of the ceiling paintings was to be the allegorical history of JAMES I. As CHARLES sent RUBENS a gold chain weighing 82½ ozs., we may presume he was satisfied with them. We have no evidence of any independent opinion by a spectator. WALPOLE says of the work:—

The design is the apotheosis of King James, for whom, when once deified, there seems to have been no further thought of erecting a monument. The original sketch for the middle compartment is preserved at Houghton; it had belonged to Sir Godfrey Kneller, who often studied it, as is evident by Sir Godfrey's original sketch, at Houghton, too, for the great equestrian picture of King William at Hampton Court, though in the larger piece he seems to have forgot that he ever had studied the former design. Sir Godfrey had heard that Jordaens assisted Rubens in the execution; if true, some of the compartments must have been painted in Holland and sent over hither, for I do not find that Jordaens was ever in England. Rubens received 3,000*l.* for his work. The building itself cost 17,000*l.* What had it been if completed! Vandyke was to have painted the sides with the history of the Order of the Garter. Inigo Jones, Rubens and Vandyke! Europe could not have shown a nobler chamber. Kent in the late reign repaired the painting on the ceiling.

The Banqueting-hall was in use as a chapel from 1724 till 1890. During that time the Bacchanalian scene and the half-naked figures were to be discerned in spite of all the rules and regulations against the introduction of paintings into churches. Probably from their inappropriateness they would not be deemed illegal. The paintings were also restored by CIPRIANI, an artist whose style was not in keeping with that of RUBENS. As the building is now used as a museum no objection can be raised against retaining the paintings of the great Fleming. But it is to be hoped they will

be entrusted to some one who will be competent to treat them properly. It is absolutely necessary to do something, for at present the series appears to have little artistic value, and does not aid in the decoration of the hall. Vigorous as was RUBENS in his handling he could not compete with the atmosphere of the Metropolis.

PUMPING OPERATIONS AND THE RIGHTS OF NEIGHBOURING OWNERS.

IN *The Architect* for February 2 of this year we discussed the question of the rights of surface owners to stop pumping operations when the result of such operations was to let down the surface of their ground. The cases there discussed clearly show that when pumping operations withdraw water and silt from under a neighbouring surface owner's land, and probably where they withdraw water only, and a subsidence ensues, the surface owner has a right of action. But these cases also show that the law does not recognise any proprietary right in underground water which percolates in undefined channels; so that if A. by his pumping operations withdraws B.'s underground water, and such withdrawal does not affect B.'s surface, B. has no cause of action. The case of the Salt Union, Ltd., v. BRUNNER, MOND & Co., LTD., decided last month by the King's Bench Division, is a difficult case upon this subject, which does not seem to fall exactly within either of these principles. It is really a case of first impression, and will probably be taken to the Court of Appeal and the House of Lords. The facts of the case are as follows:—The defendants were the owners of a shaft and of a certain area of rock salt known as Penny's Lane, near Northwich, in Cheshire. The plaintiffs owned a number of adjoining salt mines. The defendants pumped salt brine through their shaft. This salt brine was in part derived from the dissolution of rock salt in the plaintiffs' mines. In consequence subsidences occurred, and the plaintiffs sued for damages for these subsidences, and also for the abstraction of their salt.

In these salt districts the extensive mining of salt and the extensive pumping operations for salt brine have caused very frequent subsidences. In view of the number of miners and pumpers in the district it was found very difficult to say what mining or what pumping caused any particular subsidence. Parliament therefore passed an Act in 1891 which provided for compensating persons other than miners or pumpers for subsidences. In this case the Court held that though the defendants' pumping may have caused subsidences on the plaintiffs' property, it was impossible to say to what extent the subsidences in question were to be attributed to the various operations which were being carried on by both plaintiffs and defendants. That being so, the Court held that it was impossible to find for the plaintiffs in respect of the damage caused by the subsidences.

The second question, whether there was any right of action for the salt abstracted, raises the really difficult point of law. The Court found as a fact that the pumping operations of the plaintiffs had abstracted salt brine from under the defendants' land. Did this give any cause of action to the plaintiffs? At first sight it would appear that it ought to do so. The defendants had clearly appropriated a part of the soil belonging to the plaintiffs. It is true that if the defendants had merely pumped up underground percolating water, the plaintiffs would have had no cause of action merely for the abstraction of the water. But here it was not merely water; it was valuable mineral which had been abstracted. On the other hand, it was said that the mining and pumping operations carried on for many years in this district had introduced a wholly artificial state of things. Just as it was impossible to say, when any subsidence occurred, who was really answerable for it, so it was impossible to say, when a shaft was sunk and pumping operations begun, what area such operations would

affect. The reason why the law recognises no right of property in underground percolating water is that it is difficult to say to whom such water really belongs; and therefore it is better to allow any owner to pump as he pleases than to attempt to settle questions as to the ownership of such water, which, by the nature of the case, must be nearly impossible of solution. This reasoning really applies to the pumping of brine in cases where the district has been so honeycombed by mining and pumping operations that it is impossible to say to whom the salt brine pumped up really belongs. It was these arguments which convinced the Court and led it to hold that the abstraction of salt brine under the circumstances gave no cause of action.

There is much to be said on both sides of the case. The Lord Chief Justice admitted that his mind had fluctuated during the arguments and the consideration of the case. The correctness of the decision must really depend upon the proposition that it is really impossible to say what amount of brine was taken from the plaintiffs' land. We should remember, however, that it was clear that some had been taken, and, between the pumping of underground water and the pumping of salt brine there is this difference: in the first case no part of the soil is removed, in the second case valuable mineral is abstracted. The law may well say that it recognises no right of property in underground water flowing in undefined channels: it can hardly be contended that this proposition is true of salt brine. And if this is so, it goes far to destroy the analogy between pumping water and pumping brine. It may be difficult to accurately measure the amount taken; but if it is clear that some has been taken, we doubt whether this difficulty of accurate measurement deprives the plaintiffs of all right to damages. If it does the case is a hard one for the plaintiffs. We shall await with interest the decision of the Court of Appeal and the House of Lords on this new and difficult point of law.

THE CATHEDRAL CLOISTERS AT GERONA.

By ARTHUR WATSON.

THE cloisters of the cathedral at Gerona are of interest on account of their construction and as containing a remarkable series of carvings representing Scripture scenes, monsters and foliage.

The plan is quite irregular, no two of the four sides being of the same length and none of the angles being right angles. This irregularity does not make itself felt as unsatisfactory. It is not the result of caprice on the part of the builders, but arises from definite determining conditions.

The directions of the north and south walls are fixed, the former by the line of the fortified portion of the city which is itself determined by the natural formation of the land, the latter by the orientation of the cathedral. The south side is a line from west to east, the north a line from west to a little south of east. The two remaining sides run from south in a northerly direction, and complete a figure which is nearly but not quite a trapezium.

On the north side the vaulting is semicircular, whereas on the south, west and east sides it assumes the unusual form of the quadrant. The semicircular vaulting has been used where the outside wall does not adjoin any part of the monastic building, and the quadrant where it may serve the purpose of support; it is, in fact, in the happy mode of expression hit upon by Viollet-le-Duc, a continuous flying buttress. On the south side the cloisters now adjoin the north wall of the cathedral. The east and west sides adjoin what were formerly the dormitory and refectory respectively. The builders have thus, both in the general plan and in this variation in the vaulting, had real constructive reasons as determining factors.

Within the quadrangle is a little stone building surrounding the opening for the well. M. Gailhabaud, who made a special study of the construction of wells in the Middle Ages, has remarked on this one in the cloister of Gerona as being the earliest of the kind of which he had knowledge. In wells built by the Romans he found that no provision for the use of the pulley was made, and this fact he considered the more remarkable as the wheel and



FIG. 1.



FIG. 3.



FIG. 2.



FIG. 4.



FIG. 5.



FIG. 6.

axle and the pulley were not unknown to them. This consideration led him, somewhat fancifully, to the conclusion that the use of the pulley for this purpose was due to the Christians' desire to reduce the labours of subordinates, and thus he looked upon this feature as symbolical of the new religion.

This cannot be regarded as more than a too rapid conjecture. The fact, however, to which M. Gailhabaud draws attention is interesting, viz. that the cathedral cloisters at Gerona furnish a prototype of later elaborate structures for sustaining an overhead pulley.



FIG. 7.



FIG. 8.

The cloisters date from the eleventh century or the beginning of the twelfth.* On three sides they are ornamented by carvings representing Scripture scenes; on the north side by foliage patterns. At the corners, and also between the extremes of the sides, are blocks of masonry (see figs. 1-6) occupying the space between the four pillars, and on the sides of these blocks, filling the intervals between the capitals, are stories from the Old and New Testament, forming a kind of frieze. The capitals of the

twin shafts are also in some cases storied, but for the most part they are occupied by foliage or grotesque animals and birds. The Scripture scenes begin with Genesis.

The following is an almost complete list:—

Old Testament.

- The Creation of Woman.
- Adam and Eve in Paradise.
- The First Sin.
- Adam and Eve driven from Paradise.
- The First Labours.



Fig. 9.

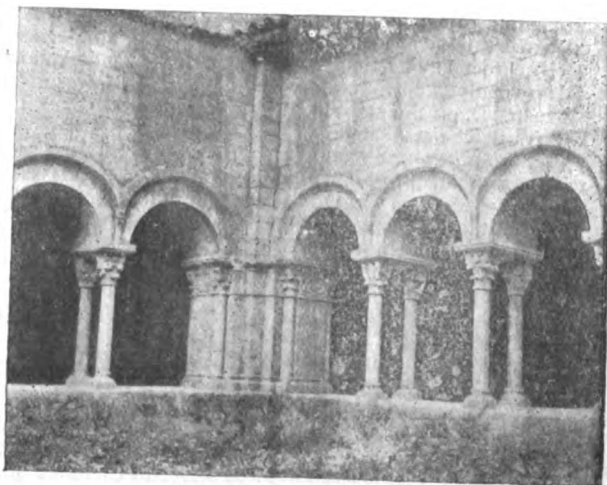


FIG. 10.

- The Death of Abel.
- The Curse of Cain.
- Building the Ark (see fig. 2).
- Noah and his family entering the Ark (see fig. 3).
- The three angels at the door of Abraham's house (see fig. 4).
- Abraham sending his servant to seek a wife for his son Isaac.
- The Blessing of Jacob.
- Esau returning from hunting.
- The Dream of Jacob.
- Rachael's flock.
- Jacob and Rachael.

New Testament.

- The Murder of the Innocents.
- The Flight into Egypt.
- The Annunciation.
- The Nativity.
- The Adoration of the Magi.

* See Bassegoda, *La Catedral de Gerona*, Barcelona, 1889.

On the west side is a piece of sculpture representing two men carrying a heavy vat or wine-press, while a man behind is bearing a jar with difficulty (see fig. 6). At first this may suggest the return of the spies from the land of Canaan, but Mediæval sculptors would probably not have ventured to substitute a vat for the grapes of the Bible story. The opposite face, however, of the block of masonry on which this subject is represented shows a bishop blessing the first stone of a building, and two masons. Fig. 6 may, therefore, as Joaquin Bassegoda suggests, be intended to represent a workman carrying water and two others bearing mortar, or it might be intended for one of the occupations of the months. At San Cugat del Vallés, near Barcelona, on one of the capitals of the cloisters is a similar representation, though much more damaged (see fig. 7).

The building of the Ark gives an insight into carpenters' work, the workmen using saw and hatchet. The hands and heads of the figures are large in proportion to the rest of the body, and the hair is represented somewhat conventionally, in this as in other subjects, as terminating in volutes. Noah and his family entering the Ark is one of the best of the scenes, and it is noteworthy that a good deal of care has been taken in the carving of the folds of the dress.

The Ark is, of course, quite inadequate.* It is but a small boat. Its line approximates to that of a semicircle, as in many Mediæval representations, and the planks of the sides are marked by studs. (Cf. British Museum MSS. 19 D. ii. f. 13b, and "Nero," C. iv. f. 3, and the seal of the town of Dover in J. R. Green's "Short History of the English People," vol. i. p. 339.)

Want of proportion is perhaps most strikingly shown in representations of Jacob's Dream, where obviously the distance between earth and heaven cannot be made to scale. It can only be attempted on the understanding that the representation is conventional and the imagination is left free play. Yet in spite of obvious inadequacy in this respect, as judged by modern standards, these sculptures in the cloisters of Gerona have, like many representations of the kind to which they belong, life and go in them. They suggest the Bible story, and at the same time bridge over eight centuries and place before our eyes common objects and common events as they appeared to the sculptors who executed them.

The rectangular Scripture scenes are bounded on each side by sculptured foliage or grotesque animals. In fig. 2, for instance, on the right is a bird form with a human head, which in fact overlaps the principal subject.

At the north-east angle is a richly carved foliage scroll, which is so arranged as to give nearly the same pattern when inverted (see fig. 8). The capital to the left has bent leaves of the acanthus type, enriched by many drilled holes, and above are diminutive well-defined volutes. This capital is of a type common in Southern France, but rare in England and Normandy. Other examples of capitals of a like kind exist in the cloisters of San Cugat del Vallés (see fig. 9), in the church of San Pedro de Galligans at Gerona, in the cloisters of San Juan de las Abadesas, and in the apse of the cathedral of Santo Domingo de la Calgada.

It may be noted that the inner or quadrangle sides of the abaci (see fig. 1) are level with the outer face of the wall, the wall receding where the arches rest on the abaci, and that the outer arch is supported by short and slender shafts surmounted by carved capitals.

From the west side of the cloisters the open door at the north reveals the outer world, framing the view of the opposite hill gilded by the bright sunlight, while the cloisters themselves are cool and shady. The glimpse intensifies the repose of the cloisters. Here the passing priest may enter into friendly conversation with the traveller, and of fresher interest to him than the surrounding treasure are such questions as the cost of travelling to England.

From the north side may be seen the giant buttresses, deeply projecting solid walls of masonry rendered necessary to support the vault of the nave with its extraordinary span of 73 feet, an enterprise the nature of which is realisable by means of documents dating from the time when the con-

struction was in contemplation, in which the opinions of experts as to the practicability and safety of the proposed undertaking are set forth (see Street, "Some Account of Gothic Architecture in Spain," pp. 501-13).

Apart from the intrinsic interest of the existing architecture of the cloisters, with their treasures of sculpture and romantic surroundings, an added interest is to be found in the fact that this peaceful retreat is set in a city which still retains so much that is Mediæval, and offers a wealth of subjects for the painter, etcher, and for the traveller who can bring away with him nothing but the remembrance or the records of his camera.

SOANE'S LAST LECTURE.

FEW architects obtained a larger measure of worldly success than Sir John Soane. The son of a brick-layer, his first occupation was as an errand-boy in the office of George Dance, the architect. As he made himself useful in other ways he was subsequently treated as if he were a pupil. He was sufficiently competent to enter Holland's office as an assistant. Soane gained the gold medal and travelling studentship of the Academy, and his three years' residence in Italy were profitable to him. On his return he commenced practice, and was able to gain appointments as well as commissions. Having been elected associate in 1795, he became an Academician in 1802, and in 1806 was appointed professor of architecture. He held the office until 1833. Soane delivered his course of lectures in the Academy for the last time in March 1832, and then he expected to deliver another course, in which he was disappointed, for owing to the failure of his sight he resigned his numerous appointments.

The following report of the final lecture has been preserved:—

Having in the previous lectures traced the progress of the art, from its first rise among the ancients through all its periods of prosperity and depression, and latterly from its revival in Italy in the fifteenth to the close of the eighteenth century, the Professor devoted his concluding lecture to an analysis of the practice of the ancient artists, and a comparison of it with that of the moderns in some of the leading features of the art.

He began with arches, of which, he observed, the origin of their introduction into architecture is extremely difficult to be ascertained. The triumphal sort of arches, he remarked, were not general until the age of Augustus. He next adverted to the construction of bridges, commented on the peculiar beauty and picturesque appearance of those foundations in effecting the union of two opposite shores. Among all the examples of this style of building at present existing none, he observed, claim more admiration than those of China, which indeed are pre-eminent for their magnitude and extent. The bridge of Kingtunc affords a splendid instance of the grandeur resulting from those qualities. The bridge of Ispahan, and those erected in ancient times, of which we have little more left than descriptions—Trajan's bridge over the Danube, Cæsar's over the Rhine, &c.—are likewise deserving the careful study of the young architect. Our own bridges of Blackfriars and Westminster are, however, never to be omitted from the list of the celebrated—the first conspicuous for the beauty of its proportions and magnificent aspect, the last for its utility and characteristic effect. Dismissing this subject, the Professor next adverted to the practice of ornamenting domes, which is carried to a far greater extent in modern than in ancient times, and frequently without any visible connection or analogy with any other part of the building. He pointed out the ill effect arising from the erection of the lantern on the domes of even the beautiful churches of St. Paul and St. Peter. To the dome he attributed the origin of the spire, and both, he observed, might perhaps find their prototype in the obelisk, an erection appropriated by the ancients to the worship of the sun. He instanced the injudicious erection of spires on the tops of roofs, and contrasted those examples with others in which the spire rises pyramidically from its own base, in which latter the outline is generally pleasing and the whole effect appropriate. He next adverted to the application in buildings of staircases, vestibules, saloons and galleries, all of which offer a wide range for the ingenuity and invention of the architect. The appropriate and injudicious selection of ornaments for buildings was the subject which next engaged the Professor's attention, and while upon it he was naturally drawn to a conspicuous

* Representations of this period almost inevitably lack proportion, and especially is this the case in sculpture. It may be interesting to note that in the representation of the Ark on the west front of Auxerre Cathedral (fourteenth century) this want of proportion is felt, as the sculptor has recognised the difficulty of doing justice to the subject within the space of one panel, and has allowed his subject to extend over two. (See W. R. Lethaby's *Mediæval Art*, plate li.)

example of the latter description in this Metropolis, Bloomsbury Church, the steeple of which is surmounted by a statue of George II. This absurdity has given rise to the following epigram:—

When Harry the Eighth left the Pope in the lurch,
His Parliament made him the head of the Church,
But George's good subjects, the Bloomsbury people,
Instead of the Church made him head of the steeple.

He then entered into a minute description of the modes of decoration used by the ancient architects, and contrasted the good taste exhibited by them with the extravagant and ill-chosen style of ornament adopted by more modern artists. For the encouragement of the growth of a pure taste in architecture, as well as in every other branch of the fine arts, the family of the Medici in Italy did much; and he hoped that under the fostering influence of similar patronage, England too would have to boast of her Raphaels and Michel Angelos. In the best works of the ancients, he continued, there is observable a propriety of design and a singular harmony of every part of the building, which is never interfered with by the introduction of heterogeneous ornaments, so fatal to the unity of many modern edifices. In order to avoid this blemish, he recommended the architect constantly to aim at imparting to his constructions a positive character—to neglect no part, however unimportant it might appear; but, by giving to each and every portion its due weight and significance, to produce that fitness and harmony he had pointed out as the standard of excellence. The ancient writers, he observed, recommended the study of music to form part of an architect's education, conceiving, perhaps, that a relish for the harmonies of tone would induce, by a sort of sympathy, a corresponding taste for those of proportion.

The profession of an architect he considered beset with many difficulties, of which the sister professions, those of painting and sculpture, are happily ignorant. The architect alone is subject to that fearful ordeal, the obligation of showing his work during its progress; his designs are besides frequently counteracted by circumstances beyond his control, and too frequently interfered with and altered to suit the purposes of economy or the contingencies of locality. He lamented that in this country the mechanic is but too often identified with the regular architect, who ought to be as distinct from the builder as the physician is from the apothecary. The architect should never be the contractor, nor ought the profession to be subject to those constant squabbles respecting building expenses so degrading to its character. The Ephesians are stated to have adopted a good regulation with regard to such matters. Among those people, it is said, the builder was required, previously to commencing his work, to resign over to the public treasurer his whole property, and if, on the completion of the building, it were found that the expenses exceeded by one-fourth part the stipulated amount, his goods were appropriated to the liquidation of the excess. The Professor entreated the students to recollect that their art, valuable and important as it is, owes all its value and importance and all its power of pleasing to its utility. It may, he continued, be considered an art pre-eminently calculated to call forth the latent energies of genius; but not all the graces of invention nor the charms of execution can compensate for the sacrifice of that great and leading principle.

The Professor, in conclusion, stated that he had endeavoured in the course of the lectures now terminated, to render his observations as useful to the students as he possibly could. He had entered upon the task with fear and trembling, but he had brought to it the whole of his zeal and attention. In the prosecution of his labour he had sought to instruct the students in the laws and principles of their art, and to point out for their guidance the faults and beauties of those masters who have preceded them. Much, however, yet remained to be noticed, nor could he comprise all he had to say within the narrow limits of six lectures. He would, therefore, next season add to the present lectures six others entirely new, in order that he might enlarge upon some of the chief principles of the art, and the more important duties of the architect. When he had completed the work he had thus allotted to himself, he would direct the twelve lectures to be printed, not for public sale, because it would be done from no feeling of vanity, but for the use of the students of the institution of which he is a member; so that if he could not say with the poet,

Exegi monumentum ære perennius,

he would yet have the satisfaction of feeling that he had

devoted his best efforts to facilitate and advance the study of architecture. Nay, that he might "whet the almost blunted purpose" of the Legislature he would direct in his will that after the death of his grandson, his natural heir, the house in which he resides, in Lincoln's Inn Fields, shall be placed under the control of trustees, who shall be empowered to allow from its proceeds a salary to a professor of architecture until such time as a national establishment for the fine arts shall be formed in this country—that then the trust shall cease and the estate revert to the next heir-at-law then existing.

This announcement was received by the numerous audience assembled in the lecture-room by loud cheers.

Sir John Soane not only made a will, but in 1833 he obtained a private Act which empowered him to vest his museum, library, &c., in trustees. The reference to his grandson as his natural heir in his last lecture was another way of expressing the alienation between him and his son, and which continued to the end of Sir John's life on January 20, 1837.

SCOTTISH BROCHS.

AMONG the various relics of the past which time has spared the Scottish brochs possess a special interest, both because they are a type of building absolutely peculiar to that country, and from the fact that they show that the prehistoric architects who constructed them possessed alike forethought and resource in working out the idea of an edifice so admirably suited to fulfil the objects for which it was intended. A broch might shortly be defined as a hollow, circular tower of dry built masonry, from 40 to 70 feet in diameter, having within the thickness of its walls a series of chambers and galleries lighted by windows, all looking into the central area. The only aperture to the outside was a doorway through a tunnel-like square-headed passage, with slightly inclined sides 5 to 6 feet high and about 3 feet wide, constructed in the thickness of the wall. The latter (which was from 9 to 20 feet thick) was solid for about 10 feet from the ground, except where it was pierced by the entrance or partially hollowed out by the construction of oblong chambers with rudely vaulted roofs. Above this the wall was carried up with a clear space of about 3 feet wide between the exterior and interior portions. Into this hollow horizontal ranges of slabs were inserted at intervals of 5 or 6 feet, thus forming galleries about 6 feet high and 3 feet wide, which ran completely round the tower. These galleries were connected by a stair which ran up to the top of the tower, and were lighted by windows in the inner wall of a peculiar construction, placed vertically over each other. The central area was from 20 to 45 feet in diameter. It is difficult to say with certainty what must have been the original heights of the brochs, as the upper portions of all the specimens known have been demolished. The best preserved is the broch of Mousa in Shetland, which though incomplete at the top is 45 feet in height, so that they must have, occasionally at any rate, attained an altitude of 50 feet. The door (which would be a slab of stone) was placed about 4 feet from the outer end of the tunnel-like passage against a rebate in the masonry, faced with strong slabs. It was secured by a strong bar fitting into holes made for the purpose in the side walls. In most cases there was also a guard-chamber opening off the passage just behind the door. The object of the builders of the brochs was undoubtedly to provide a place of temporary shelter and defence to which they could retire with their cattle and other valuables during the raids and forays of foreign marauders, which at the time of their construction were constantly occurring in the north and west of Scotland. As a general rule, therefore, these curious edifices were situated in districts of some fertility, and the buildings most admirably fulfilled the purpose for which they were intended. The brochs are unmistakably Celtic in their character, and are peculiar to Scotland. They do not bear any proper relationship to any variety of fortified edifices known in historic times. They have been compared to the round towers, but while in outward appearance there was a certain amount of similarity, and both buildings seemed to have been intended for the same purpose, there are marked and signal points of difference. According to one authority in the five northern counties there were 370 of them.

Mr. Barnett has bequeathed to the Painters' Company a sum of 100,000*l.* Part of the interest must be expended on an annual banquet to be held by the Company.

NOTES AND COMMENTS.

It has been stated that the house at Herne Hill occupied by the RUSKIN family was the Casino House. JOHN RUSKIN says in "Fors Clavigera," "When I was about five years old my father found himself able to buy the lease of a house on the opposite side of the road to the Casino, and somewhat nearer to Herne Hill station, being numbered 28. Our house," he goes on to say, "was the fourth part of a group which stand accurately on the top or dome of the hill, where the ground is for a small space level, as the snows are (I understand) on the dome of Mont Blanc. The group of which our house was the quarter consisted of two precisely similar partner-couples of houses, gardens and all to match; still the two highest blocks of buildings seen from Norwood on the crest of the ridge. The house itself, three-storeyed with garrets above, commanded, in comparatively smokeless days, a very notable view from its upper windows of the Norwood Hills on one side and the winter sunrise over them, and of the valley of the Thames, with Windsor in the distance, on the other, and the summer sunset over these." In another part of the same work RUSKIN said:—"My father's house at Herne Hill—in which I correct the press of this 'Fors,' sitting in what was once my nursery—was exactly fit for him and me. He left it for the larger one, Denmark Hill, and never had a quite happy day afterwards. It was not his fault; the house at Herne Hill was built on clay, and the doctors said he was not well there; also I was his pride, and he wanted to leave me in a better house." The house at Herne Hill referred to is well described and easily recognised, having no resemblance whatever to the Casino just demolished, and it is one of very modest pretensions, that probably did not cost more than 1,200*l.* to build, although it is still apparently in good condition and inhabited. It is much smaller than the house on Denmark Hill, a short distance off, which is numbered 163, and for the last thirty years has been occupied by Mrs. DRUCE.

THE various governments of France have reserved to themselves the privilege of manufacturing tobacco and of selling wholesale foreign products which find favour with "the blest tobacco boys." The principal manufactory in Paris was the immense block of buildings on the Quai d'Orsay, near the Pont des Invalides. At one time nearly two thousand men and women were employed in it. The Government have decided on the demolition of the buildings, for so large a site in so excellent a position can be turned to more profitable account, and the removal of a colossal factory will be an advantage to that part of the Paris landscape. According to tradition, the ground at one time belonged to BEAUMARCHAIS, who converted it into a farm. That wonderfully tough and indomitable man played many parts, and as he had friends at court and a patron in a court banker, it is not unlikely that he tried to speculate in a farm for the benefit of Paris and his own profit.

THE arrangements respecting the rebuilding of the South Parade Pier at Southsea were adopted at the meeting of the Portsmouth Town Council on Tuesday. The plans are to be prepared by Mr. G. E. SMITH, of Southsea, as architect, at a commission of $3\frac{1}{2}$ per cent. on the total expenditure on reconstruction, to be reduced to 3 per cent. if the plans, specifications and details are not completely ready for the quantity surveyor within five weeks. It is rarely an architect is allowed to co-operate in structures of this kind, and it is to be hoped the designs for the Southsea Pier will be of a character which will persuade other authorities that it is advantageous to give a commission to an architect. It is estimated that the building will cost 46,845*l.* But with such work unexpected contingencies

are likely to arise. There will be a pavilion at the shore end which can be used as a concert hall or for balls. A theatre was proposed, but the Corporation prefer to have concerts only. The tea-room will be over 70 feet in length, and it is intended to spare no pains or expense to render the pier attractive. Some members proposed to obtain designs by competition, but the majority were in favour of entrusting the work to Mr. SMITH, who had already taken some pains to assist the Council.

ST. PAUL'S Episcopal Chapel in Great Portland Street, W., was erected in 1775. It was closed as a place of worship a couple of years ago. There is now a sign-board set up announcing that the building is for disposal. What is still more remarkable, a notice has been affixed to the door stating that at the next licensing sessions a music license will be applied for. As St. James's Hall has vanished in order to make room for the new hotel, it is understood that a successor to it will be erected on the site of the Episcopal Chapel. The position is not unsuitable. It is near Oxford Street and Regent Street, and the stations of the Metropolitan Railway and the "Tube" are not far distant. The promoters, it is said, will expend 200,000*l.* in erecting a building which in convenience and acoustic fitness will surpass St. James's Hall, although it may be wanting in the interesting associations connected with the older building.

As elementary education has become compulsory in this country, it would be only rational to develop the system by making technical education also compulsory. For the majority of the people in this country the latter is the more important. The High Master of the Manchester Grammar School explained an experiment by Sir WILLIAM MATHER, which demonstrates the advantages of such a course. In a school of which he is a foffeee, Sir WILLIAM has looked after the training in manual exercises of 100 boys. The results were so satisfactory, the gentlemen who shaped out the system of higher education in Wales worked upon the experience of that school. It was urged that the only remedy for the present condition of things in England was the extension of technical education, if necessary by compulsion of law.

ILLUSTRATIONS.

THE SCIENCE WING, RADLEY COLLEGE, BERKSHIRE.

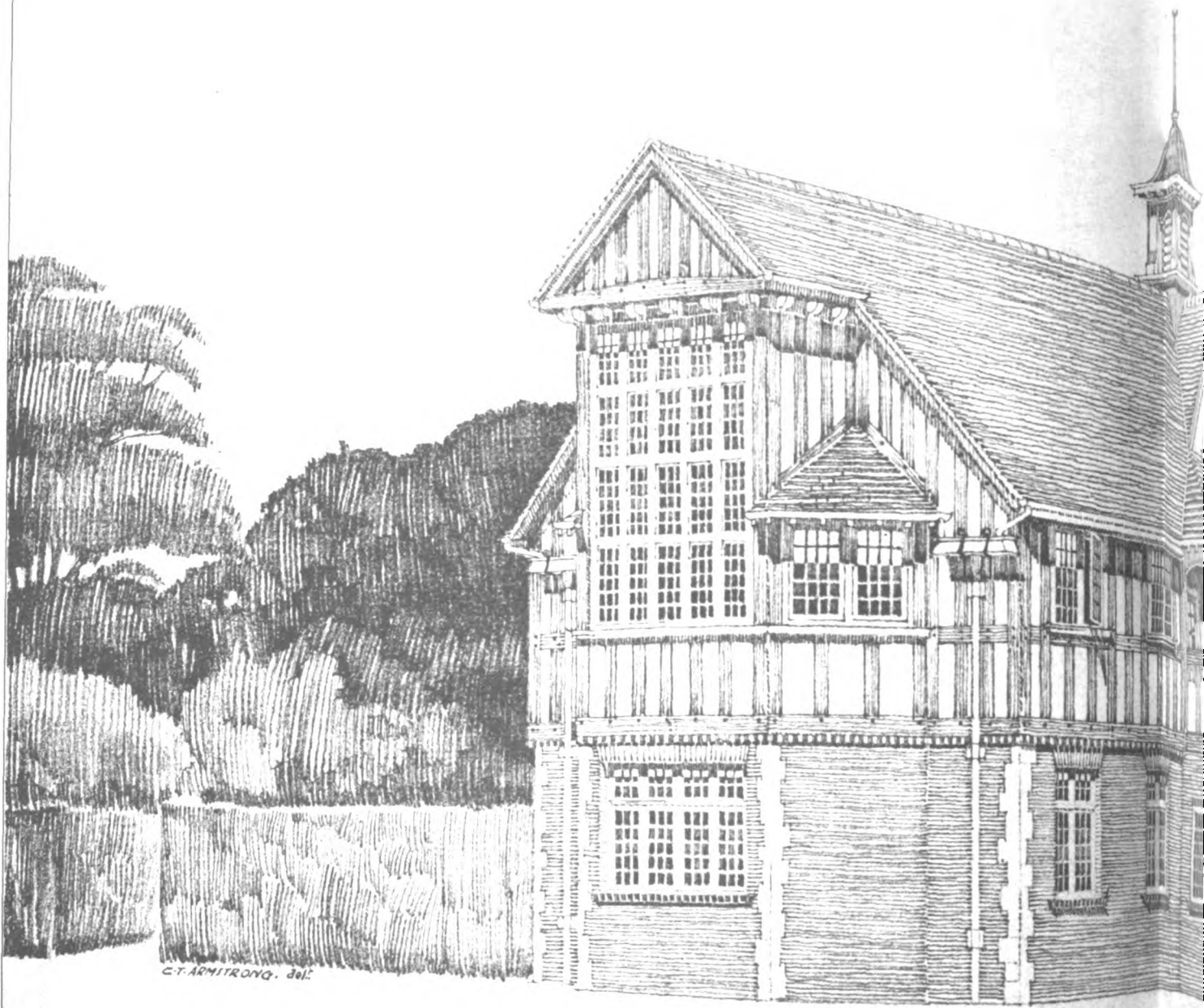
CARLE KEMP, NORTH BERWICK.

PARKHEAD DISTRICT LIBRARY, GLASGOW.

WE publish to-day the plans of one of the district libraries with which the city of Glasgow is providing itself. Many years ago, with the advice and assistance of Mr. BARRETT, the city librarian, a scheme of public branch libraries in different parts of the city was drawn up and begun to be put in execution. Already there was a valuable central consulting library. About four years ago Mr. CARNEGIE, with his usual generosity in such matters, offered Glasgow 100,000*l.* to help on their scheme of libraries. This munificent gift was at once accepted, and has enabled the city to hasten as well as enlarge their original intentions. When the whole scheme is completed Glasgow will be one of the best, if not the best, provided city in the kingdom in the matter of public libraries. This work was got in public competition by Mr. JAMES R. RHIND, I.A., architect, Inverness. The sculpture is by Mr. KELLOCK BROWN, Glasgow.

PREMIER, SLOANE SQUARE, S.W.

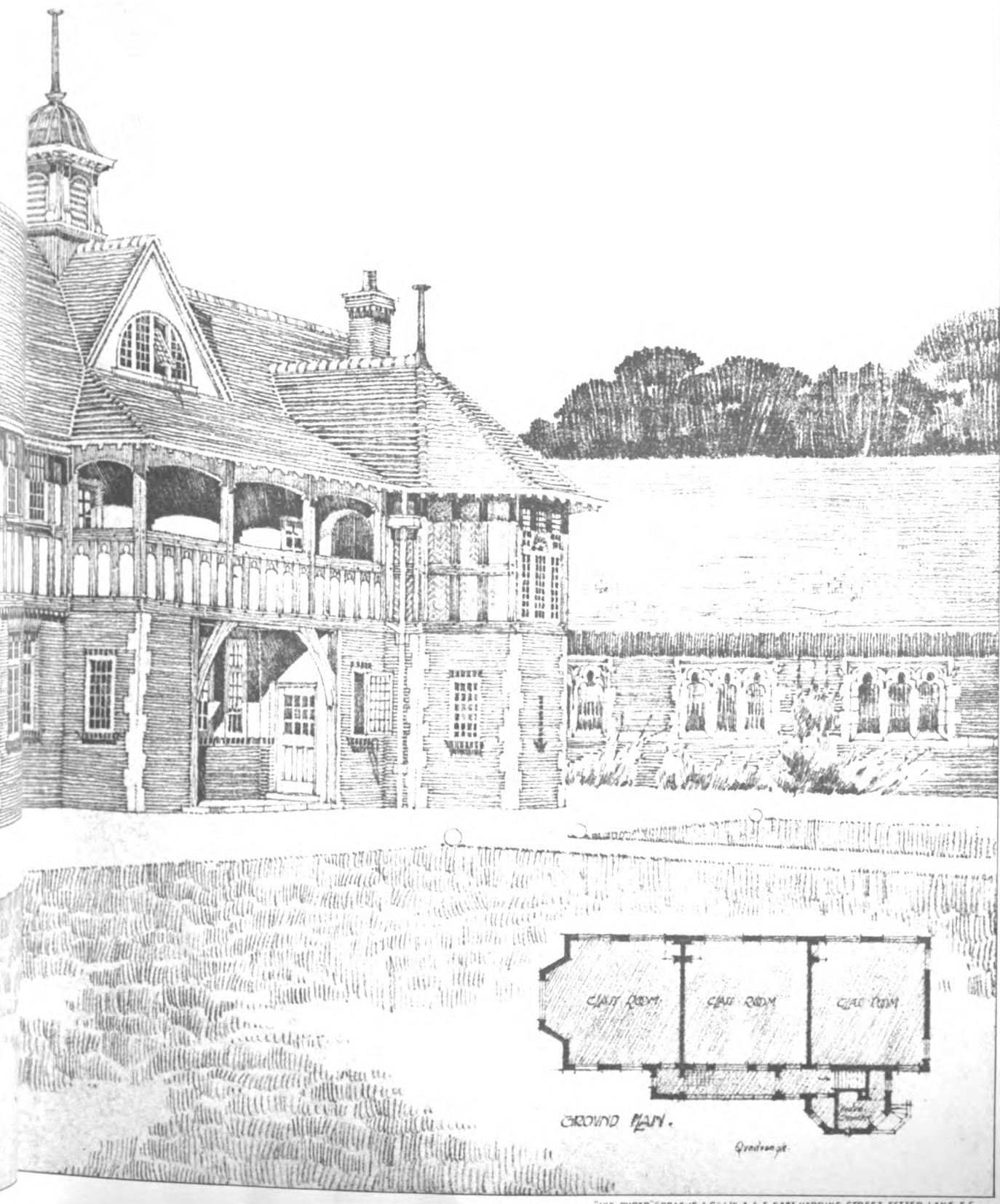
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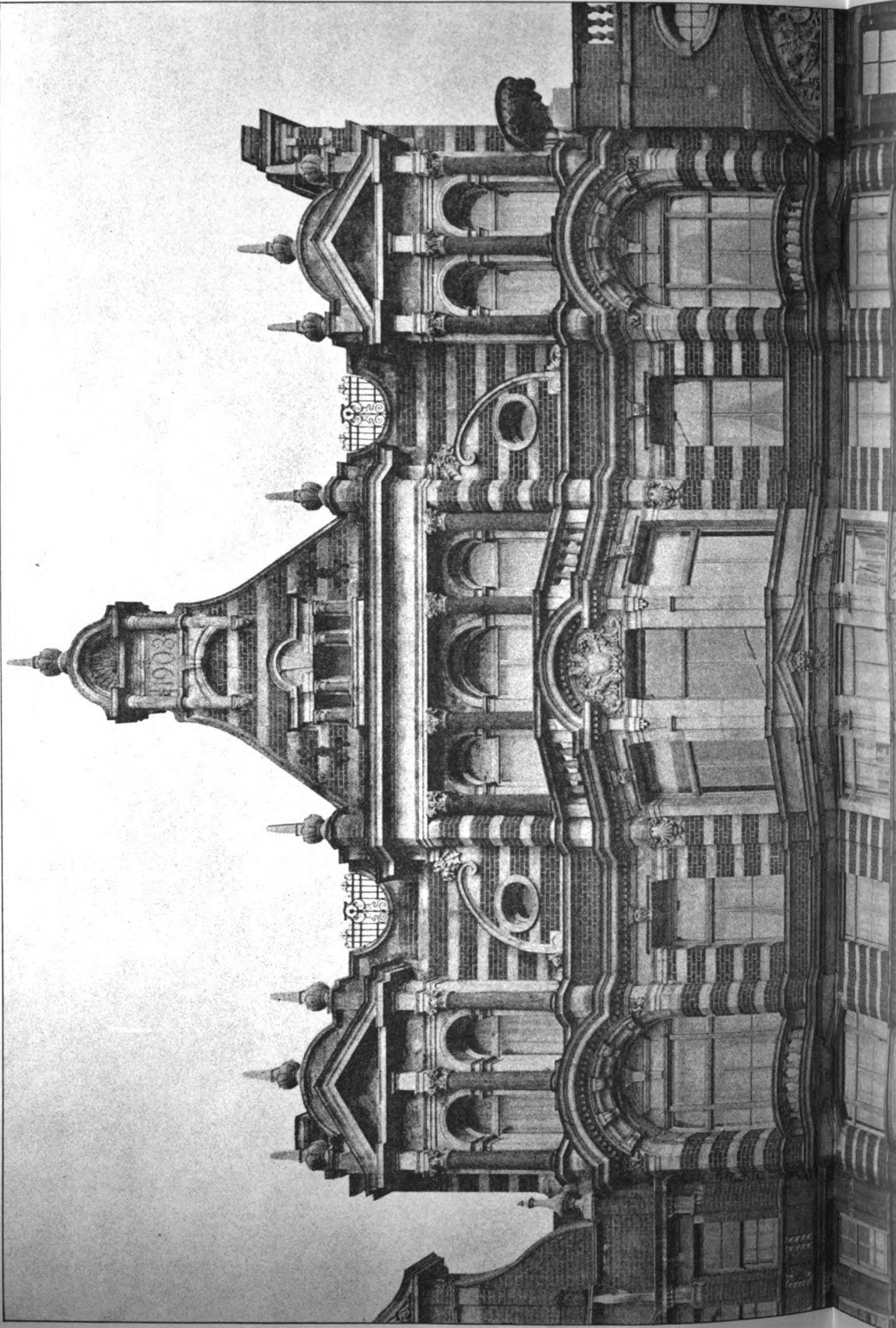
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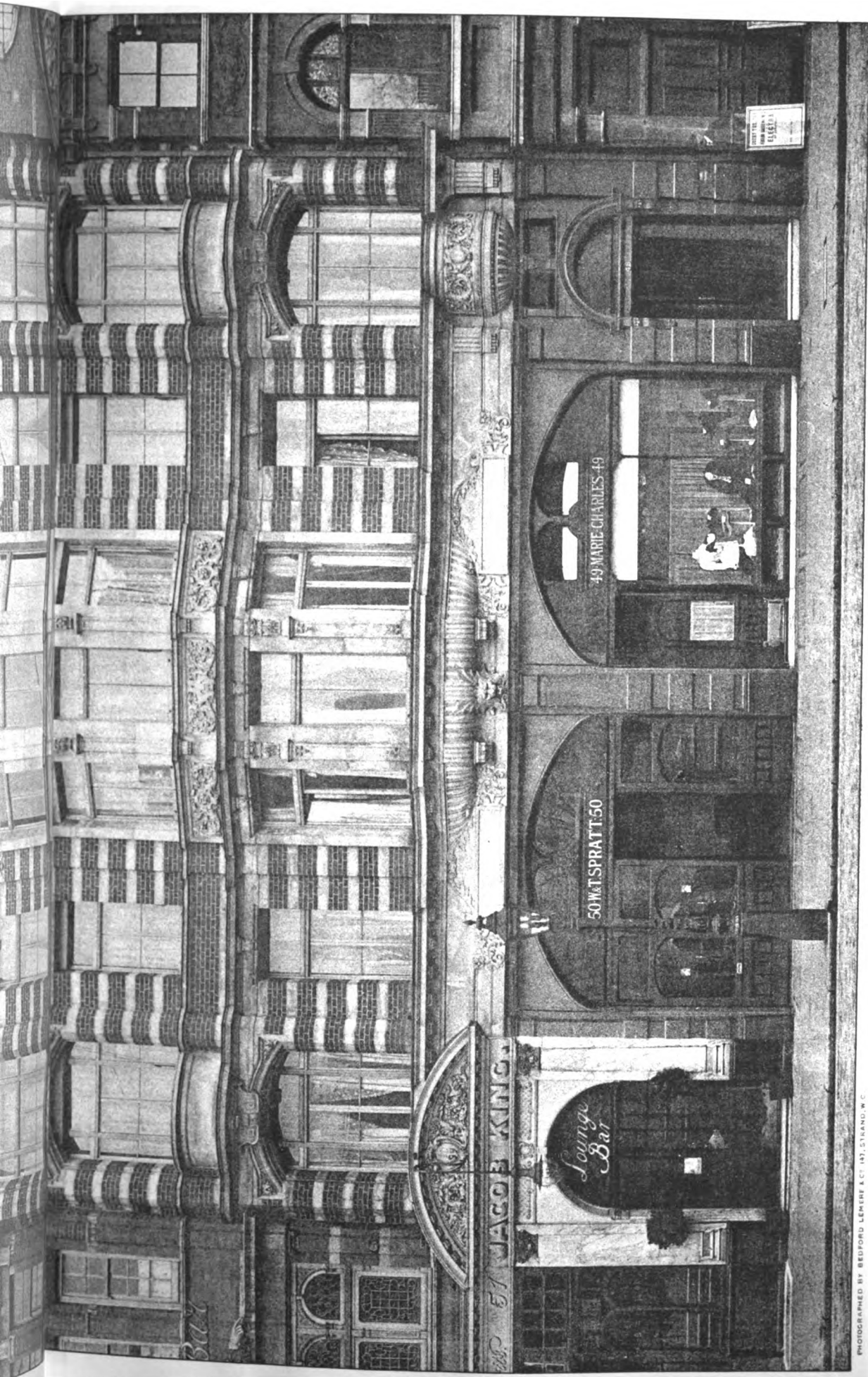


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ORTH BERWICK.
Architect.

The Architect, Sept. 14th 1906.



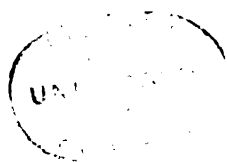


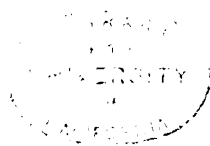
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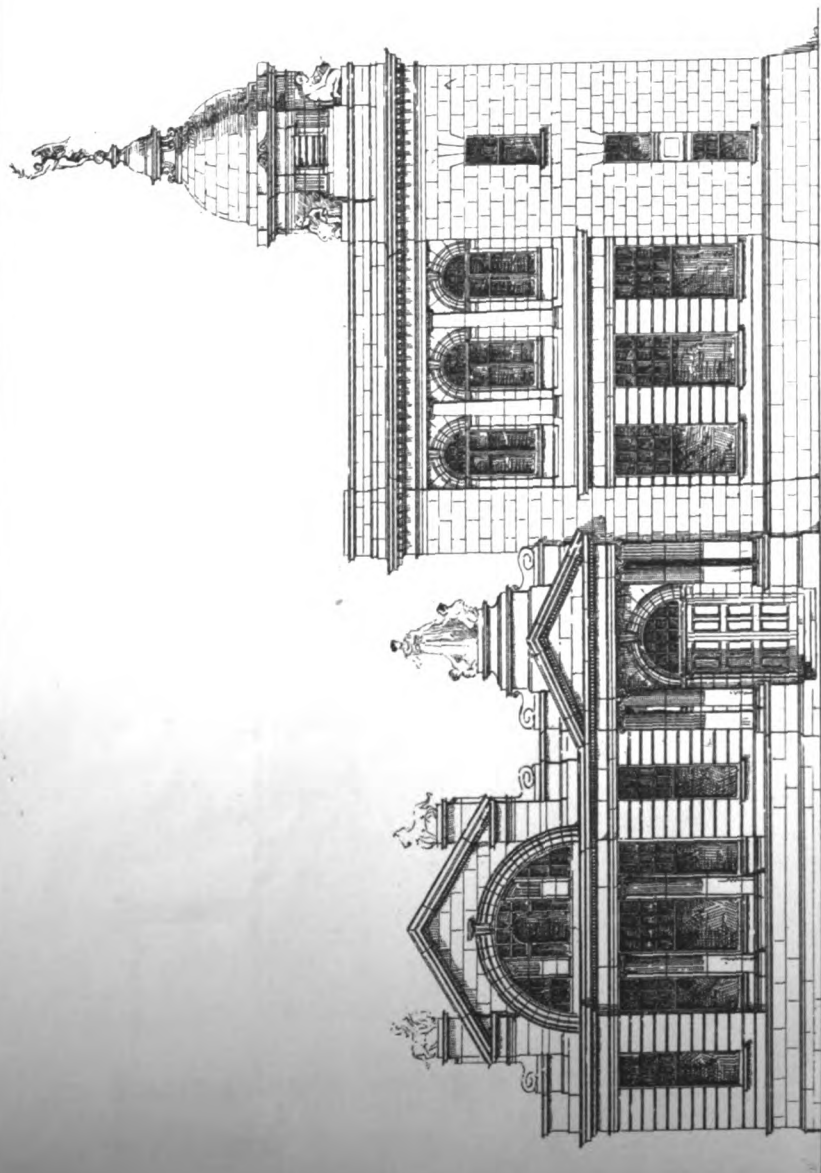
M. E. COLLINS, Architect.

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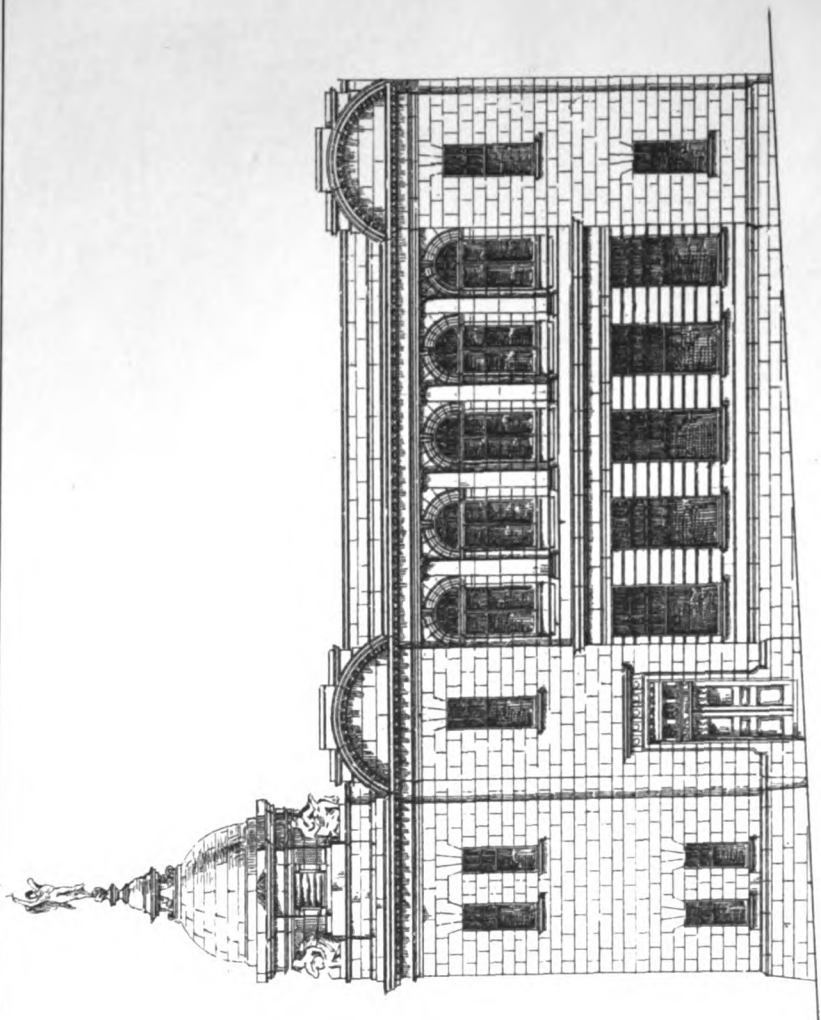
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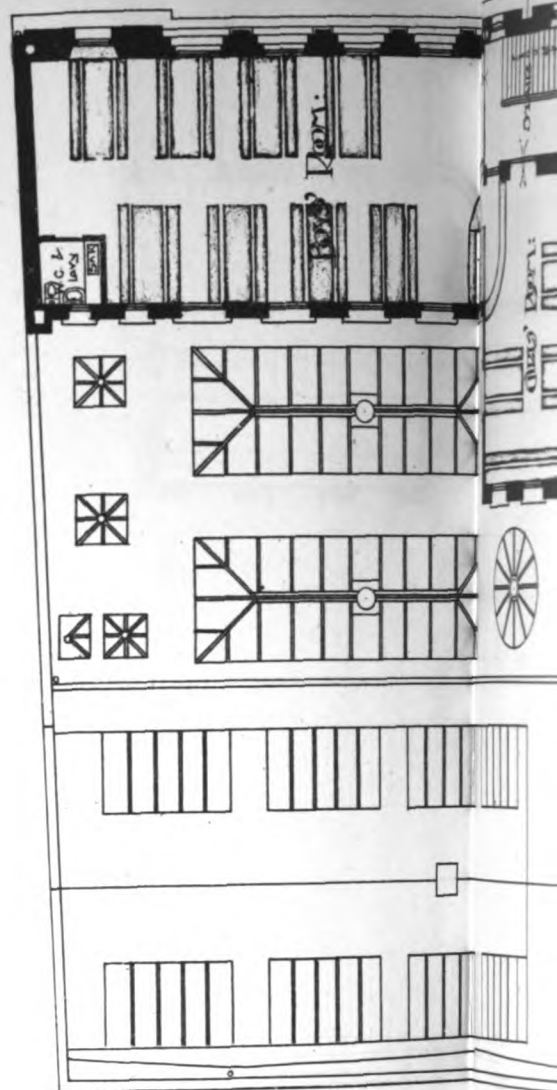
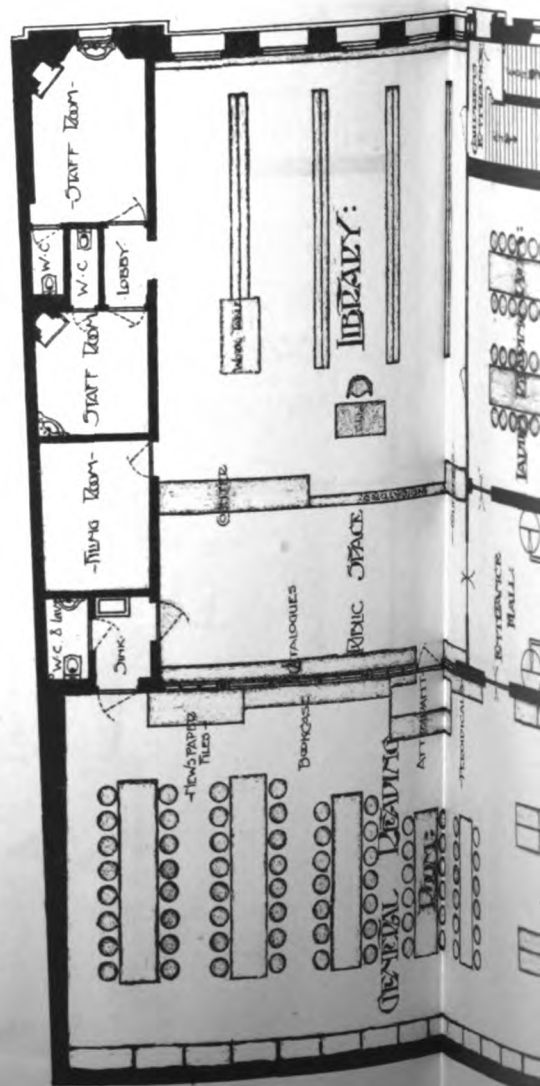


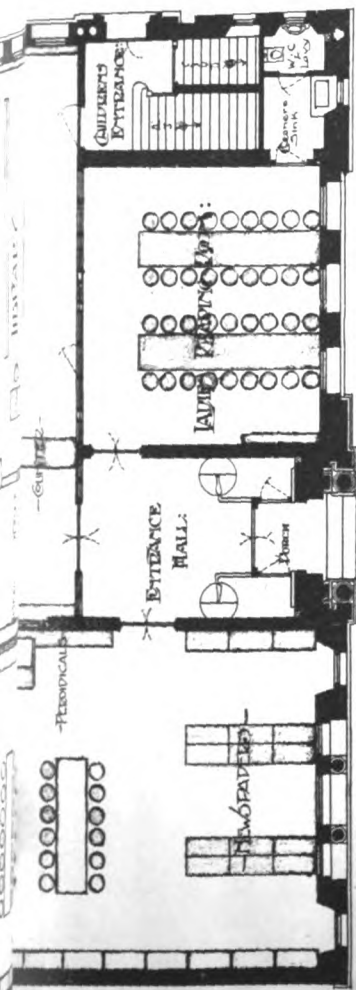


ELEVATION OF GREAT EASTERN ROAD



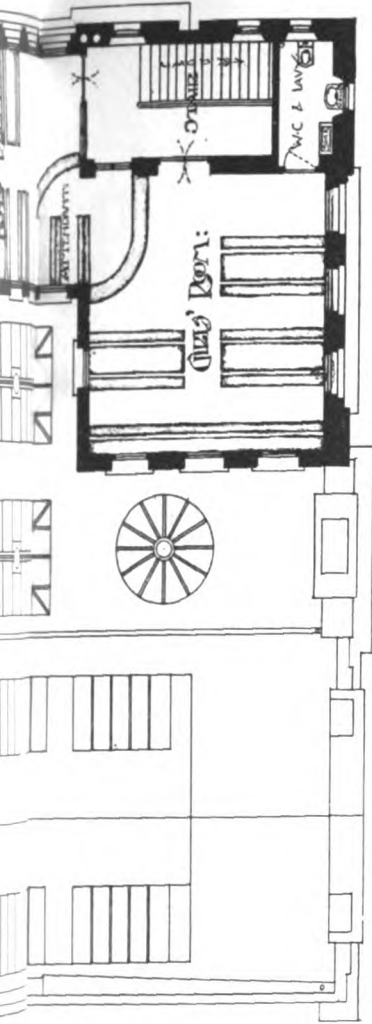
ELEVATION OF BELLEVUE STREET





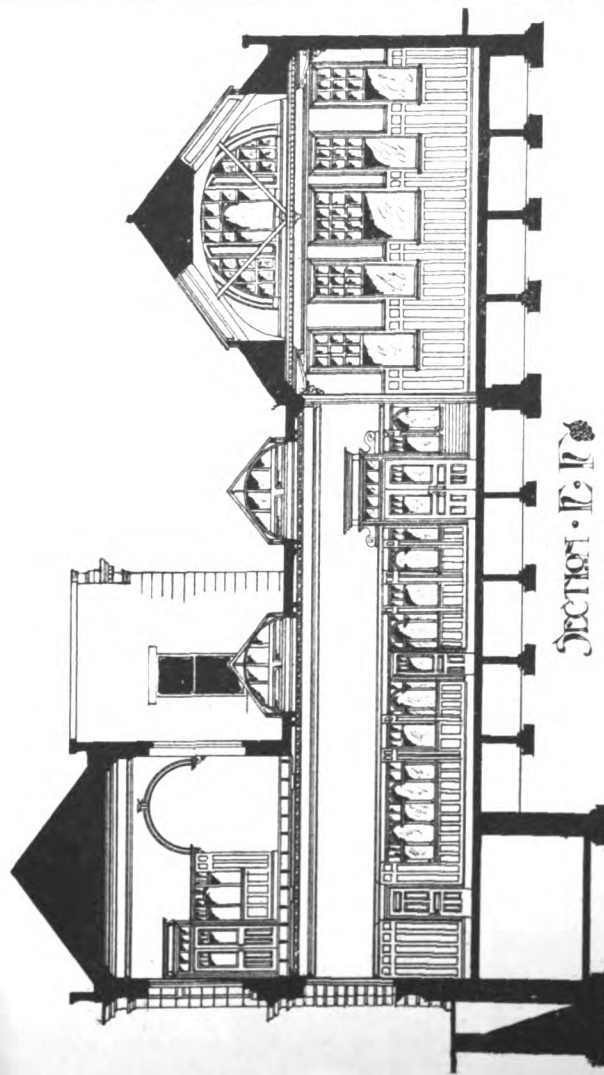
GREAT EASTERN READING

PLAN & GROUND FLOOR



PLAN & FIRST FLOOR

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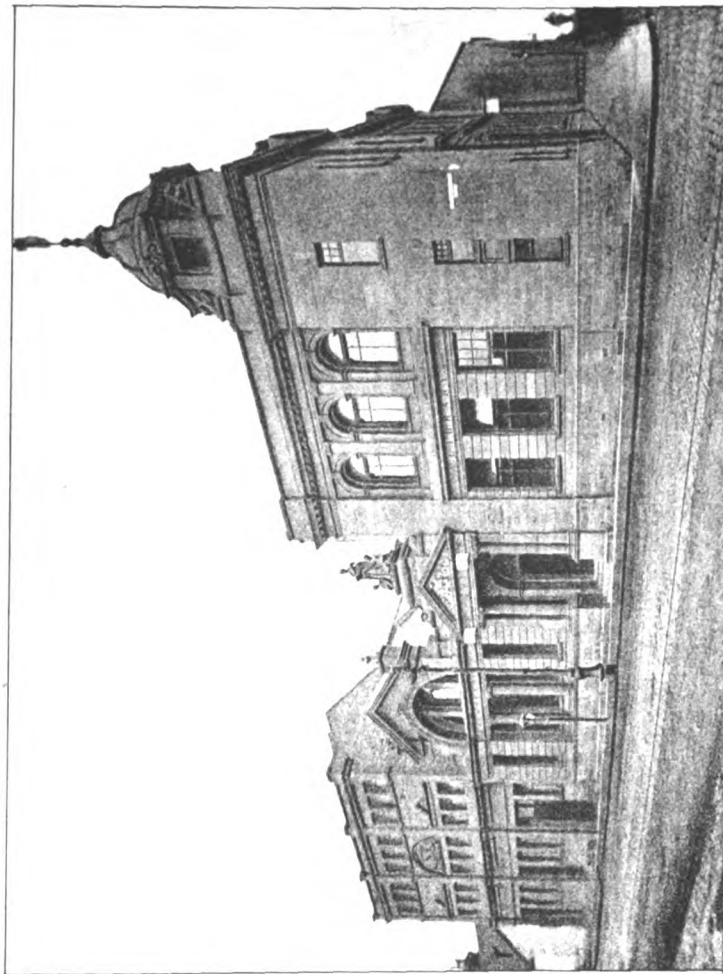


PHOTO BY A. D. GUNNEE.

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JAMES R. RHIND, Architect.

ST. DAVIDS CATHEDRAL.*

(Continued from page 166.)

THE next period in the history of the church is marked by the construction of the present lady chapel by Bishop Martyn at some period between 1290 and 1328, the former date being that of his accession to the bishopric, the latter that of his death. Perhaps the foundation of 1302 will enable us to fix the date more exactly. The appearances at the entrance of this chapel, the seams, patchings, interruptions, &c., are most perplexing, and cannot be made intelligible by any description, but the result of repeated examinations on the spot is a belief that most probably some such small structure as was described above had at least been commenced, but that Martyn changed the design and erected the present larger structure. The masonry of the arches leading into the chapel does not belong to that of the chapel itself, the arches themselves do not form a suitable approach to the latter, and Martyn's vaulting system, as we have seen, displaced an earlier one. Hence we may infer a change of design. But there is so little change in style that we must conceive the second design to have followed almost immediately upon the first. The architecture of Martyn's chapel is well nigh identical with the later Early English work adjoining. Some details may be called Decorated, but the general feeling and character much more nearly resemble those of the preceding style, and the capitals are remarkably similar to some of those in the north chapel aisle. It may be called an example of not very advanced Transition, less advanced, like so much other work at St. Davids, than might have been expected from its date. Its style, though a little later, is not dissimilar to that of the analogous structure at Llandaff, but the two present a striking contrast in proportion, that at Llandaff being remarkably tall and slender, with narrow bays and extremely lofty windows, while the St. Davids chapel partakes of the general character of breadth and lowness which distinguishes the whole cathedral.

On the whole, this chapel, though separated by a small difference in date and style, may be considered as the conclusion of the third epoch in the history of the fabric. It was the last addition to the cathedral, and brought the ground plan within a few feet of what it is at present. Up to this time the building was continually extending its dimensions; subsequent benefactors did little more than remodel the works of their predecessors. Bishop Martyn, more truly than anyone else, may be said to have completed the existing church.

Though there is no part of the edifice which has been more altered in detail, we may still ascertain the most important features of the original design. The Decorated string still surrounds the whole interior, except where it is cut through by monuments and other palpable insertions. Traces remain of the vaulting system, as the original shafts are preserved at the four corners and the corbels (heads in helmets) of at least one vaulting arch. But the number of bays contemplated in this roof is not clear. . . . Bishop Martyn was succeeded in 1328 by Henry Gower, one of the most munificent benefactors that the church of St. Davids ever beheld, and who might almost deserve the name of the Menevian Wykeham. The alterations in the cathedral effected during his time in the complete Decorated style extend nearly throughout the whole building, and appear to have been carried on from one uniform design. The chief object at this time appears to have been to bring the aisles and chapels into a more regular and ornamental shape, and we may fairly conclude that an impulse was given in that direction by the foundation of Sir John Wogan, which bears date in 1302, but which from the terms employed appears to have a merely prospective reference, and may not have been carried into effect for a considerable time. It was at this period that the aisles both of the nave and choir, and also the chapel aisles, had their walls raised to their present height, and preparations were made for vaulting the whole. . . . It is in this south chapel aisle that the work of this date appears to the greatest advantage. . . . It must be remembered that none of these preparations for vaulting were ever carried into effect. This is indeed no unusual phenomenon, yet there is certainly something striking in so many designs for a stone roof being traced out upon the same walls and none of them ever brought to perfection. . . . The operations carried on

in the cathedral during the latter part of the fifteenth century and the commencement of the sixteenth were very extensive. They consisted chiefly in an entire renovation of the roofs throughout the main portion of the fabric. This work seems to have been carried on not indeed from an uniform design, but with something like an uniform purpose, through a long series of years. . . . There are two names which especially connect themselves with the reparations of this date, that of Owen Pole, treasurer from 1472 to 1509, and that of Edward Vaughan, bishop from 1509 to 1522. To the former is attributed the roof of the nave, and there is reason to ascribe to him that of the choir also; but whether we are to consider them as having been erected at his private expense may be very well doubted. . . . The changes of late date in the eastern chapels are constantly attributed to Bishop Vaughan, the last of that series of munificent prelates who had so often filled the chair of St. Davids, and who, just on the eve of the revolution which was to extinguish them for ever, might by his benefactions here and elsewhere be almost said to have renewed the days of Gower. We may consider him as carrying out Pole's plan for reroofing the church in a more sumptuous manner, his roofs being of stone, while those of his predecessor were of wood. . . . At the same time the lady chapel was remodelled and at last received a stone vault not only in idea but in reality. . . . The buttresses on each side, the singular turrets at the east end and the open parapet, of which only just enough remains to prove its existence, were added at this time and the present windows inserted, but beyond these changes the masonry of the southern wall appears to be still the original work of Bishop David Martyn.

The more we contemplate the changes effected in the cathedral at this time, the more we are struck by the extreme diversity of the different portions. . . . The great point at which the restorers of this age aimed was a thorough renovation of the roofs of the church, the point in which it had up to their time remained most defective. Every earlier period in the history of the fabric had witnessed the commencement of designs for the appropriate covering of the church, each of which was supplanted by others destined, like itself, never to arrive at perfection. . . . That the works of this period were not fully completed is shown by the imperfect state of the ceiling in the south aisle of the nave. . . . Bishop Vaughan, with a pardonable vanity, reserved the most perfect and sumptuous form of roof for that part of his church which was to bear his own name, and which he had himself rescued from a state apparently approaching very nearly to desecration. The roof of the lady chapel appears to have been little less sumptuous; but an inferior style of vaulting might suffice for the mere passage between the two. The walls of the nave, which could not support their own weight, were clearly inadequate to support that of a stone roof; they therefore received a wooden one of the most gorgeous character. . . .

During the latter half of the sixteenth century considerable pains, as it would seem, were taken to preserve the building from further dilapidation. The blasts of the preceding period had swept unsparingly, indeed, over the ancient fabrics of Menevia; the translation of the see, which must directly or indirectly have involved the complete ruin of the cathedral, was indeed averted, but only at the price of a ruined palace and an absent bishop. But the old church still stood erect, and in its essential features uninjured; the work of spoliation was as yet confined to its wealth and its subordinate buildings; the fabric itself was spared.

At this period the precedent set by the enormous buttresses added to the nave during Treasurer Pole's repair was followed by propping both transepts in a similar manner. To the eastern face of the south transept two large buttresses were attached, a solid one at the angle and a flying buttress between its two blank arches. At the same time a wall was run across connecting the eastern points of these buttresses with the south choir aisle, thus making an actual addition to the church. . . . In fact, the space thus gained was used as a vestry; and if it be the place alluded to in an entry of the year 1565, we may venture to date its erection a little before that year. . . . We may probably refer to this date the partial blocking of the two windows of the north choir aisle. In each case three debased lights of equal height were inserted, the heads of which did not rise above the spring of the original arches. The upper part of the old windows was completely blocked, and that the blocking is contemporaneous with the debased lights is shown by an arch of construction in the masonry at some distance above the heads of the lights. . . .

* From the *History and Antiquities of St. Davids*. Architectural History of the Cathedral, by W. S. Jones, M.A., and E. A. Freeman, M.A.

We find a record of some trifling repairs in the year 1571, and in 1573 there was at least an intention of making further restorations in the south transept, unless we assign the erection of the buttresses and the addition of the vestry to that year, which is quite possible. . . . The eventful era of the Civil War is generally regarded as that in which its eastern aisles and chapels were virtually lost to the cathedral. We are told that the lead was at this time stripped from the lady chapel and the aisles, and used to cover the church and priory house at Cardigan. . . . It is, however, asserted by Archdeacon Yardley that this spoliation took place at the Reformation.

The most important operation since the days of Edward Vaughan and Owen Pole was accomplished in the year 1793. In consequence of a letter from Bishop Horsley, a subscription was set on foot in the year 1789, which amounted altogether to 1,931*l.* 12*s.* 6*d.*, 839*l.* having been subscribed by persons who were not members of the cathedral body. Accordingly, Mr. Nash was directed to give plans for rebuilding the west front, and the plans were submitted to the criticism of the Society of Antiquaries. The result of this is the west front in its present form. To show how far the original work was interfered with, it will be desirable to give one or two extracts from the specification. After giving directions for shoring the west front and the western arches of the north and south arcades, the architect directs "foundations to be dug from the two buttresses, 10 feet below the present surface of the ground, and a foundation to be dug to the same depth for the casing of the front wall, 3 feet wide, and the whole extent of the west front." "A range of fir piles of Norway timber" were to be driven under the foundations of the buttresses and casing. Mr. Nash proceeds:—"Erect scaffolding and take down stage by stage the upper part of the west front of the cathedral, the whole extent thereof as low as the cill of the principal window. Take down one haunch of the first arch on each side the centre aisle, and one half of the small arches over them (the triforium), also one bay of the lead, flat and roof, and also of the carved ceiling and boarding over it. And plaster and whitewash the whole to correspond with the old work.

"A casing (the whole length of the west front) of the stone of the country . . . to be worked up against the old wall, as high as the cill of the principal window; the said casing to be 18 inches thick at the bottom and 6 inches at the top, the old wall being in that height 12 inches out of an upright and hanging over its base." A completely new wall was to be built up from the cill of the window.

In point of fact this plan does not seem to have been thoroughly carried out, as the western arches of the arcades are still in the condition in which they probably were before the repairs, and the whole, or nearly the whole, interior face of the west wall, probably including the rear arch of the window, seems to be in its original state.

It only remains to observe that the sums expended on this work amounted to 2,015*l.* 15*s.* 5*d.*

In the year 1811 we find the thanks of the chapter voted to Archdeacon Davies "for his zeal and attention in new paving and improving the body of the cathedral."

Five years later it was found necessary to support the roof of the passage leading to the lady chapel by heavy props, which were built for that purpose against its southern wall, with arches thrown across the south chapel aisle. Another similar buttress was run out into the middle of the lady chapel, enclosing the central pillar of the couplet which leads into it.

In compliance with an order of the chapter made in the year 1827, the chantry chapel of St. Thomas was fitted up as a chapter-house, and was first used for that purpose at the audit on July 25, 1829. In order to effect a covered communication between the chapter-house and the choir, the western bay of the north choir aisle was taken in and roofed over, though at a lower level than the original roof.

Up to this point we find no repairs extending to the strictly architectural features of the fabric. There has been nothing to deserve the name of a restoration, nothing done with any ulterior view than that of rescuing the building from further ruin, and in many instances the means taken to preserve it have, in fact, run counter to and destroyed the original architectural design. The only work of any extent, since the time of Bishop Vaughan, in which there is the slightest pretension to architecture is the greatest blot in the whole building. The first dawn of anything like a practical application of its beauties is of much more recent date, and its first-fruits appeared when the piers and arches of the

nave were cleared of their thick coating of whitewash by the care of one of the residentiary canons. To inveigh against whitewash is in these days a little trite; it is a more pleasant task to record the effects of this good work. To say nothing of the richness and delicacy of the mouldings and floriated capitals rescued by this process, upon which we have dilated sufficiently already, one of the chief beauties of the nave was then brought to light in the natural colour of the stone, at once rich and sombre, and harmonising wonderfully with the general effect of Peter de Leia's architecture. Within a very few years the same process has been partially extended to the choir; but much of the same kind remains to be done both there and in the transepts, and in the nave itself. In the transepts, in the southern one at all events, the eastern arches are turned with alternate voussours of purple and yellow stone, the effect of which is at present entirely lost.

The fitting up of the south transept in 1843-4 as a parish church made considerable changes in the arrangement of the fabric. In order to enlarge it to the requisite extent, the blank arcades in its eastern wall were opened, and the old vestry, together with the western bay of the adjoining choir aisle, taken into it, the south wall of the latter being destroyed. These processes have resulted in the transept being now furnished with a complete eastern aisle. And as the arches by which it is entered have quite the effect of pier arches, there is nothing in the original transept to suggest the idea that such has not been the case from the beginning; it requires an inspection from the other side to reveal two curious and, we may add, ingenious changes to which the appearance is owing. The next bay of the choir aisle was roofed in to form a porch and a large and rather unsightly doorway cut through its southern wall. At the same time, the original door leading from the nave was, unfortunately, blocked up.

In 1846 a small subscription was raised, which has resulted in the restoration of the rood-screen. About the same time the remains of the great north window, long blocked up, were taken out and replaced by a Decorated window from a design by Mr. Butterfield. The first window from the west in the north and south aisles respectively, the former wholly and the latter partly blocked, were filled with Decorated tracery copied from the third window of the north aisle. The southern window was restored by subscription. In 1849 the whole range of Perpendicular windows was blown in by a violent storm and their places supplied by Decorated tracery of two patterns occupying the alternate windows. And the north choir aisle has since been roofed in, a step preparatory, it is to be hoped, to opening its windows and the arcade of the presbytery.

SELSEY CHURCHES.

AN inspection of seven ancient churches and two historic towers seems to be a good day's work, even though they were all on the fertile plain known as the Selsey peninsula. This was the programme of the sixtieth autumn meeting of the Sussex Archaeological Society, says the *Sussex Daily News*, and it was resolutely carried out to the last item.

Rumboldswyke Church was the first to be visited. Mr. P. M. Johnston said he could not quote another instance in this country of a church the whole shell of which is pre-Conquest in date (possibly as early as the ninth century), and the dedication of which is almost unique. He outlined the career of St. Rumbold so far as it is known, but explained that a host of events and miracles in the legendary life of the saint rest on very doubtful authority. He appears to have been the son of a king of Scotland, and was Bishop of Dublin (775). He crossed over to the Continent, and the relics of the saint, preserved in a silver shrine at Mechlin, are still carried in procession round the town on his day, July 1. Mr. Johnston seemed to have no doubt that the walls of Rumboldswyke Church were at one time adorned with painting, telling the story of the saint's miracles, and were ignorantly destroyed when the process of scarification, misnamed restoration, took place in 1866. He gave strong reasons for holding the opinion that the walls of the church were built from the spoils of ancient Regnum, and should be assigned to an early rather than a late date in the Saxon period.

The drive to North Mundham disclosed to the party some of the prettiest and quaintest old gardens in Sussex. North Mundham Church was restored about twenty years ago, and the restoration has left an effect of newness upon

the building, but from personal examination and from what the rector (the Rev. J. C. B. Fletcher) had told him, Mr. Johnston was glad to say that the ancient features of the church had all been most conscientiously preserved. The only object that could be pointed to as belonging to an earlier date than the thirteenth century was the font—a remarkable example on account of its huge size. It is large enough for the total immersion of an adult, and is probably the largest font in Sussex. He drew attention to the beautiful Early English arcades to the nave aisles; all this fine stonework which had stood the wear and tear of nearly seven centuries, was from the famous quarries at Caen, from which enormous quantities of stone were brought over in barges, in exchange for cargoes of wheat, to build our seacoast and riverside churches. The original toolmarks are still visible on most of the stones.

Sidlesham, three miles from North Mundham, was reached soon after noon, and Mr. Johnston described the Early English church. He dwelt particularly on the details of the early thirteenth-century work. The font is a perfect and unrestored example of Early English work. It has a square Sussex marble bowl, the sides being carved with *fleurs-de-lis* (in allusion to the Blessed Virgin, patroness of the church), while the bowl rests upon angle shafts of Sussex marble, having well-moulded capitals and bases of Caen stone. It stands upon its original steps, and has evidently never been moved from its ancient position. "We have," said Mr. Johnston, "many late twelfth and early thirteenth-century fonts of this type in Sussex. They are so numerous and bear such a close resemblance to one another as to make one suspect the existence of a 'font factory' in connection with the Petworth quarries."

There are also Early English churches at Earnley and East Wittering, and these were described by Mr. Johnston. The south doorway of the nave of the latter building dates from about 1120. It has been a good deal patched, and appears to have been shortened. It resembles a blocked doorway in the south-west tower of Chichester Cathedral. The party after luncheon drove to Cockham Tower, the last relic of the episcopal palace built by Bishop Sherborne (1508-38), for the sea view. They could stand up there and get a glorious view of the Isle of Wight. There was also a deer park, but that, together with other ancient glories of Selsey, is now at the bottom of the sea. It was while the party were gathered in a lovely garden at Cockham Tower that the Rev. J. Cave-Brown gave a brief account of the history of Selsey, on which interesting subject he is writing a book which is sure to be full of valuable information. At West Wittering, the sixth church to be visited, the vicar (the Rev. G. C. Walpole) was unable to be present, and Mr. Johnston pointed out the principal features of the Transitional Norman church, with Early English portions: the remains of what is called a "confessional," an altar-tomb, in which is placed a small coffin lid (stone) of the kind known as a "boy bishop's" tomb, bearing a pastoral staff, and two very interesting tombs of late character (about 1545) to members of the Earnley family. The county of Sussex, he explained, is justly famous for its Gothic altar-tombs; they may be said to start from about 1450, and to continue down to, or even after, the reign of Queen Mary. They made a most valuable comparative study, and without putting them in any precise order of date or locality, he arranged them as follows:—At Arundel, Singleton, Trotton, Horsham, Chichester Cathedral, Petworth, Wiston, Isfield, Kingston, Sompington, Selmeiston, Hurstmonceux, Racton, West Wittering, Selsey, Rustington, Clapham, Boxgrove, Broadwater, Warminghurst and Firle.

There was a longer drive of six and a half miles from West Wittering to Appledram, where the Rev. Canon Deedes described the Early English church and Ryman's Tower. He touched on what had been done in the way of restoration, and said that probably an old apple tree on one of the parish boundaries gave its homely name to the place. He inclined to the opinion that there must have been a church at Appledram in quite early times. The treatment of the chancel was extremely like that of Bosham, and reminded him of the close connection of that church with Bosham, as a prebend of that free royal chapel or college. At the beginning of the thirteenth century a skilled architect must have been commissioned to carry out considerable structural work at Bosham, and likely enough the prebendary of Appledram (or Apuldram) resolved to have his chancel treated in the same rich style as that which had been adopted in the mother church. In the belfry is a pair of twin bells, with inscriptions in fourteenth-century Lombardic lettering, "Sancta Maria, ora pro

nobis"; "Benedicta sit Sancta Trinitas," with the initials "P.W." after each, and Canon Deedes thought there was the strongest probability that the founder of these two bells was Peter de Weston, and that their date is about 1340. The restorers of the church might have been a little more conservative, but they did their work well, and but for it time might have made some ugly ravages. The church was now a thing of beauty; so might it remain.

As to Ryman's Tower, the date commonly assigned to this building is the latter part of the fifteenth century. It is quadrangular, 45 feet high, with internal dimensions of 27 by 20 feet. The builder is supposed to have been John Ryman, of Appledram. There is a good deal of uncertainty as to why the tower was built, but, as Canon Deedes said, "the whole pile is very picturesque, especially in combination with the adjoining church." Several of the churches visited, it may be noted, were beautifully decorated for the harvest thanksgiving services.

THE EDUCATIVE MINISTRY OF ART.*

A WISE old Roman has said that "He who suits his matter to his powers will never lack eloquence." What are my powers in the matter which this exhibition indicates? I have not the genius to be an art-producer, I have not the encyclopædic knowledge enabling me to be an art critic, historian or expounder. I have not the money or the taste which will allow me to be an art connoisseur. Alas! then, the prospect of an eloquent speech is not encouraging. The only qualification for the duty entrusted to me which I possess is official rather than personal; it is my association with the university, which is, or ought to be, in touch with all that promotes education. I pray you to invest me with this association. I shall try to invest myself with it and to keep within the lines which it prescribes by speaking for a little while on art and its educative ministry.

What do we understand by art? The primary notion of art, artis, is skill in combining or working out. The term was at first applied to the ordinary pursuits of life. Gradually it was so extended as to comprehend all mental activities. And by-and-by a distinction was introduced whose trace still exists in our universities. Twice a year I touch the heads of men and women with a velvet cap and proclaim them masters "in artibus liberalibus." The liberal arts were opposed to the illiberal or sordid. They were the arts of the free man; the sordid were the arts of the slave. What we now denote by the word is arts that give freedom in the worlds of thought, that widen horizons, that train the mind whilst they inform the intellect, and are the foundation on which special professional structures are reared. The educated man first, the educated specialist second. What, from this point of view, we can transfer to art in the sense proper to this exhibition is that art implies skill in working out some idea or concept and so representing it as to interest others in what is delightful or interesting for its own sake.

The treasure house of art is nature. Three things are postulated concerning the artist—vision, imagination, manipulation: the eye to see, with the capacity of seeing into and around the object; the faculty of discerning and imagining the purer form, the ideal truth of that which is seen; and such deftness of hand as secures the representation of that which is seen and imagined. Art is thus the interpreter of nature. As it is put in two lines of Pope:—

Unerring nature still divinely bright, . . .

At once the source and seat and end of arts.

Sometimes we oppose the artificial to the natural. The artificial is that which is made by art, and legitimate art expresses the natural. Yet we identify the word frequently with the feigned, the fictitious, the false. We say of such a one that his manners are artificial, not natural. Now, this is to say that the art is bad, unworthy in the end it contemplates or the methods it adopts. For the business of art is with truth. The artist endeavours to represent nature, not as it looks to the casual observer, or as it is at some moment or under some conditions, but in its wholeness, in its permanent and essential beauty or grandeur, as it is when the ideal and the actual are in closest accord.

Is it not here that you find the indefinable something

* An address delivered by Principal Marshall Lang, Marischal College, at the opening of the exhibition of the Aberdeen Artists' Society.

which we call genius? Many a painter draws correctly; lines, proportions, symmetries are excellent; the mechanical work is well done; you recognise painstaking talent, but the chiaroscuro, the glorifying light and shade of genius is wanting. A portrait, for instance: the features of the person are reproduced; the sartorial work—clothes, drapery, &c. admirable; you have the likeness, but it is rigid and stiff; the play of the soul is not mirrored, the characteristic or ideal man is not there. So also with a landscape picture. The configuration may be good, but it is not a Turner; you miss the shimmer, the spiritual, higher element in nature. It is the power of suggesting this, of awaking and inspiring the consciousness of this, that makes you occasionally stretch out your hands to a great picture; there is that in it which stirs a dormant receptivity; you feel that it has got into you, that through it you have a new possession, a thing of beauty that is a joy for ever.

Now, the educative ministry of art is at once apparent. It educates the faculty of observation and the faculty of imagination. What men want is, strange as it may sound, a training of the power to see; to see what is, not in its grosser states and aspects, not in its mere externality, but in its purer, nobler forms; to see the essentially and everlastingly interesting and beautiful. We all wish to get out of the circumscription of our daily round, our immediate surrounding. The mind needs some relaxations, some lightening of pressures, some other worldliness than the worldliness which hems it in. Is it not in its answer to this that one feature of the ministry of art is declared? The good picture initiates us into a secret lore. It bids us not only look with the eye, but through the eye into mysteries of life and beauty in the sights and sounds with which we are familiar. Among word-painters, have not Wordsworth and Burns given us a new delight in the familiar cuckoo, the "modest crimson-tippit daisy?" Even the otherwise uninteresting mouse? I see a character in the shaggy Highland cattle that I did not see until I was acquainted with Peter Graham. Lately I was in Essex, and the neighbourhood of Dedham had a charm for me. I looked for touches of the beautiful in its nooks because it was Constable's country. Thus, the faculty of observation is stimulated, is educated by such an exhibition as this. The eyes are opened to see what would otherwise escape sight, and ideas are borne away which we can breathe into our prospects, whatever these may be, and by which "the repose of earth, sky, sea and air is vivified." This is a service to all, and all sorts and conditions, surely.

We can feel what a place for every educative influence a city such as Aberdeen is. How many in it, in the adjacent country, need to be taken out of the circuit of their narrowing cares for little whiles; need to be healthily refreshed and delighted; need to have their minds replenished with images of beauty and of truth? I do not isolate art. It has been affirmed, and with justice, that "mere art perverts taste, just as mere theology depraves religion." For to be really appreciated there must be an atmosphere in the soul of the one who studies a work of art. The mind must be educated; the character must be elevated by the love of the good and the inherently lovely; the spirit must be in tune with the infinite; there must be a certain fineness in the fibre of the being. Therefore, for the power to purify and ennoble, art depends on the reciprocal and mutual action of many forces. But seeking to provide this action, is there not a call for such a collection of works as shall bring really good pictures and sculptures within the reach of limited means, as shall give to the worker, when the day's work is over, an opportunity, with his wife or others, of companionship with the master-interpreters of the universe in which he lives, and shall stimulate and guide the exercise of the imagination? We don't sufficiently or rightly cultivate the imagination. But a man without an imagination called into exercise and supplied with good material for its development is a man with the part neglected that enables him to live "by admiration, hope and love."

My friend Mr. Murray has done an excellent service to the citizenship of Aberdeen in giving momentum to the study of art treasures. Give nobler lives and higher cares, purer, sweeter interests to men and women; exercise in wholesome ways the imagination and the taste, and you do much that tends to withdraw the mind from what is mean and vulgar and degrading, to refine the manners that make men and to beautify and dignify human life. I congratulate the Society, whose motto is "Ars et fraternitas." It has existed for nearly eighty years, but within the last few years it has not only existed but lived and flourished. This

is the twelfth exhibition within these walls. I am no judge, but those who are maintain that this exhibition is the best ever supplied by the Society. The two committees—selection and hanging (not a very pleasant word)—have bestowed pains on their task, and have secured the result of which this afternoon we are witnesses. I trust that the ensuing season will be a record season; that not only those who attend our quarter-centenary celebrations shall have the occasion of admiring what Aberdeen can provide, but that hundreds and hundreds of the toiling and weary shall be refreshed, instructed and delighted in this hall of the muses that is opened to them. I venture to anticipate—the wish is indeed father to the thought, but the thought is one that shall be fulfilled—that, year by year, the fame of our city as a centre of art will grow, its circle of influence ever widening and its harvest of benefits to the community becoming fuller and richer.

TRANSVAAL UNIVERSITY COLLEGE.

WE published last week Mr. Colclutt's award in the Transvaal competition. A correspondent of the *Rand Daily Mail*, writing on the subject, says:—Some months ago the Council of the Transvaal Technical Institute advertised the conditions for an architectural competition for proposed new buildings for a university college to be erected in Plein Square. Designs for the whole of the contemplated new buildings were required, but it is the present intention of the Council to carry out only a portion of the work to the extent of 80,000*l.*, the design for the balance of the building having to be framed with a view to a proportionate outlay. Mr. Colclutt, the president-elect of the Royal Institute of British Architects, was appointed assessor, and came over recently from London to make his award. During the last three days the designs submitted have been on view to the public, and it is satisfactory to note that a considerable number of visitors have availed themselves of the opportunity of inspecting them.

After leaving the rooms where the drawings are exhibited one is inclined to feel that the word "waste" should be writ in large capital letters over the doorway. To every thinking mind the wastefulness of the competition system must be saddening. In this particular competition twenty-nine sets of designs have been submitted, twenty-eight architects have been spending their time, brains and money for three months, and one out of the number has been successful in being placed first, and will presumably be employed to carry out a portion, only a portion, of the building. No less than 270 large sheets of drawings have been sent in; of these, 263 are useless. One wonders if the time will ever arrive when some healthier and more economical scheme will be devised whereby architects can be saved this terrible wastage and disappointment.

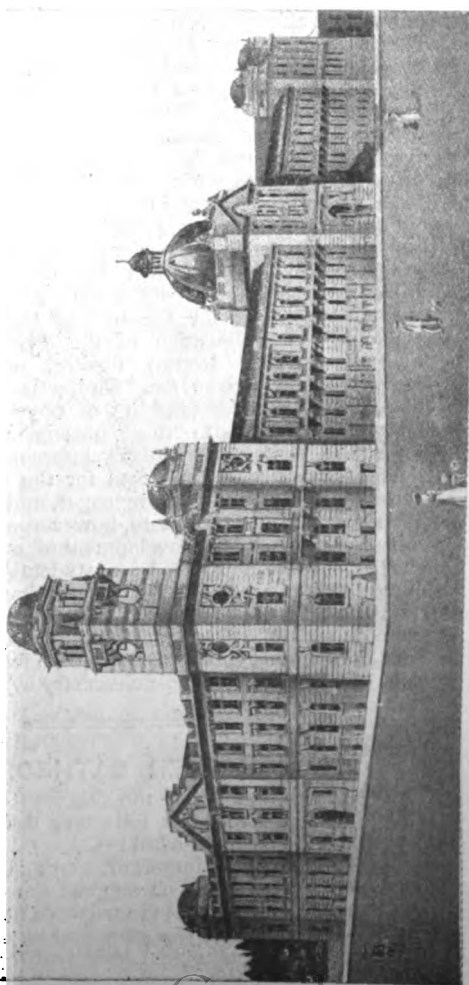
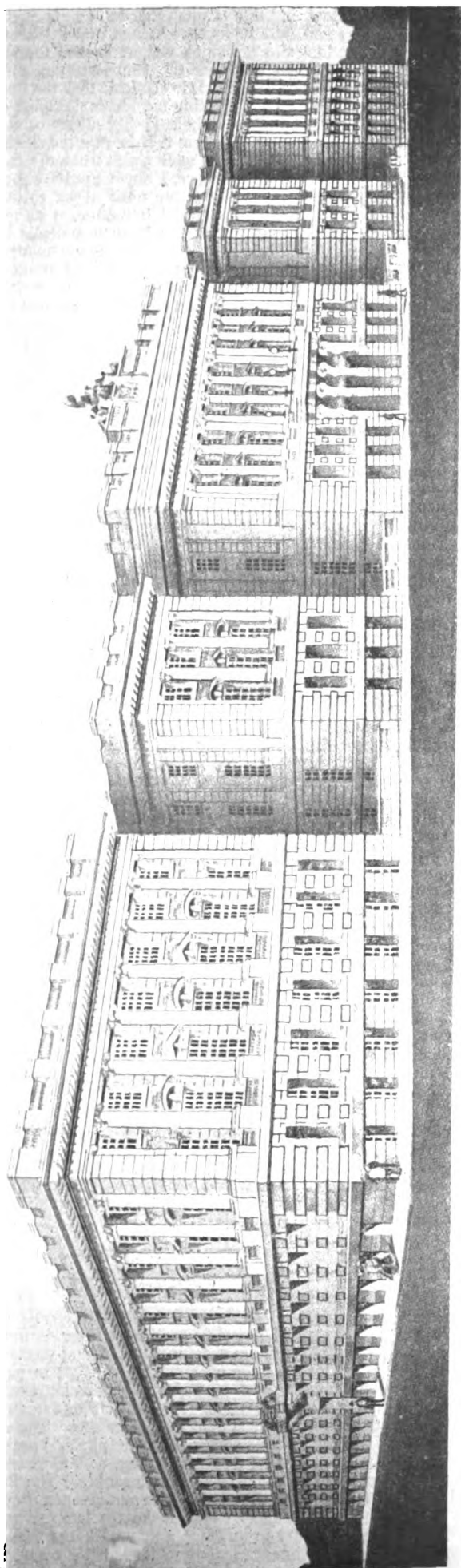
Not a single plan is wholly satisfactory, owing to the conditions which the Council of the Technical Institute laid down. The available space of 206 feet by 75 feet was graciously extended to a further 5 feet in width, making 206 feet by 80 feet. Whoever was employed by the Council to draw up such regulations is very much to blame for the necessarily unsatisfactory plans, and Mr. Colclutt in his report attributes the cramped nature of all the plans to the meagre available space laid down. Had the Council asked Mr. Colclutt to draw up the conditions, this stupid and extravagant mistake, which has crippled the designs of all the competitors, could not have happened, and it is much to be regretted that promoters of competitions do not seem to realise how indispensable it is for competent professional advice to be secured from the beginning as well as at the end of every competition.

In view of Mr. Beit's bequest to Johannesburg to found a University in quite a different neighbourhood to that of Plein Square, it is hardly credible that the complete scheme which the Council of the Technical Institute originally contemplated will ever be carried out; therefore, Mr. Howden, who is the author of the first premiated design, is to be congratulated on a plan which, more readily than any of the other designs, can be built in distinct portions which are practically complete in themselves.

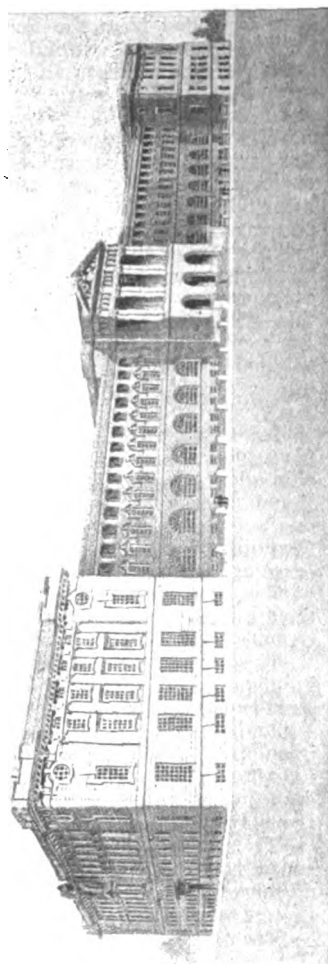
The academic and dignified Classic treatment employed by Mr. Howden lends itself admirably to the preliminary portion of the scheme, and its restraint from "features" is eminently suitable to a Technical Institute.

It is only when one contemplates this same treatment being repeated throughout the building in its entirety that one does not regret the inevitable abandonment of a University in Plein Square.

DESIGNS FOR TRANSVAAL UNIVERSITY COLLEGE.
First Design by Mr. Koch and H. (C. C. P.)



Second Design by Messrs. Dickson & McCowat.



Third Design by Messrs. Stucke & Bannister, Johannesburg.

Even in the admirably drawn perspective, which might have emanated from the Ecole des Beaux-Arts—so continental is it in its careful draughtsmanship—one's eyes grow weary of endless Ionic columns and pilasters, and one looks in vain for some relief in the treatment of the main block.

The principal feature of the plan of the first portion is the parallel corridors which, although at present far too narrow, being only 5 feet in width, will doubtless be widened when additional ground is granted by the Council. There is much to admire in many of the other designs submitted and the plan of the set awarded the second premium contains many excellent features; it is a pity that the elevations are so restless and unsatisfactory. The design awarded the third place is full of admirable restraint and good detail. By recessing the top storey of the building behind the columnar treatment the authors have availed themselves of the sunlight and shadow which is such an asset in this land.

It is difficult to discover why the author of the design placed fourth merited this distinction. The draughtsmanship might be excused owing to lack of time, but the debased Renaissance style adopted by the author is so very bad that one is astonished at the assessor's decision. Possibly the plan may possess merits which do not appear on a brief examination.

The plan of the fifth premiated design seems good, but the treatment of the elevations is lumpy, whilst the main entrance is ill-considered and unhappy in every way.

The planning of the design placed sixth is not happy in its long narrow rooms, otherwise there is much which seems good in this set.

The elevations are in many respects original and pleasing. Had the unnecessary towers been omitted much would have been gained. Particularly happy is the long stretch of plain arched windows on the second storey, which are treated with refreshing restraint.

Twenty-six unpremiated designs, many of them of great merit, remain for the visitors to inspect, each the product of some three months' unremunerative toil, each a silent protest against the wastefulness of the competition system.

We now publish views of the premiated designs from the *Transvaal Leader*. According to Mr. Howden's design the new building will be a three-storeyed structure, and will have an effective space of some 12,000 square feet per floor after allowing for walls, passages, staircase, lift and lavatories for men and women students and for professors. In the basement provision will be made for mining and metallurgy. There will be a museum for both these branches. In connection with mining there will be a lecture-hall, a general laboratory, and, in addition, a laboratory for private work. On the other side provision will be made for the main metallurgical laboratory, a metallography-room, a sampling and grinding-room, a laboratory for wet work, a dark-room, a balance-room, &c. The ground floor will be devoted (*pro tem.*) to a council chamber, registrar's offices, secretary's offices, a large room for the use of technical societies and for the accommodation of the Seymour Memorial Library, a general lecture theatre, an examination-hall, a staff common-room, &c. On the first floor provision is to be made for the teaching of physics and mathematics. In addition to these, provision is made on the first floor for two commodious classrooms for the teaching of mathematics, a classroom for the teaching of the classics, another for modern languages, and yet another for English literature. The feature, however, on this side will be the classrooms for the development of evening technical classwork. There will also be a students' common-room. The second floor is given up to surveying and chemistry, and excellent provision is made for both these subjects. In connection with chemistry there are to be two laboratories—a main laboratory nearly 2,000 square feet in extent and also a laboratory for organic chemistry over 1,000 square feet in size.

WINCHESTER CATHEDRAL.

IN the latest number of the *Diocesan Chronicle* Canon Braithwaite gives the following description of the works at Winchester Cathedral:—

The first and most important work is that of underpinning the buttresses which support the north and south walls of the retro-choir, and the northern and southern portions of the east wall. The cathedral was originally built on a bed of peat, on which were laid horizontally large

trunks of beech trees in layers, the interstices being filled with chalk and flints; upon these the early English builders (A.D. 1202) laid their foundations and raised their walls. Before long the immense weight caused the walls to sink and spread, so that now the south-east corner is 20 inches out of perpendicular. It is obvious that the first need is to prevent this from continuing. This is being done in the following manner:—A hole is dug close to the foundation down to the peat; when this is reached the hole is continued under the main wall 9 feet from the front, and the timber, flints, &c., removed down to the top of the peat. There is scarcely any water until about 1½ feet or 2 feet above the top of the gravel, but as soon as this depth is reached the water fills the hole to a depth of 6 feet or 7 feet. The diver then removes the remainder of the peat, and places bags of cement concrete well grouted on the top of the gravel, which prevents the water from rising. When he has completed one layer of concrete bags he slits open the top of each bag and lays another upon it, which adheres to it; in the same manner a third layer is placed on the second, and so on. When 3 feet or 4 feet of the concrete have been put down the grouting-machine forces in liquid cement, which fills up all interstices and binds the whole into one solid rock. The water having been sealed down by the concrete, ordinary bricklayers lay courses of specially-burnt, hard bricks with cement upon a rock of so broad a base that no movement is possible.

A word as to the diver may be of interest. He is a man of great skill in his work; he holds a certificate for having been under water at a depth of 184 feet. Before the Government gave up the attempt to salve the *Montagu*, an application was made for this man, on account of his skill, to work upon the wreck; but the architect decided that it was impossible for him to be spared from the cathedral. On Saturday, August 11, Mr. Francis Fox, the eminent engineer, paid a surprise visit, himself put on the diver's dress, and went down into the holes in which work is at present in progress, in order to test the work for himself. He was more than satisfied, he said, that the work underneath was admirably executed and could not be improved.

Of course when the walls began to move the strain on the roof was tremendous, and it is no wonder that many of the ribs were pulled out of shape and that they, and the groining between them, have ceased to fulfil the office of an arch. For this reason the whole of the retro-choir is filled with scaffolding; some of the ribs and much of the groining must be taken out and rebuilt. The same has happened in the nave, where the outer walls have spread, though not to the same extent as the eastern part, and great cracks separate the groining from the wall in many places.

Neither the work in the roof of retro-choir or nave was foreseen when the appeals for help were made, and as, in addition to all this, reparation of the west front and pinnacles is imperative, it seems almost certain that more money will be needed than was at first contemplated, and that neither the diocese nor the country must hold their hands. At all costs the cathedral must be made absolutely safe, and those who have contributed or are going to contribute (that is to say, every person in the diocese) may feel perfectly happy that the work is in the ablest hands, and is being done by all concerned with the greatest interest, skill and carefulness. We are sure that the diocese will hear with thankfulness that every week a short service is held for the workmen, who respond most cordially. We would ask the prayers of all that they may be protected from accident, and may increase in the knowledge and love of God.

TESSERÆ.

Architecture and the Novel.

IN external materials architecture varies more than any other art. In part, it uses rare and precious materials, associated mainly with artistic service; in part, materials as common and as intimately associated with practical daily life as language. In materials and in structure architecture is the most objective of the arts. The average mind is at once impressed by the mere physical presence, length, height, mass of a great building, and these characteristics are also of essential artistic meaning. The labour of construction and the comparative permanence of works of architecture are facts which make the lamp of memory shine more clearly in its domain than in that of fiction. The processes of material decay, addition and restoration have no

analogies in the novel. The relation of part to whole is very different in a building and in a novel. In the former there are many details which have less artistic meaning, separately considered, than the single words in a work of fiction. Yet it is in unity of structure that the two arts may be most readily compared. The best plots in the novel have a marked architectural quality. When the mind grasps the general design of a cathedral, the effect ceases to be sensuous, and becomes one of the best examples of calm, free intellectual mastery over the senses to be found in any form of art. In all that concerns the warmth of concrete individual experience, the trivial affairs of the common heart, architecture can offer no successful rivalry to the novel. It cannot readily be associated with the emotional history of an individual artist, as every novel can be. So far as architecture serves practical purposes as a shelter from the elements, and a centre for community interests, it is connected with social life, however, in a more real manner than the novel is.

The Client's Duty.

The employer, in matters connected with outlay, should be honest and unreserved with his architect. It would be as foolish for him to hide from the architect his ability to spend a large sum as it would be to conceal from him his inability, should it exist, to spend a large amount. In one case he will miss the supply of much which would have improved his building, and made more delightful much of the supply of his wants, and in the other he will involve himself in unnecessary and unwise embarrassment. If his architect tells him honestly and clearly that his ideas and wants cannot be satisfactorily supplied for the sum of money it may be within his power without difficulty to provide for the purposes of his structure, he will do well to either abandon doing what he had proposed to himself to do, or consent to a remodelling of his views altogether. To make a great scheme and then to cut it down is almost infallibly to spoil everything. If all the conditions of the employer's case are properly made known to the architect before he commences his design, and borne in mind by him sedulously in the formation of that design, in nine cases out of ten the first mode of working out the problem will be found to be the wisest. Doubts and hesitations and partial pulling about of an architectural idea almost invariably destroy its unity, symmetry and proportion.

Mental and Actual Views.

How much more the artist's pencil is guided by his mental than by his sensorial view of certain objects has been pointed out by Mr. Hamerton, who states it as a fact that every landscape-painter represents mountains much higher than he sees them, as is shown by the comparison of his drawings either with photographs or with tracings taken by a perspective apparatus. Another departure from visual truth for the purpose of producing ideal truth is made by every artist in his pictorial representations of the perpendicular lines of a building as vertical and parallel; notwithstanding that, as projected upon his retina, they converge towards a vanishing point in the sky. This last statement has been called in question, on the ground that a perspective projection on a vertical plane shows perpendicular lines as vertical and parallel. But when we are looking at a lofty building like the west front of York Minster, we do not direct our eyes horizontally, but look towards a point some way up, so that the retinal plane becomes oblique, and what our visual picture really is under the circumstances is proved by the unerring test of photography. For in taking a picture of a lofty building the photographer tilts his camera upwards, so that the plane of the picture becomes oblique; and in every photograph thus taken the perpendiculars of the building must unmistakably converge.

Interpretation of Works of Art.

Constructive association is the foundation of imagination. A very common *modus operandi* is the realisation of a landscape, a figure or a countenance from a pictorial representation of it. Every picture must be essentially defective in some of the attributes of the original, as, for example, in the representation of the projection of objects, and all therefore that the picture can do is to suggest to the mind an idea, which it completes for itself by this constructive process, so as to form an aggregate which may or may not bear a resemblance to the original, according to the fidelity of the picture and the mode in which it acts upon the mind of the individual. Thus a mere sketch shall convey to one person a much more accurate notion of the object repre-

sented than a more finished picture shall give to another, because from practice in this kind of mental reconstruction the former recognises the true meaning of the sketch and fills it up in his "mind's eye," while the latter can see little but what is actually before his bodily vision, and interprets as a literal presentation that which was intended merely as a suggestion. And it is now generally admitted that in all the higher forms of representative art the aim should be, not to call into exercise the faculty of mere objective realisation, but to address that higher power of idealisation which invests the conception suggested by the representation with attributes more exalted than those actually possessed by the original yet not inconsistent with them. It depends, however, as much on the mind of the individual addressed as on that of the artist himself whether such conceptions shall be formed, since by those who do not possess this power the highest work of art is only appreciated in so far as it enables them to realise the object which it may represent.

Granite.

An average granite may be expected to contain from two to three-fifths parts of crystals of quartz or crystalline quartz; about the same, more or less, of felspar, also partly crystalline and chiefly in definite crystals, and the remainder (one-tenth part) of mica. But the mica may form two or three-tenths and the quartz three-fifths, or more, while the proportion of felspar, as well as the particular composition of the felspar, both vary extremely. Good ordinary granite weighs 166½ lbs. the cubic foot, and the cubic yard as nearly as possible two tons. Fourteen cubic feet to the ton is the usual estimate. Its toughness or resistance to crushing weights is very great, and is believed to vary a great deal in different samples. For practical purposes it is safe to assume that fresh unweathered granite will bear any direct crushing weight to which it can be exposed. Granite contains a certain amount of water capable of being driven off by continued exposure to a heat insufficient to produce any other change. This quantity differs much in different specimens even of the same stone, but it may be said to be represented by the "loss" in the table of analysis. It averages, therefore, about 0.8 per cent. Taken in its ordinary state, and containing this quantity of water, it is still sometimes capable of absorbing about one-fourth more (or 0.2 per cent.) when placed in water for a few hours. This quantity is, however, rather larger than could be expected of a good sample. Expressed in another way, we may say that a cubic yard, or two tons weight of granite, contains in its ordinary state something more than 3½ gallons of water, and some specimens can absorb nearly a gallon more on being placed in pure water for a short period. It is important to notice this fact, as the influence of frost on stone is in proportion to the water it takes up, and determines its durability.



Honorary Architects.

SIR,—If the "Young Practitioner" who wrote to you last week will look in any directory of charitable, philanthropic and other institutions he will find names of honorary physicians, honorary solicitors, honorary chaplains, honorary secretaries, &c. Without such men numerous excellent organisations must cease to exist. There are also honorary architects, and I have acted as one of them whenever occasion demanded. I knew I was in excellent company. Take, for instance, the lifeboat stations all round the coast. Until the time of his death my excellent friend the late Charles Henry Cooke acted as honorary architect for every one, for the only money he received from the Lifeboat Institution, as he told me, was on account of travelling expenses. Yet he was far from being a wealthy man, and he was sensitive concerning professional etiquette. I consider it is almost incumbent on architects to hold honorary offices. There is no use in concealing the fact that many people believe in architects having the "itching palm," and in consequence add to the cost of buildings in order to increase their commission. It is one of the causes by which municipal councils, regardless of additional trouble to themselves, employ their own surveyors to design buildings. In no way could it be more effectively brought home to the

public that architects are not more avaricious than other men than by showing a readiness to act on certain occasions without fees.

As to the case mentioned by your correspondent, where two would-be pillars of the church suggested his paying himself through trade discounts, if I were in his position I should have done something to the hypocrites which would have led to a summons. Generally men of that class are shrewd enough to know that the cost of the building is not diminished by such an arrangement. The "Young Practitioner" should have demonstrated that he was insulted as well as the profession, and I do not augur a successful career for him unless he displays more courage. I should like to have the account of the two members of the building committee on the transaction, and the reasons for tempting a novice.

Whether travelling expenses are accepted depends, of course, on the conditions of each case. Generally it will be found that arrangements can be made by which they are not incurred.—Your obedient servant,

AN ANCIENT FELLOW.

SIR,—In reply to your correspondent, *re* "honorary architect," I should understand the term to mean that he was to prepare plans, specification, supervision and the general routine of the work for nothing; but certainly he should not be called upon to pay his own travelling and out-of-pocket expenses. I have done work in this capacity, but then it has been in the town, where there are no travelling expenses. With regard to trade discounts, they should belong exclusively to the builder, and no gentleman of any position or repute would think of taking them, although we all know it is done and called secret commissions.—Yours faithfully,

HY. CURTIS-CARD.

10 North Street, Lewes: September 8, 1906.

SIR,—"Young Practitioner" has raised a point which is a poser, or rather two points—firstly, the position of honorary architect (a most unsatisfactory one) and a position which should be sternly refused. Why should an architect give his services for nothing? Do surgeons perform operations for nothing, and do solicitors undertake legal work for nothing? They do not; then why should a member of the architectural profession? With reference to the "customary trade discounts," has our profession fallen so low that such a question can be put? We have no doubt some undesirable members, as in all professions, but surely not so many black sheep that this question can be put in a journal of the standing and importance of *The Architect*. I trust that "Young Practitioner" will steadfastly shut his eyes to such a practice, and should he be fortunate enough to obtain proof of such grossly unprofessional behaviour that he will immediately place the matter before the Royal Institute of British Architects, who can safely be left to deal with such a question in a manner which would promptly put an end to the delinquent's professional career. I am a comparatively poor man in the profession, but am thankful to say honest, and have always held myself aloof from honorary work, and absolutely from the question of a bribe, and I can in consequence meet my clients and those who work for me in a quite independent and respected position, which I could not have obtained and retained had I mixed myself up in such transactions as suggested by your correspondent. Stick to your work, act honestly, do not give away your independence, and you, "Young Practitioner," will find that your work will be pleasant, your name will be respected, and should you prove exceptionally clever and have the opportunities denied to some of us, you may rise to the highest positions in your profession. With all apologies for taking up your space,—I am, &c.

AN OLD PRACTITIONER.

Old Maldstone.

SIR,—It is proposed to pull down the gatehouse of the old Palace under the new street improvement scheme. This is possibly the oldest piece of architecture in Maldstone, showing as it does direct evidence of Norman architecture, and such a piece of vandalism should not be permitted and every possible pressure brought to bear on the local authority. Will you, therefore, favour me by publishing this letter in your widely-read journal?—Your obedient servant,

ARCHÆOLOGIST.

GENERAL.

The Bexhill Town Council have paid the Somerset Herald the sum of 76*l.* 10*s.*, being fees on patent for a grant of arms.

Mr. William Fegson, architect, who has practised in Carlisle since 1868, died in that city on Monday last in his sixtieth year.

The Northern Architectural Association again offer to students (and associates not in practice nor yet twenty-five years of age) a first prize of books of the value of 2*l.* 2*s.* and a second prize of 1*l.* 1*s.* for the best set of drawings or testimonies of study as required by the R.I.B.A., to be submitted for their final examination. Similar prizes will also be given for the probationary work for the intermediate examination. The drawings are to be delivered not later than February 19, 1897.

Mr. William Goldstraw, building surveyor for a great many years to the Liverpool City Council, is to retire on a superannuation allowance of 366*l.* 13*s.* 4*d.* per annum.

The Government of India have decided to create an entirely new service of sanitary engineers, whose special province it will be to safeguard public health. A committee of experts has been appointed to consider the details of the scheme.

The Shanklin (Isle of Wight) District Council are about to expend 10,000*l.* for a supplementary water-supply from Chillerton.

The Glasgow Town Council have given formal approval to a draft agreement for the transfer of the municipal telephone undertaking to the Post Office authorities, who took possession on September 10. The purchase price, exclusive of loose tools and stores, which will be taken over at a valuation, is 305,000*l.* This figure entails a loss on the undertaking to the Corporation of 15,000*l.*

The Rev. John Griffiths reports in the *Western Mail* the discovery by the Rhonddda Naturalists' Society of a buried city at Gelli, Llwnypia, in the Rhonddda Valley. In the excavations made on this site flints of the finest workmanship were relatively abundant—arrow-heads (plain and barbed), lance-heads, scrapers, all fitted for some special use. The pottery, though in small pieces, presents eight or nine different patterns. Hearthstone ledges, fireplaces and large slabs, firmly planted for tables or anvils, were common features of the huts. In rude stone implements the sites, all of them, were remarkably rich. "There is now no doubt in my mind," Mr. Griffiths writes, "that the Gelli group of ruins is a prehistoric town. The sites already explored are numerous and important enough to warrant such a description. The 'drinking-cup' may be ascribed to the period between 1000 and 1880 B.C. The wheel-made pottery cannot be much earlier than our Christian era. What we expect to find at this old town is not merely evidence of one stage of culture, but a continuous history of man in the Rhonddda for about 4,000 years."

The Liverpool City Council last week adopted a report from the housing committee to the effect that, mainly on the question of inability to compete with private enterprise in the matter of cost, they could not recommend the Council to enter into competition with private enterprise in the direction suggested. The following amendment was proposed and lost:—"That the recommendation be referred back to the committee with instructions to prepare by way of experiment a scheme for building artisans and workmen's dwellings (not necessarily for the dispossessed) in the outskirts of the city, allowing more land, light and air than has been usually provided."

The Board of Works (Edinburgh) are taking active steps for the preservation of the stone circles at Stennes and Maeshowe. The stones of Stennes, the Watch Stone and the Ring of Brodgar are all being carefully examined, the fallen stones raised, and those that have sunk in the ground exposed as far as possible. In addition, the bases of such as are loose are being set in concrete in such a manner as not to interfere with the appearance of the stones. At Maeshowe a fence is to be erected to keep off wandering cattle, &c., and steps will be taken to prevent damage by the surface water percolating through to the stonework. Notices will also be erected at all the principal monuments in the district, intimating that they have been placed under the charge of H.M. Office of Works, as custodians under the Ancient Monuments Act.

The Architect.

THE WEEK.

POSSESSORS of pictures of late years often bequeath or present some of their examples to corporations. That is praiseworthy conduct and is deserving of imitation. On the other hand, a man who prizes a picture and intends to sacrifice his own pleasure by parting with it should ascertain what provisions are to be made for its preservation. In cities like Birmingham, Manchester, Liverpool, there are curators acquainted with the processes of cleaning and restoration. A work is therefore not likely to suffer while in their charge. But in other towns where it would be too expensive to appoint a curator there is no doubt that risks to the pictures are almost inevitable. At the present time in York there is a discussion on the subject. The city possesses some modern pictures known as the Burton collection. Recently they have been operated on, and the renovation is of a kind which would startle the painters of them. We can judge of that fact by one instance. There is a picture called *Scotch Drovers*, which is the work of the late RICHARD ANSDALL and Mr. FRITH. The latter recently visited the gallery, and he says of it:—"This picture has been so seriously injured by the removal of sheep and other unwarrantable liberties that I can scarcely recognise my own work." Some sheep it appears have been obliterated, others have been "improved" by removing their horns or by altering the forms of their eyes. Another picture was painted by the late G. F. WATTS, and is called *The Sentinels*. In it a beacon lamp, which the Saxons were supposed to employ, was removed and a cross substituted for it; afterwards the cross was painted out and a lamp of a novel kind introduced. A landscape by SAM BOUGH has been enriched by new foliage. The sub-committee who have been investigating the subject, and who are, we suppose, more or less responsible, have come to the conclusion that the work of renovation has been carried out in a thoroughly efficient manner, and without causing damage to the pictures as alleged, although no doubt the picture by ANSDALL and FRITH has at some time been damaged, but in their opinion not by their restorer. There may be differences in judgment about restoration as in those about the original execution. But when one of the aldermen declines to make observations through fear of an action at law, it is evident there must be irregularity somewhere. When such an incident can arise in a city like York it should be taken as a warning by the owners of pictures to be careful about the public bodies to whom they make over their treasures.

THE cathedral of Worms is one of the most interesting of the Romanesque churches of Germany. The style is sober and far superior to the vagaries of German Gothic of a later time. Although it might seem an enduring form of building, the cathedral was especially unfortunate in accidents. This has been explained by Professor HOFFMANN before the Union of German Architects and Engineers. There was a cathedral in Worms at an early date. But the existing building was commenced during the episcopate of Bishop BURKHARD, who presided in the diocese from 1000 to 1025. In 1018 the Emperor HENRY II. passed through Worms on his way to Burgundy, and although the building was incomplete it was consecrated at his desire in order that he might assist at the ceremony. Two years afterwards the choir collapsed. Other misadventures must have followed, for there was another consecration in 1110 and a third in 1181. In 1421 the north-western tower fell down. During the Thirty Years War the city suffered, and in 1689 the furniture and woodwork were carried off by the French and were used as firewood. In 1860 it was necessary to use iron

ties in order to keep the walls together, and in later years it has been necessary to employ a variety of methods to uphold the building. One proof of the weakness of the construction is seen in the rose window, which, owing to the sinking of the foundations, is now oval rather than round. The cathedral has two apses with altars, an arrangement which Lord LEIGHTON said jars on our sense of artistic propriety, especially as the choirs are raised above the floor of the nave. He considered that such a disposition could not have found general acceptance among a people whose sense of æsthetic fitness was congenital and strong.

It is hard on architects to be deprived of commissions which they consider are rightfully theirs. But the misfortune becomes aggravated when it is alleged that economy is insured by avoiding them. The Bradford architects have had an experience of that kind, and they met on Tuesday in order to protest against it. A statement has been issued from the city architect's department stating that the work done for the last five years, if done by outside architects, would have cost the city an average of 3,203*l.* a year, that the charges of the department had been 1,630*l.*, and that there had thus been a saving of 1,573*l.* a year to the public. Mr. T. C. HOPE analysed the document in order to prove that the saving was more imaginary than real. Mr. PRIESTLEY took a desponding view of the future, and Mr. FAIRBANK explained that, with a city architect, a poor law architect and an education architect as rivals, all commissions for public works were withheld from private practitioners. It was pointed out that the International Congress of Architects were unanimous in their opinion that the employment of official architects was detrimental to the progress of the art. But under present conditions any vote of the Congress is not likely to cause a revolution.

ANYONE taking an interest in English ecclesiastical remains, and who has a little money to spare, will do service by contributing to the cost of excavations at Haughmond Abbey, near Shrewsbury. The work has been commenced by Mr. HERBERT SOUTHAM, the local secretary of the Society of Antiquaries, under the supervision of Mr. HAROLD BRAKSPEAR. There must have been at least one peculiarity about the building, for the east end was 10 feet higher than the west end; but how this was arranged cannot be ascertained without further spadework. The abbey comprised church, chapter-house, frater, dormitory, infirmary, gate-house and guest-house, but hitherto there has been no correct plan to define the relative positions. Mr. BRAKSPEAR has offered to be present and direct and also to plan out all the work done. Visitors in the future would have the assistance of a trustworthy printed guide to enable them to understand the buildings of one of the most beautiful abbeys in the kingdom. The amount required is about 50*l.*

As there is no restraining influence in New York to determine the height of buildings, there is now rivalry among property owners to attain loftiness in their premises. The latest victory seems likely to be attained by the Singer Company. Having a building at the corner of Liberty Street and the Broadway which is fourteen storeys high, it has been decided to superimpose an extension which will attain a height of 612 feet 1 inch. There will then be forty-two floors. The addition will appear still higher as each side will measure 63 feet across, and the whole will be designed as a great tower. Lifts will, of course, be introduced, which will enable all the floors to be utilised. The premises will eventually have a cubic area of 6,695,000 cubic feet, and the floor area will measure 411,333 square feet, or nearly 9½ acres. The cost of the works has been estimated at 1,800,000 dols. Mr. ERNEST FLAGG, architect, has prepared the plans and several of the large contracts have been let.

ARCHÆOLOGY AND ROMANCE.

IT is generally accepted as a truism that there are fine arts and useful arts. The distinction between them is not always obvious. The greatest of all arts, unless we rank poetry with it, is architecture; and it sometimes can be considered as a combination of the fine arts and the useful arts. We need not enter here into any analysis of the differences between the two. But, generally, the useful arts are concerned only with the present and the future, and are indifferent to the past. Those who practise the fine arts, on the contrary, are disposed to give more attention to the past than to the present. Poets like TENNYSON, BROWNING and MORRIS, who have the deepest sympathy with the cares and difficulties of their contemporaries, cannot resist the captivation of olden legends, and endeavour to live in imagination among the conditions of a former age. In an exhibition of modern paintings we are sure to find illustrations of ancient incidents. Sculptors have not yet freed themselves from the sway of Classic mythology. Modern architecture at one time is Classic or Neo-Greek; at another time Gothic prevails. The Renaissance of Italy and that of France find admirers beyond those countries. When a favourable occasion occurred the styles named were superseded by the quaint style of Holland.

We must accept the inevitable, and all those variations can be considered as arising from the peculiar qualities of human nature. We see only a succession of changes around us, for, as has been demonstrated in our time, the surface of the great globe itself is not necessarily stable or independent of the law of mutation. Men would probably be more unhappy than they are if they were not in harmony with the material world and destined to play many parts during their seven ages. The arts, whether useful or fine, are intended for the service of man, and it must therefore follow that human interests should be influential in their growth and in their decline.

Owing to the defects of language that fact is not always apparent. We speak of Greek, Doric, Ionic, Italian and other styles as if they corresponded with the stones which were found in those countries, and were produced independently of men. What we should express by language is that architecture was created by Greek minds, Italian minds, Mediæval minds and so on. In reviving a style we are compelled to think of those who were originally associated with it, and building is only one kind of effort towards our imitation of them.

Everyone who is acquainted with architectural drawings knows how often figures in ancient costume and suitable to the style are introduced in designs for modern buildings which are imitations of Classic, Mediæval or Renaissance examples. In Gothic churches many clergymen abandon the robes which might be called constitutional, and assume vestments of the forms and materials which prevailed prior to the Reformation. Although the French are very sensitive to ridicule, statesmen, artists and authors used to pose as Romans at the parties in Prince JEROME'S Pompeiian villa. Eighteenth-century costume is occasionally worn by guests in some modern Queen Anne houses. It is only fitting that people should be in keeping with their surroundings, and a love of antiquity can be shown in costume as well as in buildings.

How far, when adopting surroundings and customs belonging to a past time, men and women also permit their thoughts to turn backward and to imagine themselves as belonging to a different period and a different country, is a subject for which we can have less visible evidence. Even in practical go-ahead America, if we believe EMERSON, there were many earnest people who were dissatisfied with modernity and were pining after an earlier and more romantic sort of life than was led in the new cities. That very shrewd business man, WILLIAM MORRIS, described himself as a "dreamer of dreams, born out of my due time," suggesting that, like

most men, there was a duality in his composition which he was able to turn to profitable account, but which would have brought other men to ruin. What, in fact, are histories and historical romances but means which are intended to gratify the craving to escape from the present and to put ourselves in the place of those who lived, as we suppose, amidst less prosaic conditions? It was a recognition of the importance of human influence when the late Professor BANISTER FLETCHER introduced in his "History of Architecture" a number of historical novels among the reference books which were recommended for the use of students. For it is absurd to consider columns, arches, windows, roofs and doors as if they corresponded with crystals in being independent of human faculties. To appreciate styles we must know something about the qualities of the races with whom they originated, and what functions the buildings were intended to serve. There were temples in Greece which Romans could imitate, but the Coliseum was of native growth. To consider the elements of a building by themselves is to ignore the spirit by which the style was created, and which was expressed in those forms rather than in others.

It must be admitted that in endeavouring to discover the character of a people of a past time there is great difficulty owing to the uncertainty of the evidence. This is seen in the disregard for what is called history by men for whom it has especial importance. The well-known story of the great Duke of MARLBOROUGH, stating that his knowledge of the Wars of the Roses was derived from SHAKESPEARE, is only one of several cases. Colonel ESMOND considered that HOGARTH and FIELDING should be accepted in the future time as more trustworthy than the official annalists of the eighteenth century. But the scientific spirit of our time is not disposed to accept caricatures or novels as necessarily authentic descriptions of the age in which they were produced. Sir WALTER SCOTT, for instance, had far more archæological knowledge than SHAKESPEARE; he was well acquainted with a variety of men in all conditions, and he had the training of a lawyer and of a judge. But modern archæologists and historians will not accept SCOTT'S pictures of life as correct. Some critics have said he is only valuable for his descriptions of armour and costume. But students of those special subjects maintain that nowhere is he so defective as in dealing with the garb of his characters.

An example of the hypercriticism to which romances are now subjected was afforded during a recent visit to Cumnor Hall by members of an archæological society. That ancient mansion has gained renown through SCOTT'S novel, "Kenilworth." In it he followed the tradition that AMY ROBSART, the wife of LEICESTER, was murdered in Cumnor by one of the earl's tools—Sir RICHARD VARNEY. Mr. JAMES PARKER, who was the cicerone for the occasion, said that much which SCOTT wrote on the subject was nonsense and entirely untruthful. Lord DUDLEY, who was afterwards Earl of LEICESTER, was in reality an excellent husband, who paid large sums for his wife's gowns and hats, and the death of AMY ROBSART was caused by an accident. Owing to the numerous errors, Mr. PARKER doubted whether Sir WALTER SCOTT ever visited the district. All that SCOTT could gain by a visit would be materials for a description of the mansion and of the park, which are of inferior importance compared with the tragedy. As it happened, Sir WALTER did visit Cumnor, but it does not follow that he was bound to describe the estate with the care that would be desirable in a land agent who was negotiating for its purchase. As regards the earl, he was undoubtedly one of the crafty nobles who were engaged in playing a deep game, and he therefore exposed himself to the danger of having his schemes distorted and his character darkened. SCOTT, who was a man of honour, says distinctly that LEICESTER may have been slandered. But the murder of AMY was generally believed in by the people of the sixteenth century. ASHMOLE, the antiquary, was

not a man who gave much attention to the gossip of ignorant people, and SCOTT found in his "Antiquities of Berkshire" the statement that VARNEY, after stifling or strangling AMY ROBSART, flung her down a flight of steps and broke her neck, using much violence upon her. In "The Yorkshire Tragedy," which some scholars attribute to SHAKESPEARE, one of the characters says—

The only way to charm a woman's tongue
Is, break her neck—a politician did it.

The words may have been inspired by one of the earl's enemies, but at least they express what was the opinion of the time. It may be allowed that documents discovered of late years prove that LEICESTER was not so black as he was painted, and Mr. PARKER would no doubt be able to make out a good case in favour of the ambitious noble.

The question, however, is whether SCOTT acted wrongly. He endeavoured to assume the position of an Elizabethan, and he is not to be blamed because he did not anticipate the researches which were to be undertaken some sixty years afterwards. He did not profess to write a history or a biography but a romance, and therefore he was only obliged to observe such laws as earlier writers had followed. Modern archæologists may endeavour to employ the same tests in dealing with legends as are used in identifying material objects of an older date. But SCOTT knew that all such investigations were likely to be uncertain. Although an enthusiastic archæologist himself, he more than once exercised his humour on the assumptions of infallibility to which some of his friends laid claim.

SCOTT, in his admirable "Essay on Romance," does not claim more for a romance than to be "a fictitious narrative in prose or verse, the interest of which turns upon marvellous and uncommon incidents." The word "romance" is no guide, for originally it signified one of the Latin dialects—"Frankis speech is called Romance." As far as can be made out, men in all ages endeavoured to obtain a respite from ordinary life by listening to fictitious narratives which, like the "Iliad" and the "Odyssey," may have had some connection with actualities. The simple authors of such fictions were not always able to create new characters. Just as in architecture, while people are demanding new styles, modifications of old styles have to be repeated, so in the romances old characters under new names were introduced from time to time. Hence it happens that stories and legends which at one time were supposed to have originated in certain countries and to be peculiar to them are now found to have a more remote origin, and to have travelled from the East to Western Europe. To subject romances to severe archæological tests is an abuse of strength and power like the breaking of a butterfly on a wheel. Writers of romance do not, as a rule, oppose fiction to fact. Their field is among incidents which are not clearly explained by history or tradition, and by combining the known and the imaginative they produce a consistent whole. DEFOE, as SCOTT says, rendered fiction more impressive than truth itself, and SWIFT gave plausibility to the grossest impossibilities. SCOTT also has been able to make romances so convincing as to excite the envy of professed historians. When so much can be done it is not wise to subject a romance to rules and regulations which were unknown to storytellers from primitive days.

It seems to us that there are analogies between the cramping system which would make "Kenilworth" an impossibility and much of the criticism which is applied to architecture. In our time everyone who proposes to practise as an architect is expected to be proficient in the science of mechanics and especially of statics. The syllabus of a modern art college, school or class would scare the architects not only of Greece and Rome, but of the Mediæval and Renaissance periods. Those men must have had various rules of thumb which they could turn to account.

But if their buildings were to be tested by the sublime science which was exemplified in the Tay Bridge that a sudden storm blew away as if it were a structure of cardboard, several must be condemned as departures from the laws of building. In most of them there is a great waste of material, and the masonry does not always correspond with any diagrams of forces which a novice could make out. An ancient building is in its way as inconsistent with scientific facts, as untruthful and as nonsensical as SCOTT's "Kenilworth," or the "Nibelungen-Leid," or the "Arthurian Legends." But the architects who designed the buildings were like the writers of romance. They adhered to the rules and regulations which had come down from their predecessors, and all of which had the simple object of captivating the attention or giving pleasure to those who looked at the buildings or listened to the romances. Men are not entirely scientific, and in spite of the absence of logic, their buildings are destined to survive thousands of most excellent structures which are marvels as expositions of pure science.

THE CHATEAU DE MADRID.

IT was rarely the late Mr. FERGUSSON expressed regret over a vanished building. He was so confident in his own power to improve buildings which are generally considered as masterpieces, he may have imagined that those which are only known by tradition were also imperfect. One of the exceptions to his general treatment is the Château de Madrid, which was due to FRANCIS I. To French eyes it was a wonder, although they were accustomed to gaze on many remarkable buildings. In describing some of the French Renaissance works of the sixteenth century Mr. FERGUSSON wrote:—

The palace, or château, of Madrid, in the Bois de Boulogne, at Paris, is another production of the same age, the loss of which is more to be regretted (it was destroyed in the Revolution) than that of any other building of its period. From the drawings of it which exist it seems to have been of remarkably elegant design, and to have approached more nearly to the palatial requirements of the age than almost any other. It was not very large, being only 265 feet in length by 112 feet wide, but it was four storeys in height, and divided into three nearly equal blocks by square towers at each of the angles and two in each face. Standing on a good bold basement, the two lower storeys were covered by arcades of very elegant design broken only by the towers, and variety and relief were given to the whole by the centre being recessed. The roof, though high, was far from being excessive, and the chimneys were treated as an essential part of the design. If we may judge from the testimony of those who have seen it and, more than this, from the representations that still exist, there was certainly no building for its size so palatial or to which the Transitional style was more happily applied, though it had not the picturesqueness of Fontainebleau nor the semi-feudal grandeur of Chambord. As an exterior, however, it would probably have at least been equal to the fragment of the court of the Louvre, which was in course of being erected simultaneously and almost in sight of this building, while its open arcades give it exactly that degree of shadow and relief the want of which is so much felt in the Louvre.

It is remarkable that Mr. FERGUSSON does not mention the peculiarity which rendered the Château de Madrid a novelty to Parisians. It was popularly known as the Château de Faience. This was owing to the manner in which glazed terra-cotta was employed in its construction and decoration. Probably Mr. FERGUSSON did not approve of that mode of construction, which in our time it is found to possess many advantages. PHILIBERT DELORME, when he was entrusted with the completion of the building after the death of FRANCIS I., declined to continue the enamel decoration, although he played it elsewhere. The château must therefore have wanted unity, and resembled a great many English houses, in which we find a difference between the front

and the sides. Some fragments may be found in the Sèvres and other museums, which are supposed to have formed part of the château. But it is very doubtful whether any important part survived the merciless destruction to which the structure was condemned, as if it were an enemy of the Revolution. There is one description of the building which should have interest for Englishmen, and which suggests the peculiarity which distinguished it. In 1650 JOHN EVELYN was in Paris, and on April 25 he visited the château. The following record of the impression it made on him is given in his Diary:—"I went out of towne to see Madrid, a palace so call'd, built by FRANCIS THE FIRST. 'Tis observable onely for its open manner of architecture, being much of terraces and galleries one over another to the very roofe, and for the materials, which are most of earth painted like Porcelain or Chinaware, whose colours appeare very fresh, but it is very fragile. There are whole statues and relievos of this potterie, chimney-pieces and columns both within and without. Under the chapell is a chimney in the midst of a roome parted from the Salle des Gardes. The house is fortified with a deepe ditch, and has an admirable vista towards the Bois de Boulogne and River." The palace at that time had existed for about a century and a quarter. But the colours continued to be "very fresh." As to the "fragility," if the pieces were thin, they were likely to be broken after a fall, but the word was likely to be used to suggest that faience was not considered to be as enduring as brick or marble. EVELYN said that the château was built by FRANCIS I., and was given its name in order that he might be absolved from his oath, "that he would not depart from Madrid, in which he was a prisoner in Spayne, but from whence he made his escape." That may have been the belief among foreigners at the time, but it is not supported by evidence. When FRANCIS I. was taken prisoner at the battle of Pavia in 1525, he demanded that he should be conducted to Madrid to his cousin CHARLES V. He found the emperor was not inspired by any excess of generosity. He was treated as a royal prisoner, and was so disappointed he thought of abdicating in favour of his son. At length he signed a treaty which his subjects declined to accept. The Pope released the king from his oath. When FRANCIS began to build the château it was known as the "Château du Bois de Boulogne," or more simply "Château du Bois." People imagined when they saw the enamelled exterior that it was an imitation of the Alcazar or the Alhambra. It was even believed that the prison in which the king was confined when in Spain was of a similar character. But so far as is known FRANCIS I. never desired to have a memorial of his misfortunes, and his conscience was not sufficiently scrupulous to compel him to set up a memorial which would remind him that he had broken his oath or was disloyal to CHARLES V.

The origin of the building was much more commonplace. English visitors when they take drives through the Bois de Boulogne where the palace was erected may imagine from the number of routes, avenues and alleys, which are laid out with so much skill, that the trees also were planted in modern times to give pleasure to spectators. But long ago the Bois formed a part of a genuine forest which extended beyond the suburban towns which now mark its limits. FRANCIS I. was fond of hunting there, and he wished to have a residence which would be nearer to it than the Louvre or St. Germain. There was no doubt that he was a genuine lover of the arts and artists of Italy, and he formed an Italian school which exercised a great influence in France. The king must have often heard of the success of LUCA DELLA ROBBIA in the decoration of buildings by glazed and coloured terra-cotta, and it was only what we might expect from such a patron to insist that his new villa, which Pierre GADIER designed, should exemplify the latest novelty in architectural decoration.

Some of LUCA's grand-nephews were following in his footsteps. The younger LUCA apparently confined

himself to glazed terra-cotta. But his brother GIROLAMO not only worked in clay but in marble and bronze. The latter was therefore better adapted to serve FRANCIS I., and through the agency of some Florentine merchants he was persuaded to visit France. VASARI says that he executed various works for King FRANCIS, "more particularly a palace decorated with numerous figures and other ornaments, cut in a kind of stone similar to that which we have ourselves at Volterra, but of a better quality, since it is soft while being worked and becomes indurated by time and exposure to the air." GIROLAMO laboured in other parts of France, and it is said remained in the country for about forty years. He acquired wealth as well as reputation. He invited his brother from France, but LUCA died soon after his arrival. VASARI considers that after GIROLAMO's death the methods of working in glazed terra-cotta became unknown.

FRANCIS I. died in 1547, and at that time the Château de Madrid was not completed. His successor HENRI II. was likewise favourable to the advance of art and his name is associated with an interesting class of pottery. The works are believed to have been continued under PHILIBERT DELORME, who was also engaged at Fontainebleau, the Tuileries and other palaces. HENRI II. reigned for only twelve years. The château was partly used as a hunting lodge and partly as a residence for royal favourites. But we do not learn that additional works were carried out. There is reason to suppose that the château was neglected. HENRI II. set up a menagerie in the grounds, and in the time of LOUIS XV. it was used like Hampton Court at the present time, to afford accommodation for people who had some claim on the liberality of the Sovereign.

Many of our readers may remember the engraving from ELMORE'S picture of the invention of the stocking frame. WILLIAM LEE, who was a Cambridge scholar, is represented watching his wife knitting at the time when he was happily inspired to invent a machine which would serve instead of women's fingers. Hose were then important articles of dress, for they were not concealed by other garments. The great HENRI IV., although burdened with the task of reconciling the different sects, made arrangements that the Château de Madrid should be used as a factory for the production of hose under the superintendence of LEE. He was also desirous of introducing various other industries and to reorganise French trade. But the king's assassination by RAVAILLAC put an end to projects of reform. LEE endeavoured to assert his rights, for he had brought over a great many workpeople from England. But the disturbances which followed were unfavourable to his claims. It was remarkable that in the eighteenth century one of the gentlemen who were allowed to live in the château used his apartment for weaving silk stockings. The effort to use the building for a factory must have had an ill effect on the royal residence, and for a long time it could not be said to be applied to any definite use.

Although of little or no utility, the Château de Madrid required the expenditure of money for its upkeep. LOUIS XVI. was compelled to give an order for its demolition. But it was untouched when the Revolution broke out. It was then sold to two contractors, BORNE and LEROI, for the small sum of 8,000*l.* For the lead they were able to obtain more than 6,000*l.* The sculpture in marble and wood was purchased by strangers. The temper of the time is suggested by the fact that no importance was attached to the beautiful work of GIROLAMO DELLA ROBBIA. The whole of it was sold to a paviour, and was converted into cement. Whatever might be said about some of the decoration, the walls at least could not be described as fragile. Although demolition in many forms was destined to be supreme during the French Revolution, the house-breakers of that time had to submit to many delays at the Château de Madrid. Large fires were lighted. But as gypsum must have been largely employed in the

construction the walls withstood the flames. At length they had to be taken down course by course with pick-axes. So much labour was expended on the work, it is stated that the expense of demolition exceeded the enormous prices received for the materials.

It would be strange if some attempts were not made by Frenchmen to imitate the decoration of the DELLA ROBBIAS. It was employed on mansions here and there; but they were so few in number that we must conclude that the sixteenth-century architects in France were not favourable to that class of work, although there were ancient as well as Renaissance precedents for its use. It afterwards became confined to finials and ornaments for roofs. Of late years the French potters have shown their ability to produce panelling and surface decoration in glazed materials. The discovery of the Persian frieze by M. and Mme. DIEULAFOY, which is now in the Louvre, has doubtless given an impetus to ceramic decoration, for it is a precedent of great age which is well deserving of respect.

STANTON HARCOURT.*

IT is an interesting coincidence that there should be a direct connecting link between the manor of Stanton Harcourt and that of the manor of Benham-Valence, by Newbury, now so well known as the property of the youthful Sir Richard Sutton, both manors having as their owners the important baronial family of De Camville, lords of Middleton, now the seat of Lord Jersey, Stanton having been granted by Adeliza, queen of Henry I., to her kinswoman, Millicent de Camville, whose daughter Isabel married Robert de Harcourt, while the manor of Benham-Valence, which has of late years been ignorantly associated with Beenham, near Reading, was given by Richard I. in 1189 to Richard de Camville, the founder of Combe Abbey, in Warwickshire, the seat of Lord Craven; and here we have another coincidence in the fact that the De Camvilles' manor of Benham-Valence after many alienations was purchased by the Cravens in the seventeenth century. Considering the many changes which have taken place in the ownership of landed property from time to time, it is a remarkable fact that the ancient and honourable family of Harcourt have held Stanton Harcourt for over 750 years, although the family seat is now elsewhere.

The magnificent old manor-house of Stanton was probably built about 1450, and ceased to be the residence of the Harcourts on the death of Sir Philip Harcourt, knight, in 1688. His widow sold the furniture, and early in the eighteenth century the family removed to their new house at Newnham Courtenay, which was building at the same time as Blenheim. The old house stood for many years dismantled and fell gradually into decay. At last, in 1770, it was taken down, though the great kitchen and a tower, containing a chapel and other rooms, was spared. The embattled tower is 54 feet 6 inches in height, with a stair turret at the south-west angle, rising 2 feet 9 inches above it. The great detached kitchen is on the lordly scale of Glastonbury, Christchurch and Durham, about 30 feet square, with a turret at one angle and an octagonal pointed roof, and is best described by Dr. Plot, the historian of Oxfordshire:—"It is so strangely unusual that, by way of riddle, one may truly call it either a kitchen within a chimney or a kitchen without one, for below it is nothing but a large square and octagonal above, ascending like a tower, the fires being made against the walls and the smoke climbing up them without any tunnels or disturbance to the cooks, which being stopped by a large conical roof at the top, goes out at loopholes on every side, according as the wind sets, the loopholes at the side next the wind being shut with louver boards, the adverse side open. The walls are 3 feet thick and the height to the roof 39 feet, which rises 25 feet higher. The roof is surmounted by a griffin 8 feet high, supporting a vane. Pope, in his letter to the Duke of Buckingham, likens the kitchen to the forge of Vulcan, the cave of Polyphemus and the temple of Moloch. He also graphically described the aged and desolate appearance of the house in his time, and concludes by affirming that 'its very rats are grey and praying that the roof may not fall

upon them, as they are too infirm to seek other lodgings.' He also describes one of the little rooms in the tower as walled up, 'for the ghost of Lady Kances is supposed to walk here and some prying maids of the family report that they have seen a lady in a fardingale through the keyhole; but the matter is hushed up and the servants are forbidden to talk of it.'"

The tower, good Perpendicular of Edward IV., called Pope's Tower, is in the garden, and contains the domestic chapel, with three rooms above it, the uppermost of which is called Pope's study, having been occupied by the poet during his residence here in 1716-8. The pane of red glass upon which he wrote the following inscription was taken out of its casement in this chamber, and is now preserved as a valuable relic at Nuneham:—"In the year 1718 Alexander Pope finish'd here the fifth volume of Homer." While he resided here Gay was staying with the Harcourts at Cokethorpe and frequently visited him. An interesting letter of his graphically describes the death of two horses who were here struck dead by lightning in 1718.

Stanton Harcourt has a charming old house in the village, belonging to All Souls College, locally known as the Pest House, but which was used as a resort for the members of the college at the time of any epidemic occurring at Oxford, and which in the seventeenth century was occupied by the Huntingdon family, to one of whom there is a monument in the chancel (1693). A remarkably interesting collection of armour and portions of military equipment of the Civil War period was inspected by some of the party. Here is also a curious collection of ladies' hats of the Cromwellian period, and other items of considerable rarity, of which time did not permit of a proper inspection.

This fine old property, which has been held by the Harcourt family 750 years, embraces a series of fishponds. The visitors ascended the tower and inspected the quaint and separate building which in former times served the purposes of a kitchen. It was described as being unique, and more remarkable than the famous kitchen at Glastonbury Abbey. The party next assembled at the church close by, which Mr. Keyser said was one of the most beautiful country churches in Oxfordshire. It contained a certain amount of Norman work, including two very fine doorways. The noble chancel and transepts were of the Early English period of architecture—thirteenth century. The antiquarians were, by special permission, allowed to enter the Harcourt chapel and inspect the grand old tombs and effigies which are so well and carefully preserved there. The most interesting of these were the recumbent figures of several members of the family, including one in knight's armour, by his side being his wife, who was represented as wearing on her arm the badge of the ancient Order of the Garter, this being one of only three instances known of the Order of the Garter being conferred upon a woman. Of the remaining two cases one exists at Ewelme, near Wallingford. There is also a fine full-length marble statue of Field-Marshal Earl Harcourt, who was born in 1743 and died in 1830, and a beautiful memorial to George Simon Harcourt, described as "earl, viscount and baron," born 1736. Mr. Keyser considered that the Harcourt chapel was probably built in the reign of Edward IV. The church screen, of Decorated style, no doubt dated from the fourteenth century. It appears to have been the custom in former times to affix memorial tablets on the outside walls of many parish churches, and among those outside Stanton Harcourt Church was one which was specially noticed on account of the tragic event which led to its erection. The quaint inscription on the tablet runs as follows:—

Near this place lie the bodies of

JOHN HEWET AND SARAH DREW,

an industrious young man, and a virtuous maiden of this parish, contracted in marriage, who being with many others at harvest work, were both in an instant killed by lightning on the last day of July, 1718.

Think not by rigorous judgment seized
A pair so faithful could expire
Victims so pure, Heaven saw well pleased
And snatched them in celestial fire.
Live well and fear no sudden fate
When God calls virtue to the grave.
Alike His justice soon or late
Mercy alike to kill or save.
Virtue unmoved can bear the call,
And face the flash that melts the ball.

* A paper by Mr. Walter Money, F.S.A., read at the visit of the Berks Archaeological Society, and published in the *Reading Mercury*.

Signor Rava, the new Italian Minister of Education, proposes to utilise a portion of the Castle of Sant' Angelo as a museum of mediæval Roman history.

OLD BUILDING AGREEMENTS.

ONE of the buildings associated with the career of Lord Bacon was Gorhambury House. It was not the mansion known by that name which belongs to Lord Verulam, but one erected by Sir Nicholas Bacon, the father of the philosopher, of which some remains exist. The estate was part of the possessions of the abbey of St. Albans. At the time of the Dissolution it was granted to Sir Ralph Rowlatt, citizen and goldsmith. From him it was purchased by Nicholas Bacon, who was afterwards Keeper of the Great Seal, and on it he erected a house. He also possessed York House, which stood within the grounds in that part of the Metropolis between Buckingham Street and Villiers Street, the Thames and the Strand. There Francis Bacon was born, there he lived during the time he held high office, and when after his disgrace he was commanded to surrender it he was afflicted. In his letter to the Duke of Lennox he wrote:—"York House is the house where my father died and where I first breathed, and there will I yield my last breath." Accident was too strong for Bacon, for he died after an experiment relating to what would now be called "cold storage" at Lord Arundel's house in Highgate.

Like many other impecunious men, Bacon lived in the grandest style. At Gorhambury he probably was attended by as many servants as James I., and according to all accounts they fleeced him as mercilessly as he fleeced litigants in his court. His father's house at Gorhambury was probably too small to accommodate his retinue, but it is said he found fault with the water-supply and had Verulam House erected on a site to the north-east of the house of Sir Nicholas Bacon. After the death of Lord Bacon, who was without children, the Gorhambury property passed to a great niece, who was married to Sir Harbottle Grimston, Master of the Rolls. Afterwards it came into the possession of his daughter-in-law. The lady was not of the temperament to allow any of her rights to be ignored. In 1656 Bacon's house had existed for only about half a century, but it had fallen out of repair, and Mrs. Sarah Grimston was eager that any reparation required should not be paid for out of her income.

Some of her letters to the Master of the Rolls remain, and have been printed by the Historic Manuscripts Commission. In one she says:—"For the repairs of the house, to which Mr. Bigg was bound, if he be of so sordid a spirit as to deny the repairing of a house which he lived in above three years, rent free, surely it is but just if he be forced to do that which, were he of a generous disposition, he would scorn to decline." A week afterwards Mrs. Grimston again writes:—"If your many employments will not give you the leasure to deale with Mr. Bigg, if you shall pleas, by my servant the bearer hereof, to send me up his lease, I shall take here that order with him which you intended, and with it, that you would pleas to send up all my other leases, save those two which Mr. Lowe is to make new ones by."

The Master of the Rolls evidently informed his daughter-in-law that it would not be becoming on his part to institute proceedings about so trifling an affair. Mrs. Grimston's reply is characteristic:—

"I am very willing rather to forbear it than to doe anything for my own gain which may be to your prejudice. But yet I thinke it very hard that I should bee required both to put the house in repair and keep it so, when, should it bee refered to indifferent persons, nothing would bee enjoined me more than to take care that it fall not into a worse condition then I found it; for the estate being to returne, after my death, to you and your heires, ther is not the same reason for my doing that now, which I should most willingly have done, had God spared to me my son, who after my life should have received it."

Lord Bacon's house was taken down a few years afterwards, viz. in 1663, and litigation concerning the keeping of it in repair was prevented. It could not be of imposing size, for it was returned for taxation as having only eleven hearths. The older house, erected by his father, was described as having forty-one hearths, and it was used as the family seat until 1681. Among the manuscripts which have survived to our time are some agreements dated 1672-3 relating to works at the chapel, which are interesting, as they were likely to be drawn up by the Master of the Rolls himself, who was one of the parties in each case. The first is between Sir Harbottle Grimston and Thomas Edney. The latter is "to build a new window to the chapell, containing fourteen foot wide in transome, and eighteen foot in the clear, with a pier in the middle, and

three lights in each side of the pier. The first light to be seven foot high with transome, the second six foot high, and the third five foot high, arched on the top." And the Master of the Rolls is to bring as much stone from Sopwell as is useful and necessary for doing the said work; and what is wanting over and above is to be supplied out of the stone in the barn at Gorhambury. And the said Thomas Edney is to find lime for the said work, and to let in all the iron bars fit for the glazier, and do all other freemason's work to the finishing of the said window, which is to be done and finished, before Midsummer Day next ensuing, in good and workmanlike manner. And he is to have and receive for the said work the sum of 19*l.*; that is to say, 5*l.* the first day he begins the work; and 10*l.* more when the work is half done, and 4*l.* when he has finished the said work.

The Sopwell referred to was an adjacent nunnery. On the same day another agreement was entered into with Thomas Evans, who was "to take down the end of the old chapel and to build a new wall, twenty foot in length from the old wall, and to make the foundation as thick as it was before, and from the water table to the roof a foot and a half thick; the hight and breadth within to be according to the old chapel." He is to "lath, tile and seal it," and to raise the roof next the chaplain's chamber even with the new building. Moreover, he is to build up a room for the gardener adjoining the said wall, which is to be 7 feet high from the ground and 7 feet broad and 16 feet in length, to lath and tile it, and pave it in the bottom with brick. And the said Thomas Evans is to provide all materials whatsoever for doing the aforesaid work, and to have the use of the old. And for doing and finishing all the said bricklayer's work (which is to be done before Midsummer Day next ensuing) he is to have and receive the sum of 60*l.*—that is to say, 30*l.* presently down and 30*l.* when the work is all finished.

A month afterwards there was a contract with Joseph Carter as follows:—

"To frame a new roof ye whole length and breadth of the chapel, and to put in seiling gises and brackets for a cone seiling, and to make good the gallery roof to ye chapel roof, and to find all materials belonging to ye carpenturers' work of new timber.

"To make a pair of stairs out of the passage in the gallery into the gallery in ye chapel, and also to make a timber partition to secure ye round stairs, and two new door-cases with timber and boards.

"To make a new wooden gutter the whole length of the chapel to carry ye water between ye gallery roof and chapel roof ready for the laying on the lead, and to make use of old boards.

"To frame a new roof for a shed 7 foot wide and 16 foot long on the back side of the chapel, and a door and a door case, and a window, to be done of the old materials except the door case and window.

"To cut off the landing-place going to the chapel, and to return ye rails and ballisters straight to the dining-room door, and also to put in a new door-case into ye chapel close to the great stairs.

"To make the roof going up to Mr. Tressel's chamber level and straight with the rest of the range of building with old timber.

"To new joist and board with materials, which are to come from Sopwell, and boards which are already at Gorhambury, the new room under the master's own chamber: to fill (?) the old roof where the tiles are to be taken off, and to put in two purlines, and to new set up a dormer window in the garret looking into the kitchen court with old stuff which is already at Gorhambury.

"To take down ye old roof which is now over the chapel and the ceiling-floor and the windows, and to frame a floor the breadth of the seats on both sides of ye chapel with old stuff, and to board with old boards.

"To make a new window in the chapel according as it is designed in the draught.

"And it is agreed that the Master of the Rolls do pay unto Joseph Carter the sum of 70*l.* in full for doing the several works aforesaid, and the said Joseph Carter doth acknowledge that he hath received 30*l.* in hand, in part of the said 60*l.*"

It was added that "Six pounds is to be abated out of this contract in regard he does not make the window."

A third agreement was between Sir Harbottle Grimston, Master of the Rolls, and Thomas Edney, stone-cutter, who was no doubt the same party as Thomas Edney agrees to "make and set up one window of stone in the chapel

belonging to Gorhambury in form and fashion according to the draft made thereof by Capt. Ryder, for which the said Sir Harbottle Grimston does agree to pay unto the said Thomas Ednee the sum of 10*l.*, and find stone, iron-work and the carrier of the sand." The said Ednee further agrees "to lay the floor of the said chapel with good, strong and sound Pirbeck stone, cornerwise, and to find stone, lime and all other materials whatsoever, except carriage of sand," for which he is to receive at the rate of 16*d.* a foot. A subsequent memorandum records that the window was to have been "18 foot and 20 foot," and that "now the window is to be but 14 and 16 foot."

Soon afterwards there was a further agreement between the same parties. Ednee agrees "to lay the floor of the chapel at Gorhambury with good strong sound and well-coloured white Pirbeck stone and black marble, cornerwise, well polished," at the rate of 2*s.* a foot, which "comes upon measure 443 foot." Ednee also agrees "to lay the floor of that part of the chapel where the communion table is to stand with black and white marble, well polished and glazed, cornerwise," for which he is to have 3*s.* 6*d.* a foot, and to find marble, lime and all other materials. He is also to work the step "with an ostrigal mould, [and] to polish, glaze, and lay the same with the marble steps that are at Sopwell, finding all other materials" for which he is to have 3*l.*

Finally, Ednee agrees "to take up all the defective stone of blake marble in the shell house, and new lay, in the roome thereof, blacke marble, rubbed and polished, and to new lay the paveinge before the shell house doore leadinge into the gravill walke, as well where the wood lyes as where the stone lyes. To take up the stone in the space at the end of the lowe gallery under the gallery chamber, and to square and rubb the best of that stone and new lay it, the one halfe with that stone, and the other half with blacke marble, well rubbed, as alsoe the steppes goinge in and out of the same. To make foundations of bricke to sett the two pillars upon that supports the gallery chamber, to make cleane and rubb over the stones that lye by the pillars on the syde of the sayd space, and to plaster all alonge the syde at the foote of the pillars with tarrice, and to lay two courses of old stone that shall bee left in the kitchen court from the bricke paveinge at the seller doore to the door goeing up to Mr. Martine's chamber, and one course from that doore to the bricke paveinge goeing into the brewhouse entry, and to lay whole stones in the fore court in the roome of such as are broken; he to find all stone, marble, lyme, hayre, and all other materialls to be used about that work, for which he is to have forty and three pounds."

Although the agreements were entered into, Joseph Carter, who was to execute work of the amount of 70*l.*, writes to Mr. Martin, at the Rolls, in Chancery Lane:—"We receive no orders for the going on with the chapel as yet. I well hoped to have heard on Saturday last at night. We desire to hear with what expedition you can. We are not yet hindered by it, by reason the old walls are not quite taken down; if we can hear by Tuesday next, it will be seasonable enough. The bearer hereof, Mr. Edney, and I have talked about the window in the chapel, and he says he can make it of stone which he can find out at Sopwell, and I perceive the charge of wood or stone will not differ much, if you please to acquaint the master and lady with it, since he is come so great a journey. If they please, I am very willing to remit my bargain, which is 6*l.*, out of my contract, that he may have the doing of it if the master and lady be so pleased. I hope to hear by the bearer if he return to Gorhambury, or otherwise, directly how we shall proceed."

On the death of Sir Harbottle Grimston in 1683 his younger son, Sir Samuel Grimston succeeded. He in turn died in 1700 and the property passed to his great nephew, William Luckyn, who assumed the name of Grimston, and was created a viscount in 1719. One of his first acts was to order a new staircase, as is evident from the following document:—

"Estimate for a staircase to be erected at the manor-house of Gorhambury for William Grimston, Esquire. The staircase to be erected will rise out of the south side of the hall at the upper end, next the chapel, to the floor of the dining-room above, as it now lies, viz. two flights of stairs of eight steps each and two half paces, one at the end of the first flight and the other level with the dining-room floor, where the dining-room door is to be made; all to be made of good oaken wainscoat, viz. treads, risings, rails, ballisters and brackets, and also to be wainscoated rail height with

oak and pilliasters answerable to the columns on the rail worke; the under part to be wainscoated down to the floor, as also that part of the ceiling under the upper halfe pale with the same oaken wainscoat, viz. bead worke and the pannells raised, the dining-room door to be the same with architrave on both sides carved, and shutters and linings to the two windows on the stairhead, all oaken wainscoat. The ballisters, braketts, rails and cappings of the wall worke and architraves under the stairs with the columns are to be carved. The chappell door is to be sashed with 2 inch and half stuff, from the middle rail upwards; bottom to be bead worke and pannells raised, with a deal door next the hall to slide up in the partition, and those pair of doors that are now in the chappell to be putt into the parlor partition underneath the stairs, and the steps to be made from the hall floor down to the parlor with old treds that are now at Gorhambury."

In 1775 the old house had to be shored and subsequently a new mansion was erected. On October 20, 1784, the then Viscount Grimston records in his diary:—"Took possession of our new house at Gorhambury on this day, after having been employed in building it seven years the second of last month."

VALUATION OF TECHNICAL COLLEGES.

ON Friday last a committee of the Glasgow Corporation heard appeals against the valuation of Mr. James Henry, the assessor.

Mr. Allan F. Baird, on behalf of the governors of the Glasgow and West of Scotland Technical College, asked that the institution should be entered at a nominal sum.

Mr. Henry explained that he had entered the property at 3,000*l.*, being the same rent or annual value as appeared on the roll last year. He understood there was no objection to the sum, but the governors thought the college should receive consideration, and be entered at a lower valuation than a Board school. He had valued the college on the same principle as he had valued Board schools.

Mr. Baird asked the committee to consider the relation of the college to the city. Up to this year the college was exempted from the city assessments, but the committee, in view of the new buildings, thought it was impossible to continue the exemption. So that now the governors were in a worse position than in past years. The Corporation gave two grants to the college, one of 10,000*l.* from their city funds and the other from their share of the residue grant. If the committee found it necessary to assess on the valuation now put on the buildings, then they would be in the position that the city had given with one hand what it was taking away with the other. The present valuation capitalised would more than eat out the city's grant of 10,000*l.* It might be asked if there were any similar buildings treated in the way he asked. He could not refer to any case absolutely upon all fours, but he might suggest that the committee were in the habit of treating churches and hospitals in the way he asked this institution to be treated. This was not a commercial concern. The institution was entirely for the good of the industries of the West of Scotland, and their income was spent in the payment of the large staff of teachers and professors and in meeting the other expenses of the college. The Inland Revenue authorities had recognised their claim to exceptional treatment and had remitted the Imperial taxes.

The Court upheld the valuation. The Chairman remarked that while they sympathised with the work they did not see that they could interfere in the matter. They thought the valuation moderate.

The Nominations for officers and Council for the Society of Architects, 1906-7, are as follows:—*President*, Mr. A. E. Pridmore. *Vice-Presidents*, Mr. G. E. Bond, Mr. G. A. T. Middleton and Mr. R. F. Vallance. *Councillors*, Mr. Henry Adams, Mr. J. Bartlett, Mr. B. D. Cancellor, Mr. J. B. Corby, F.S.I., Mr. J. W. Dyson, Mr. H. E. Hawker, Mr. Choltan James, Mr. W. J. Jennings, Col. F. S. Leslie, Mr. E. M. Leest, Mr. E. H. Mead, Mr. T. R. Richards, Mr. E. J. Sadgrove, Mr. Anthony Scott, Mr. W. A. Scott-Deakin, Mr. F. W. Kinneir Tarte, Mr. T. F. Tickner and Mr. Percy B. Tubbs. *Hon. Treasurer*, Mr. B. R. Tucker. *Hon. Librarian*, Mr. R. G. Base, and *Hon. Secretary*, Mr. Ellis Marsland.

NOTES AND COMMENTS.

By the death of the venerable PHILIP AUDENBRAND *L'Art* has lost one of its most valued contributors. He was the NESTOR of Parisian journalists, and it was only necessary for him to invoke his memory in order to produce delightful articles. As far back as 1842 he was one of the official reporters of the French Chambers. At that time he had gained a position on the Press, and since then he has produced, in addition to articles, a large number of novels and other examples of *belles-lettres*. Being endowed with sympathy he was the friend of all the great artists, authors and players of his time, and his souvenirs form a history of French art and literature during the latter half of the nineteenth century. Among his friends was HENRI HEINE, of whose life in Paris he has given a pathetic account. His last contribution to *L'Art* related to MARIE DORVEL, who was the original CATHERINA in VICTOR HUGO's "Angelo," and whose charm in representing it compelled Mdle. MARS to surrender her rôle of THISBE in favour of her young rival. As in his other contributions, PHILIP AUDENBRAND made the old appear as if it took place the day before. In that way he had an advantage over all his younger rivals.

SOME months back it was settled that the water-works at Portsmouth which belonged to a company should be purchased. The agreement was drawn up, and on Tuesday was presented for sealing at a meeting of the Corporation. Unexpected opposition was raised. At the end of last year there were one or two heavy storms, and in consequence the water became discoloured. The company did not take energetic measures to clear the water, and investigation showed that the required filtration might cost from 50,000*l.* to 90,000*l.* If the works were extended the cost would be about 300,000*l.* Some of the members of the Corporation who at first supported the purchase joined on Tuesday with the opposition. The result was that while eight members were in favour of the purchase, thirty-four voted against it. The affair is not altogether creditable to the Town Council. At first they were confident in their own knowledge and judgment, and the technical assistance which was necessary was not obtained, partly on the score of economy, but mainly from a belief in their own wisdom which inspired the members. There was a reaction, and the Council became alarmed about the condition of the mains which they were taking over without any examination, and they anticipated that the sources of supply would yield diminished quantities of water. It now remains to be seen whether the waterworks company will accept much lower terms, or will continue to retain the works in their hands.

CANONBURY TOWER is one of the few remains of ancient manor-houses which have survived in London. The site was probably once occupied by the country house belonging to the Priors of St. Bartholomew in Smithfield. The tower is part of a house believed to have been erected by Sir JOHN SPENCER and is said to contain over twenty rooms. The contrast between the structure and the modern houses around imparts a value to it not altogether due to its architectural importance. Canonbury Tower obtains further interest from its connection with OLIVER GOLDSMITH. In 1762 he was known as the author of the "Enquiry into Polite Learning," "The Bee," the "Citizen of the World" and the "Life of Beau Nash." He was one of NEWBURY's writers, and as the publisher lived in Canonbury Tower. GOLDSMITH went there, partly to be nearer to him and partly for the quiet of the place. It is related that he composed a "History of England" and a series of "Letters from a Nobleman to His Son" in his Islington lodging. But although the interview with JOHNSON, when he gave him the manuscript of the "Vicar of Wakefield" to read and sell, may have occurred at Canonbury, it is more likely the delightful story was written in Wine Office Court.

ON October 3 there will be an excursion of the Royal Society of Antiquaries of Ireland to Trim, in the county Meath, which is about twenty-three miles from Dublin. It is an ancient place, for an abbey was founded there in the fifth century. One of the first acts of the Norman invaders was to erect a castle in Trim, and so much importance was attached to it that all the available native forces united to besiege it. ILLUGH TYRRELL, who was in command, preferred to set the building on fire. It was afterwards rebuilt, and was the residence of King JOHN. It is believed that Prince HARRY OF LANCASTER, prior to the time when his father became king of England, was imprisoned there. In the fifteenth century a mint was set up in the castle. Sir JOHN TALBOT, who was known as the scourge of France, erected an abbey, and an ancient mansion which bears his name; for a long time it was used as a school, and there the Duke of WELLINGTON received his earliest education. THACKERAY was amazed that in one of the most wretched towns in Ireland a column should be erected in memory of the Duke. Dangan Castle, where he was born, is about four miles from Trim. The Yellow Steeple is a part of the abbey tower which has survived the destructive efforts of the Parliamentarians.

ILLUSTRATIONS.

BARRY MUNICIPAL BUILDINGS.

DESIGNS for the above proposed buildings were invited from competing architects in 1902, and the following year an award was made by Mr. T. E. COLLICUTT, P.R.I.B.A., when the accompanying design was selected.

The library portion of the building was first proceeded with, the cost being about 8,000*l.*, which was given by Mr. CARNEGIE, and the building was opened early this year by the Earl of PLYMOUTH.

The Barry Urban District Council have now resolved to proceed with the construction of the front portion of the public offices, and have accepted the tender of Mr. D. W. DAVIES, of Cardiff, amounting to 7,488*l.*, subject to the approval of the Local Government Board. The architects are Messrs. C. E. HUTCHINSON & E. HARDING PAYNE, of 29 John Street, Bedford Row, London, W.C.

NEW PARISH BUILDING, HAYLE.

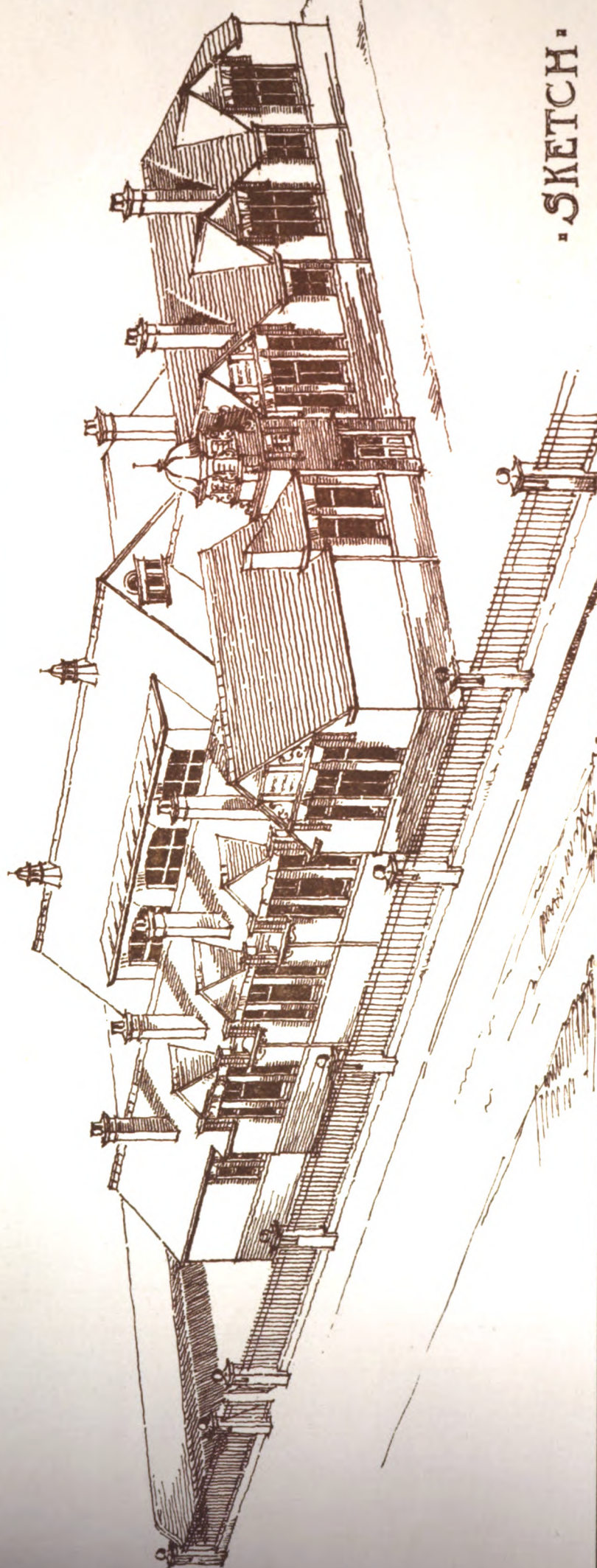
PROPOSED CHURCH, CUMBERLAND.

WE illustrate this week perspective view and plan of a proposed church for a village in Cumberland. It is designed to seat 250 people. The materials are to be local stone with roofing of Westmorland green slates. The estimated cost of building is 3,000*l.*, and Mr. J. E. DIXON-SPAIN, A.R.I.B.A., of 19 Hanover Square, London, W., is the architect.

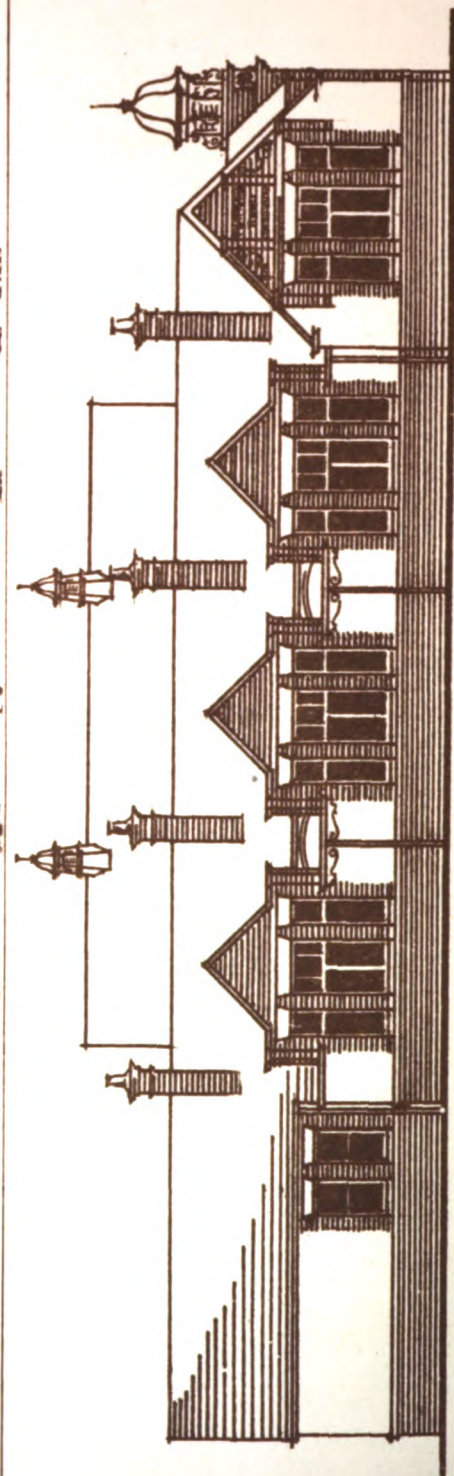
SCHOOL OF ART, HULL.

PORTLAND ROAD COUNCIL SCHOOLS, HOVE, SUSSEX.

THESE schools were opened on September 3, and are the latest of the public elementary schools established by the Hove Borough Council. They are all on one floor and occupy a prominent position in Portland Road, Hove, a wide thoroughfare on the Duke of PORTLAND's estate. The accommodation provided is for 600 children, and the schools, which need little description, as the arrangement can be seen upon the plan, claim to give for a low cost all that is necessary in construction and arrangement, including glazed brick dados with plastered inside walls, a large central hall and modern fireplaces and fittings. The building contract, which was placed in the hands of Messrs. NORMAN & BURT, of Burgess Hill, works out at less than 11*l.* per child, exclusive of the fencing and boundary walls. The architects are Messrs. CLAYTON & BLACK, of Brighton.



SKETCH.



SOUTH ELEVATION.

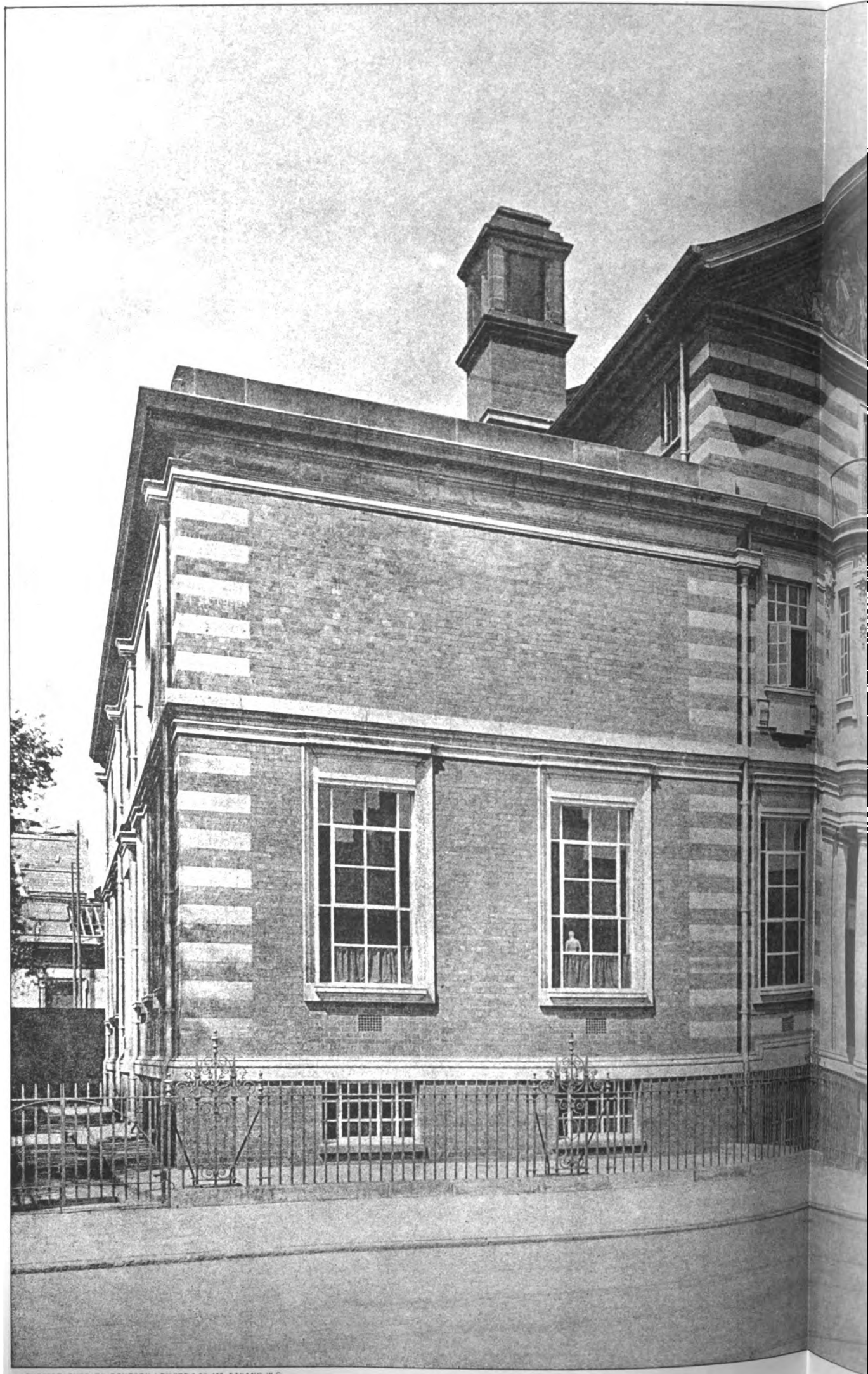
GIRLS

ENTRANCE

BOYS

ENTRANCE

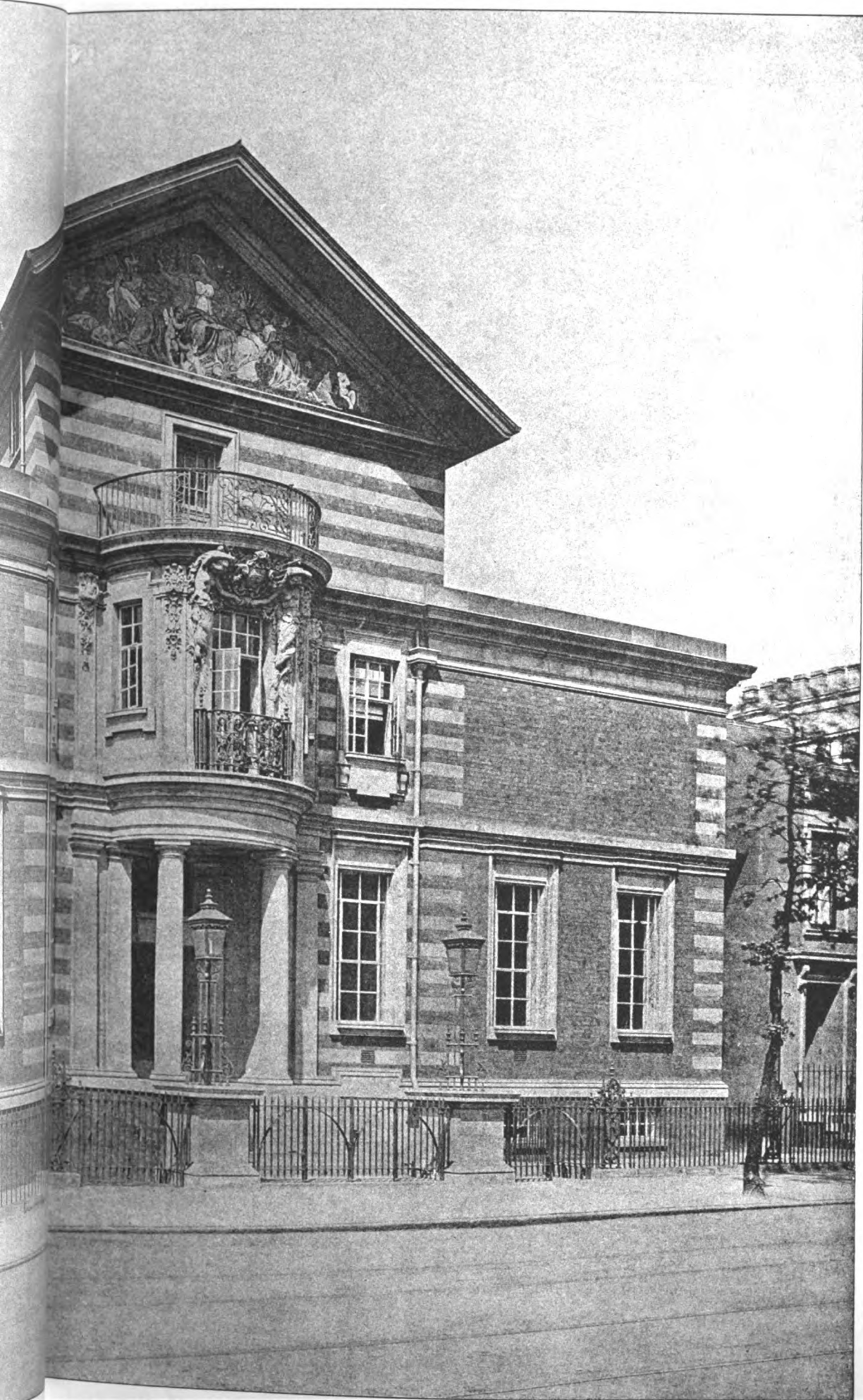




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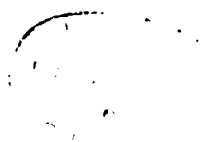
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Messrs. LANCHESTER & YOUNG, ARCHITECTS.

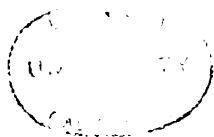
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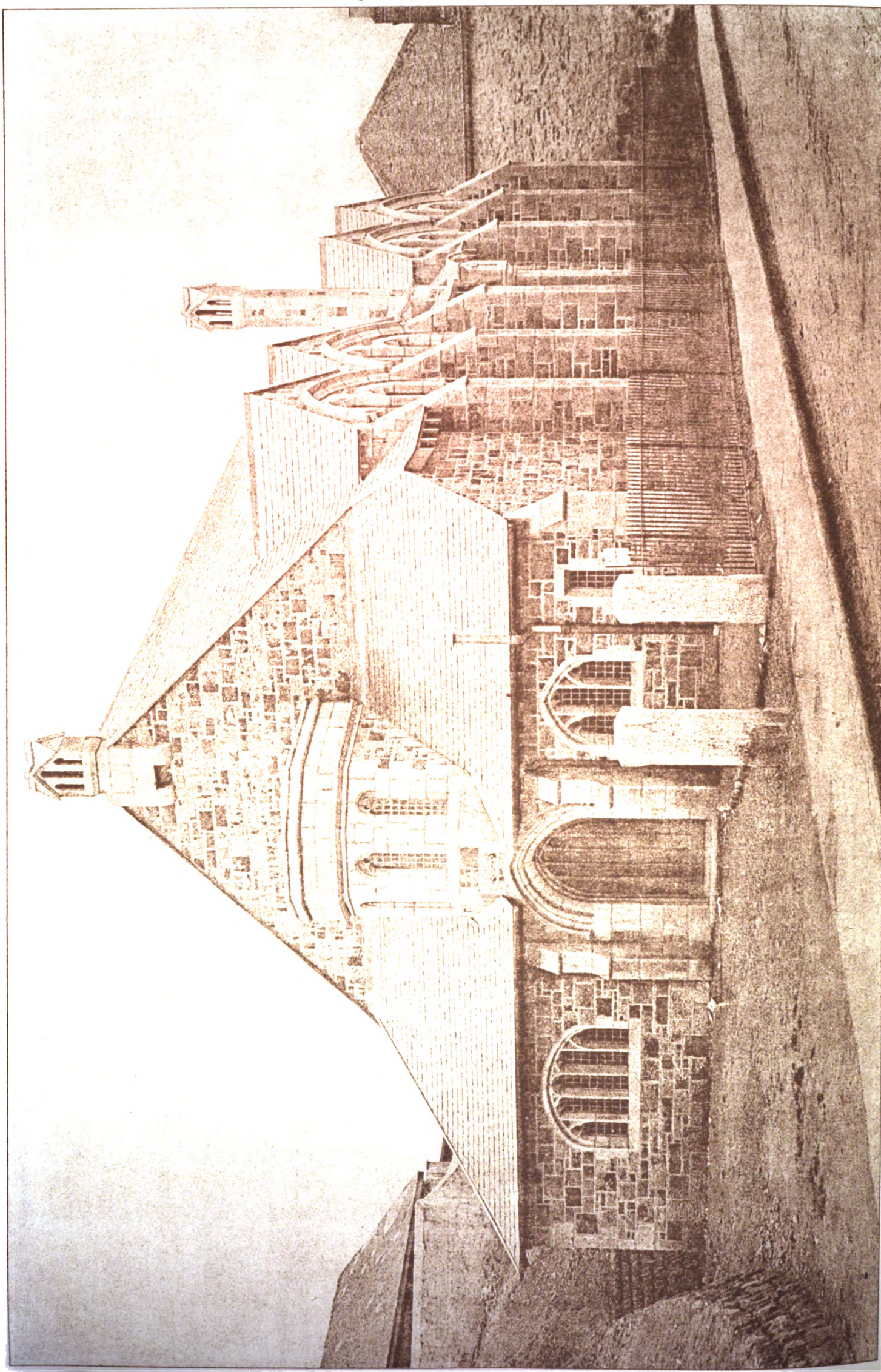


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ART, HULL.
RICKARDS, Architects.

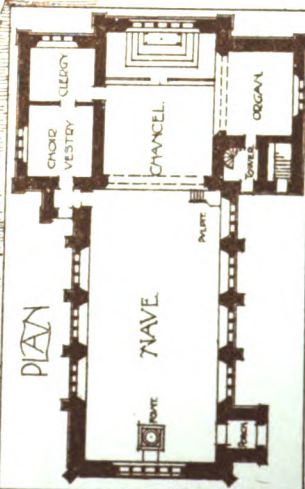
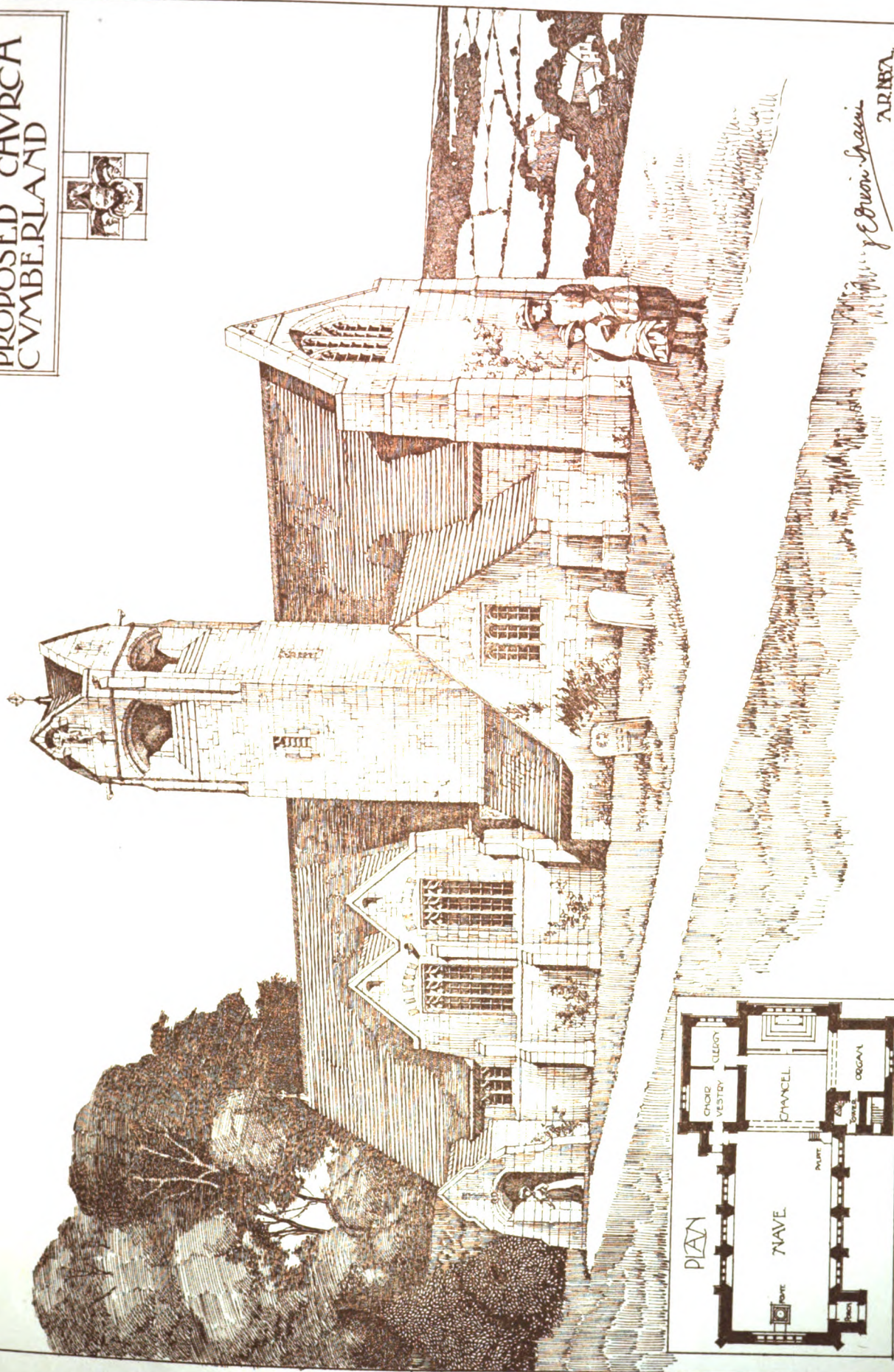






NEW PARISH BUILDING, HAYLE.
EDMUND SEDDING, F.R.I.B.A., Architect.

PROPOSED CHURCH
CUMBERLAND



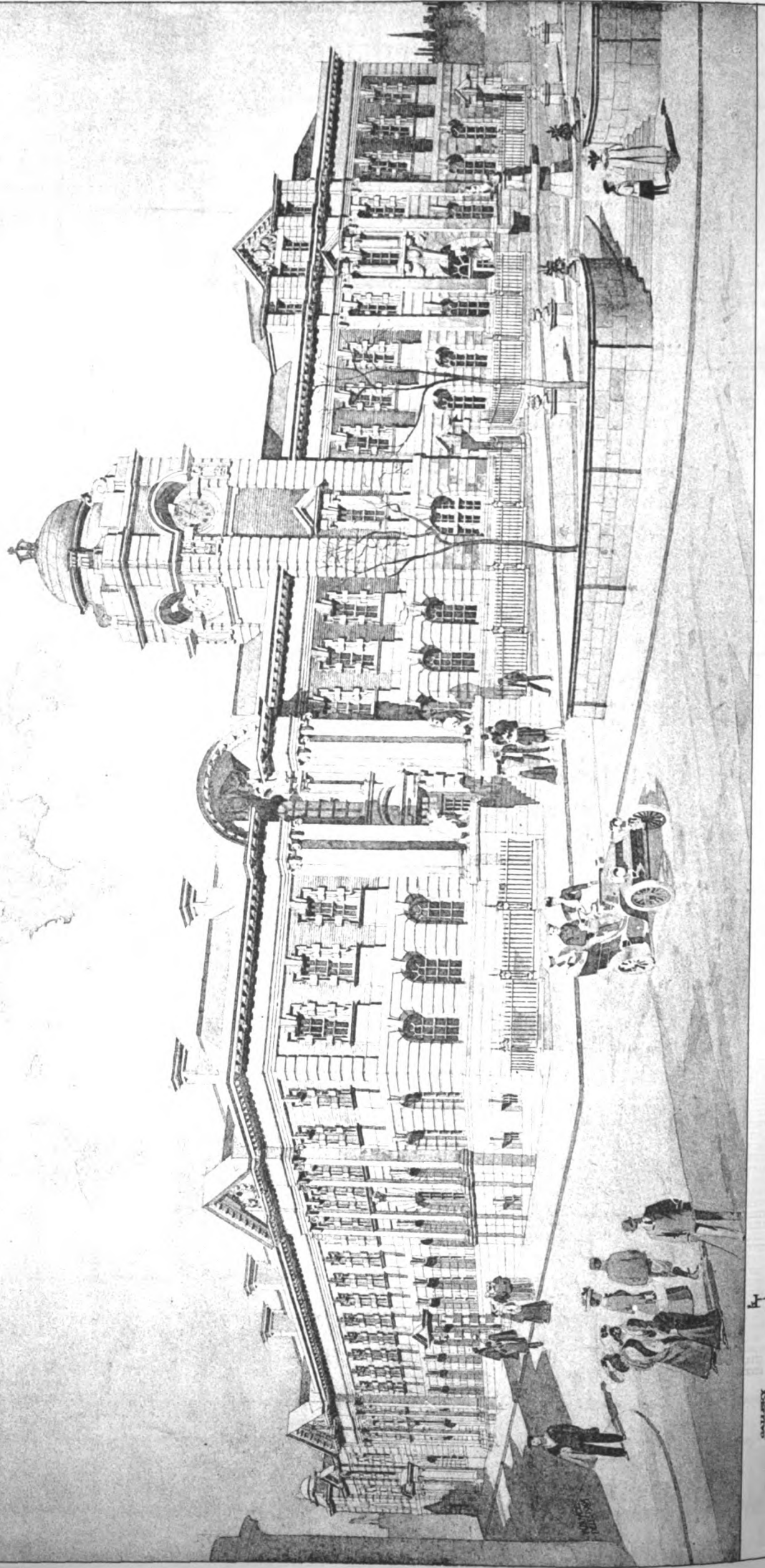
Wm. E. Greenham
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The Architect, Sept 21st 1906

BARRY MUNICIPAL BUILDINGS

C. HUTCHINSON. A.R.B.A.
F. HARDING-PAYNE. A.R.B.A.
ARCHITECTS



ASBESTOS FLAT

[illegible]

GROUND FLOOR PLAN

SCULPTURE IN THE SEVENTEENTH CENTURY.

DURING the seventeenth century in Italy moral causes operated strongly in directing attention to other studies and in forming intellectual habits opposed to those of the artist. A spirit of inquiry and of philosophical discussion came abroad in the age and turned the genius of the time to mathematics and to science. The fifteenth and sixteenth centuries had boasted their Ghibertis, Donatellos, Raphaels and Buonarrotis; the seventeenth was adorned by Galileo, Toricelli, Viviani, Cassini. Nature, as if unwilling or unable to bless the same epoch with opposite and transcendent talents, seemed to rob the arts in order to enrich philosophy. It was, however, in reality only a change in the provinces of exertion, and those powers had hitherto been exercised in the realms of taste, which were now employed on subjects not less noble or sublime. The same political causes, a similar want of patronage and preference given to other studies affected in like manner literature and poetry. Between these pursuits, indeed, and the cultivation of the fine arts there appears to be an intimate relation. The taste is the same, though differently developed, and in small States they will generally be found to have flourished and decayed simultaneously. But between the spirit of analytical inquiry, and the eagerness of discovery, which conduct to philosophic truth, and the creative genius which leads to excellence in works of imagination, the opposition is so vast that the human mind has never attained high eminence in both, in the same age, and among the same people.

The immediate successors of Michel Angelo had begun to decline from the lofty but fatal pre-eminence to which the peculiar character of his genius and labours had elevated him. A succession of undistinguished artists and of unimportant productions continued to disseminate the corruption, and connect the close of the sixteenth century with the age of Bernini. Of the names or works which mark this interval, it is unnecessary to enter into details. In every respect the purity of taste was greatly deteriorated, and that of mechanical execution formed the only department in which vigorous powers were still exhibited.

No artist ever displayed happier dispositions for excelling, or at an earlier age than Bernini. Nor were these indications of youthful talent fallacious. He was certainly endowed by nature with all those qualities requisite for becoming one of the greatest of modern sculptors. He was inspired by an ardent love of the art, animated by a noble desire of honourable distinction, and possessed unwearied activity in the pursuit of his object. Such is the organisation of genius. At twelve years of age he produced portraits which excited the astonishment of all who beheld them; at fifteen he finished his group of Æneas and Anchises; and at eighteen that of Apollo and Daphne, the wonderful execution of which still claims admiration. His facility and address in the last particular, indeed, have seldom or ever been surpassed. Under his chisel the marble seemed to assume form at a word, and he appeared to create rather than to carve the productions of his fertile skill.

But these rare endowments, these excellent requirements, from the course subsequently adopted by their possessor were rendered useless, or rather hurtful to the art, by throwing a splendour round the errors and extravagances of a capricious genius. He aspired to the reputation of an inventor, and chose rather to be considered the founder of a sect than to be placed among the chiefs of the modern school.

To Bernini the antique appeared meagre in outline, poor in composition and feeble in effect. The works of Michel Angelo he preferred to those of the ancient masters as being more forcible in their impressions, but possessing a character too severe and forbidding. He hoped to elicit a third style, exhibiting distinctive excellences of its own, and which should display greater strength and energy than the former while it surpassed the latter in suavity and grace. In pursuit of this imaginary perfection he wandered still further from simplicity and nature, introducing a taste inconsistent with the real principles of sculpture which finally extinguished art in mannerism, extravagance and exhaustion. To produce effect was now the only object of study, and every means of startling attitude—flying drapery—and forced expression were employed to strike, dazzle and surprise. Statues were composed and draped after the manner of figures in painting, and the full-flowing robes of the Bolognese school were adopted as the models which, in this respect, sculptors were to follow. Thus,

amid greater errors engrafted on those of the preceding age, Bernini, by the introduction of a style which rendered less necessary the science that had hitherto constituted a redeeming quality among the imitators of Michel Angelo, and had tended to maintain an intercourse with nature, produced a more fatal separation and hastened the downfall of taste. The powers of beautiful and facile execution possessed by him in so eminent a degree recommended or concealed the impurities of his style and reconciled those whom they could not deceive. Among artists this style was quickly and almost universally adopted, both as it was the reigning mode and as its author enjoyed during a great part of this century such dominating influence and exclusive patronage as rendered him the tyrant of art to whom all who desired employment were expected to render homage.

Among the contemporaries of Bernini who were thus generally reduced to the rank of imitators two still maintained the dignity of independent and in some respects of original minds. These were Alessandro Algardi, of Bologna, and Francis du Quesnoy, of Brussels, distinguished in Italy by the appellation of his country—Il Fiammingo.

Algardi had studied painting under the founders of the Bolognese school, and we may even discover the evidences of an acquaintance with the antique, though perverted by peculiar notions. When in advanced life he afterwards adopted the profession of a sculptor, by the better principles in which his youth had thus been trained, his style was preserved comparatively pure. If, like his compeers, he confounded the distinctive characters of sculpture and of painting, he claims the merit of at least following correct examples; while they imitated Pietro da Cortona or Luca Giordano, he selected as models the Caracci and Domenichino. The most celebrated performance of this artist, and indeed one of the most extraordinary labours of modern art, is the bas-relief which measures 25 feet by 6 feet, representing the invading Army of Attila stopped by St. Leo in its march to Rome. It is placed in St. Peter's, Rome.

The department in which the talents of Fiammingo were chiefly exercised aided perhaps in preserving his manner uncontaminated by extravagant expression or conventional forms; and as the sculptor of children he not only excelled every contemporary, but even equalled the greatest of his predecessors. Nor was he inferior in works of greater magnitude; though in these his taste was little calculated to secure the approbation of his own age, as not exhibiting sufficient indications of the grand style—as that of Bernini was then falsely termed. For this very deficiency his statue of St. Andrew, in one of the niches of the cupola, is now justly regarded as one of the best colossal figures in St. Peter's. As a model Fiammingo will be found to have selected Titian, whose pictures of children hold a middle style between those of Raphael and Correggio; not so learned, pure and correct in outline as those of the former, they owe less than similar productions of the latter to the magic though fugitive graces of shade and colouring.

Participating yet faintly in the same false principles, the two preceding artists are to be considered rather as rivals than followers of Bernini. Their style and manner are more sustained, more chastened, more severe, and they might have prevented or at least retarded the complete decline of sculpture had not their merit been eclipsed by the superior reputation or their fortunes depressed by the advantageous position of that master. By this ascendancy so fatal to art, Algardi was kept in continued obscurity and neglect, while Fiammingo to obtain employment bowed before the reigning idol, but was early poisoned by a brother jealous of his fame. The genius of Bernini thus remained paramount, maintaining its supremacy during the greater part of the seventeenth century, while the eighteenth was opened by the second generation of his actual disciples.

Rome was thus the grand centre of corruption, but what of excellence still remained was to be found there also. In Lombardy, Naples, Tuscany and all over Italy the same character prevailed, while Venice enjoyed a more barbarous perversion of its own without the merit of producing one man of genius to redeem or to extenuate error. To trace the progress of decline in each separate State, and through a succession of artists whose mediocrity offers no salient feature to the observer, would be equally tedious and nugatory.

Every age has, or imagines it possesses, its own great men, and to impartial posterity often seems to have been strangely prejudiced in this delusion. About the commencement of the eighteenth century, Camillo Rusconi, a Milanese

and scholar of Ferrata, a favourite pupil of Bernini, was the great man at Rome. This artist, though as inferior to Bernini as the latter fell beneath the Tuscan masters who preceded him, was said by his compatriots to unite the correctness and majesty of the ancients with the expression and graces of the moderns. Yet Rusconi was not destitute of talent; with sounder principles and more refined taste he might have obtained merited reputation. Nor were occasions wanting of exercising his powers, since in the twelve colossal statues of the Apostles, placed by Clement XI. on the façade of the Lateran Church, he conducted the only undertaking of importance which during this period illustrates the history of sculpture. Of these Rusconi himself executed four, in the rest he was assisted by six others, whose names will point out the principal sculptors of the time—Stephen Monnot and Le Gros each finished two, Guiseppe Mazzuoli, Francisco Maratti, Lorenzo Ottoni, Angelo Rossi each produced one statue.

In these works are displayed, redeemed only by facility of mannered invention and by audacity of mechanical execution, all the characteristic errors of this school. Grandeur of effect is sought in greatness of extent, and boldness of hand is substituted for sublimity of thought. The forms are buried in a load of drapery, disposed in immense masses, as is the practice in pictures intended to be viewed from a distance, and exactly in the manner of the favourite painters of that age. The conclusion, however, is not warranted by fact in ascribing these effects, as has been done, to the designs of Carlo Maratti. This was a style of art not derived from a new or partial source, but proceeded from a principle of exaggeration and of novelty, to be traced, as the reader is now aware, in the works of Michel Angelo, which was pursued as a leading object by Bernini, and received full development among his successors.

Rusconi and his compeers are the last artists who for nearly three-fourths of the eighteenth century merit particular notice, and the work just described may be considered as the expiring effort of Italian sculpture prior to the restoration by Canova. A crowd of artisans continued for a while to haunt the scenes of former glory, but to enumerate their names or productions could neither interest the reader nor illustrate the subject. Corruptions in taste and extravagances of composition went on increasing, but the means of displaying them offered only in detail, and, finally, the sound of the mallet was scarcely audible in a city of Italy. In the department of mere labour the chisel was still wielded in a bold and skilful manner; but this advantage rather augmented the evil, both as it came to be regarded the praise chiefly to be aimed at, and as facility was thus enjoyed of following every caprice of fancy. In the fine arts the powers of execution are the last to acquire perfection and retain excellence the longest; they survive when moral beauty, sentiment and truth have long ceased to ennoble the creations which their mastery realises.

The progress of Transalpine sculpture during the preceding period now demands our attention. In France Louis XIV. patronised the arts with munificence becoming a great monarch; and though his motives were merely political, not flowing from any innate love of elegance or refinement, their effects were equally beneficial. To create French artists he established academies, endowed professorships, proclaimed rewards, instituted honours and accomplished the object. Patronage, however, cannot introduce purity of taste nor command originality of invention; these are results of causes more universal in their operation and less extrinsic in their nature. France has ever been under the influence of that domination which Italy has always exerted in the arts, and more especially in sculpture. In the present instance this influence was most direct, and they were not the models of a purer age, the monuments of better art that guided imitation, but the works of Bernini and of his school. A similarity of circumstances also concurred to introduce in both countries the same vitiated style of sculpture. Le Brun in Paris maintained the same exclusive sway enjoyed by Bernini at Rome. Nor was this despotism of an individual master equally injurious in the respective capitals—the latter was indisputably a man of genius and a sculptor—the ascendancy of the former was not the superiority of a great mind, and his reign was yet more fatal to sculpture, tending still further to extend the supremacy which painting had acquired. Directing all public works the French sculptors were necessitated to copy his designs, composed solely in the manner of painters and without any practical knowledge of their art, or if they opposed this tyranny remained unemployed.

The merits of Gerardon, the son of a founder at Troyes, entitled him to, and ought to have secured, the success which ultimately attended his exertions, without his being forced previously to become the sycophant of Le Brun. His style of sculpture, though cold, is noble, and more correct than that of his contemporaries. His manner of design is also pure and free from glaring errors, but heavy and destitute of character, and too frequently reminds the spectator of similar productions of ancient masters. That he was the Phidias of his age, though asserted by Le Fontaine, may be disputed; but that Gerardon was a sculptor of great talent, if not of genius, must be acknowledged.

Strongly opposed to the disposition of his compatriot appears the character of "the fiery and energetic Puget," the favourite artist of native writers. His execution is bold, rapid and masterly; but in composition he is defective, in science inaccurate, and in expression without dignity. In every intellectual beauty of art his works are imperfect, presenting little of elevation, nobleness, or grace: the forms are often vulgar, and always exhibit the peculiarities of an individual model. Yet such is the vigour of mechanical detail, such the breadth and freedom of touch, that the figures appear endowed with the privileges of life and movement. In early youth Puget had studied painting under Pietro da Cortona, whose large and effective, but unlearned style, is the most remote from the rigid purity of sculpture; accordingly, its influence becomes sufficiently apparent in that of France, where, subsequently to this period, it was generally followed.

As we advance to the conclusion of the seventeenth, and especially in the early portion of the following century, French sculptors rapidly increase; and, as the occasions of exercising it were more splendid, the art seemed in better condition than in Italy. The actual condition of taste, however, was alike fallen in both countries. Of the artists who flourished during this interval, Sarrasin and Guillin preserved, in the caryatides of the Louvre, some remains of ancient propriety; Le Gros and Theodon are best known at Rome; in France, the names of Le Pautre, Desjardin, Coysevaux, Vaucleve, the two Coustous, are still remembered with honour from numerous groups and statues. These, and many others of inferior note, adorned the brief golden age of French sculpture, which, under the imbecile Louis XV., suffered a rapid decline. Bouchardon, the only artist of eminence who distinguished that reign, possessed no mean talents, but was destitute of the dignity and firmness of character requisite to enable the individual, by pursuing the dictates of his own better judgment, to oppose the caprices of reigning modes.

VICTORIA BATHS, MANCHESTER.

THE Victoria Baths cover an area of 7,395 square yards, and are situate on the north side of High Street, Chorlton-on-Medlock, with the frontage to High Street. They abut upon Curzon Street on the north side and Bax Road on the west side. The elevations are carried out with red Ruabon bricks and terra-cotta in the Renaissance style, and the whole is surmounted by a turret containing a four-dial clock and hour bell. Three entrances are provided, one to the males' first-class washbaths, swimming-bath and to the Turkish baths, another to the males' second-class washbaths and swimming-bath, and a third to the females' washbaths and swimming-bath. The internal treatment of the walls is in glazed bricks, faience, buff bricks and terra-cotta, the whole harmonising in effect and design. The large roofs are carried by steel principals, those over the administrative portion of the buildings being in timber. Glazed lanterns are provided for efficient lighting and ventilation. The floors generally are finished with terrazzo with the exception of the second-class swimming-bath and round the footbaths, which are finished with patent non-slip tiles.

The buildings are heated throughout by steam, and are lighted by electricity, with a supply of gas for cases of emergency. The whole of the hot and cold water and steam supply pipes are fixed in short sections, so that repairs can be effected with a minimum of disturbance to the working of the establishment. A complete system of electric bells and telephones is provided, by means of which there is communication from each bath-room to a disc-board in the ticket office, and from the ticket office to other parts of the building, so that in case of accident or mishap there may be no difficulty in communicating with the staff. The walls of the calorifier house and laundry are treated in a



ELEVATION.



MALES' FIRST-CLASS SWIMMING AND GALA BATH (FROM SHALLOW END).

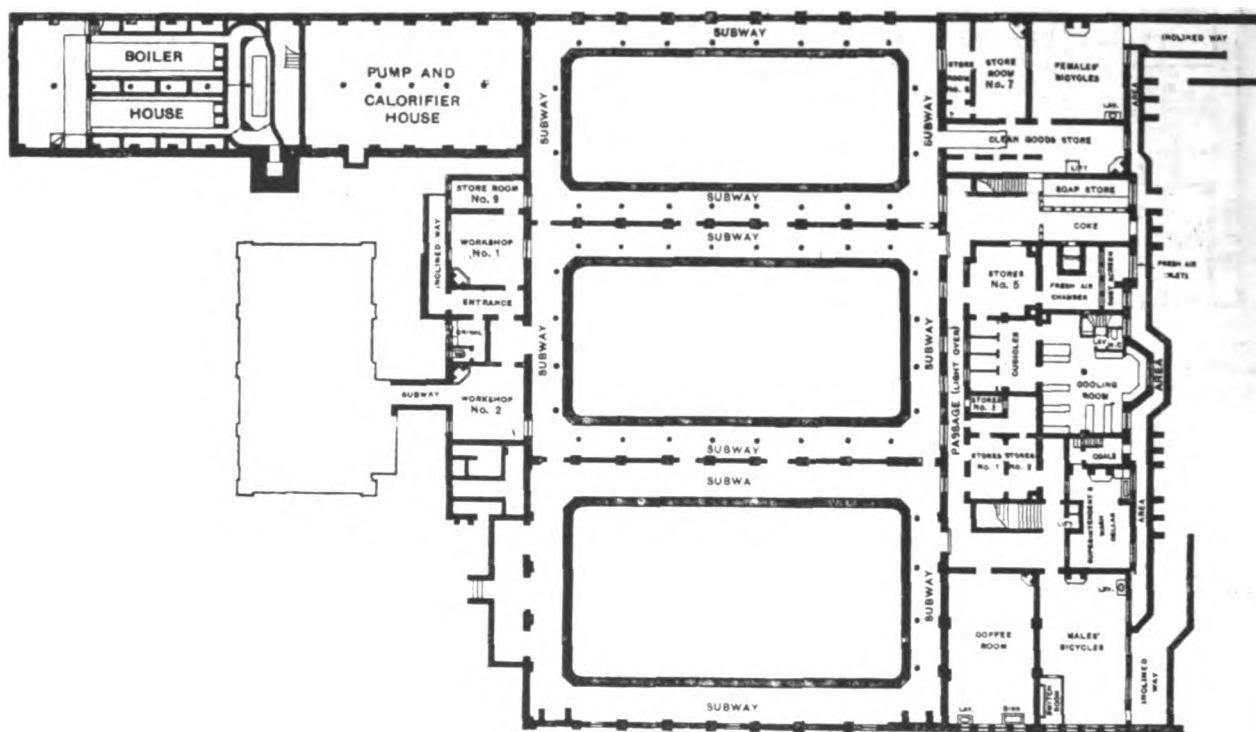
simple design in glazed bricks, allowing the cleaning down to be done at a minimum cost. In all the details of the buildings an effort has been made to minimise the cost in repairs and renewals.

The swimming-bath is constructed of concrete with a lining of Limmer asphalt; the inside surface at the sides and ends is of glazed bricks, and the bottom is laid with special floor-tiles. The bottom is marked out for water-polo. The floors of the gangways and dressing-boxes are in terrazzo, and a total of forty-five dressing-boxes are arranged on the two sides of the bath. The divisions between these dressing-boxes are constructed of 2-inch

glazed partition bricks, with cast-iron columns, with wings for the framing.

The males' second-class bath and the females' bath are in the main constructed on similar lines to those of the first-class, but the sizes of the baths are 75 feet by 35 feet and 75 feet by 30 feet respectively. At the shallow end of the baths the bottom is level for a distance of 14 feet. This insures greater safety for the younger bathers. The floor of the gangways to the second-class bath is in patent non-slip tiles, and that of the gangway to the females' bath is in terrazzo.

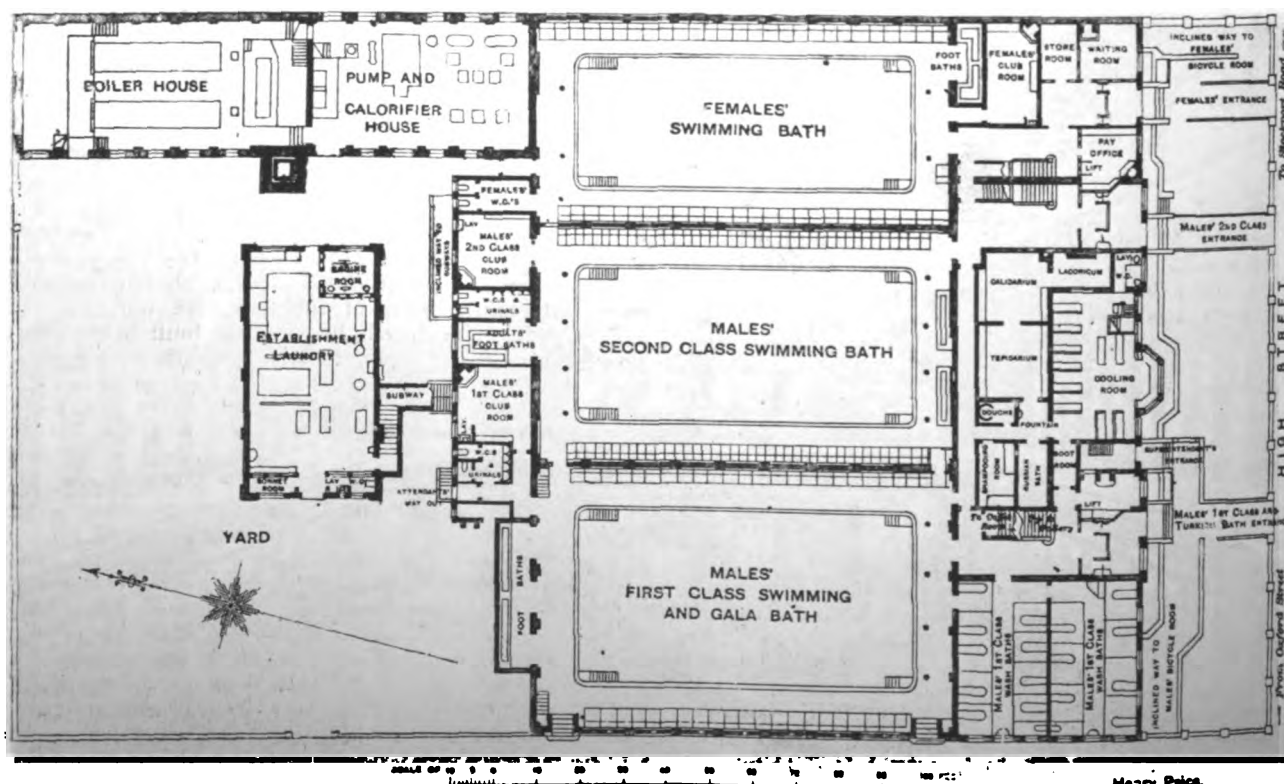
The engineering work, exclusive of laundry, consists of



SCALE OF 0 10 20 30 40 50 60 70 80 90 100 FEET

BASEMENT PLAN

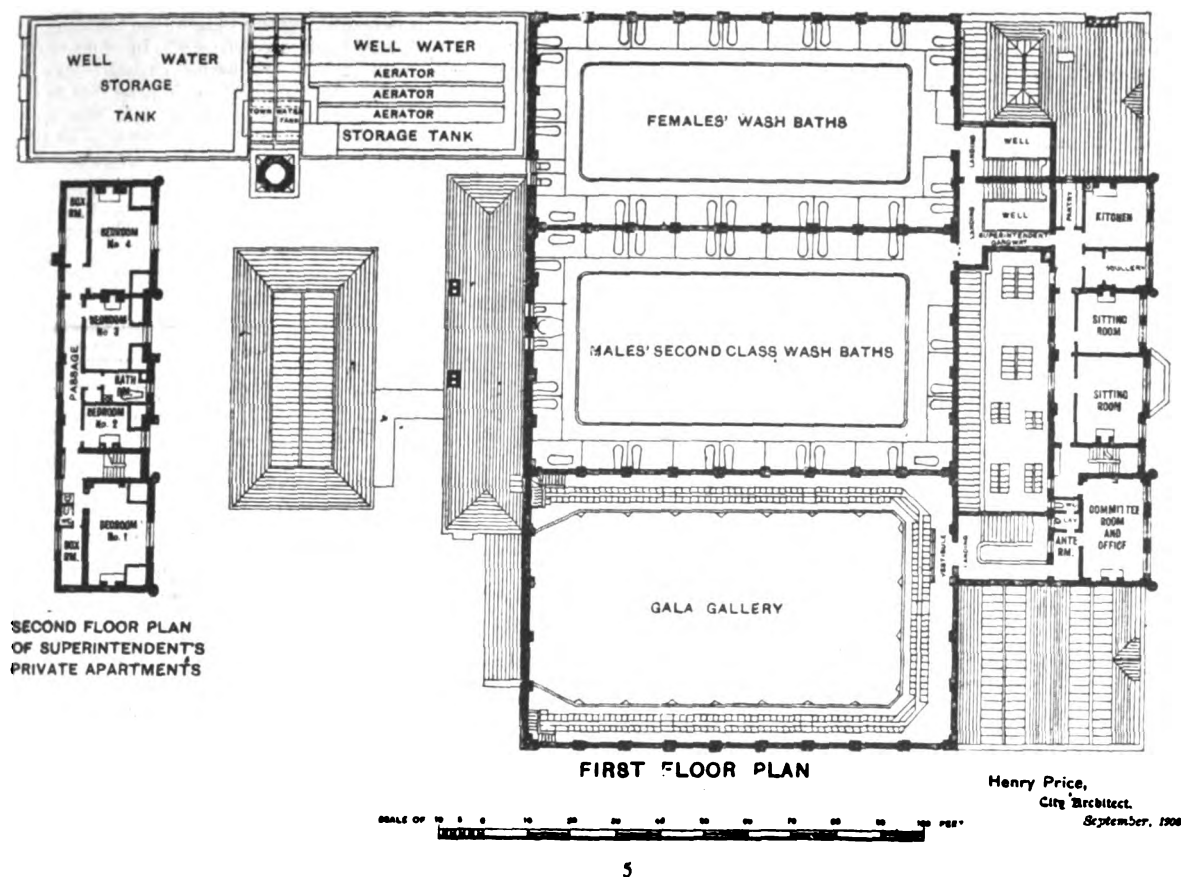
Henry Price,
City Architect.
September, 1906.



SCALE OF 0 10 20 30 40 50 60 70 80 90 100 FEET

GROUND PLAN

Henry Price,
City Architect.
September, 1906.



5

a steam raising plant, deep-well air-lift pump and water storage tanks, circulating and aerating plant, calorifiers, exhaust-steam heaters and boiler-feed pumps.

The buildings have been erected by Messrs. C. H. Normanton & Son, contractors, from the designs of the city architect (Mr. Henry Price, A.R.I.B.A.). The engineering work generally has been designed and carried out under the direction of Mr. L. Holme Lewis, M.I.M.E., the waterworks committee's hydraulic engineer. The machinery and mechanical equipment of the laundry has been carried out under the direction of Mr. J. Derbyshire, general superintendent of the baths. The total cost of the buildings, street formation, sewerage, machinery and equipment amounts to 59,144*l*.

SHAP AND PENRITH.

THE members of the Cumberland and Westmorland Antiquarian and Archæological Society on Thursday in last week started on a two days tour. A detailed description is given in the *Carlisle Journal*, from which we take the following passages:—

Shap Abbey.

Walking over the crest of the hill the members came into sight of a sheltered vale through which the river Lowther pursues a winding course, and close to the river picturesquely situated was seen the tower of Shap abbey rising grey against the hill in the rear. Chief interest in the abbey ruins lies in the fact that they represent one of the few Premonstratensian abbeys in the north. The tower rising 50 or 60 feet high is a striking object. The walls, from the broken tops of which vegetation springs, are of immense thickness, and two of them are pierced by tall Gothic arches which seem to make a passage through from one side to the other. One of these arches was formerly a window, but the mullions have now disappeared. In a smaller window higher in the wall the mullions, however, are fairly complete. The Rev. J. Whiteside gave the assembly the benefit of some of his knowledge of the interesting ruins, but owing to the adverse conditions he refrained from entering upon the historic aspect of the subject, dealing mainly with the ground plan and pur-

poses of the various enclosures. One heard that the tower was comparatively recent, being built about 1485 to 1500. Nobody seems to care very much about its preservation; its condition is going from bad to worse, and there is a fear that at no distant date it may come down altogether. In the tower a niche was pointed out in which is a statue of St. Mary Magdalene. In adjusting the levels of the stones of which the building consists the monks apparently used oyster shells, and one of these shells in a perfect state which Mr. Whiteside had found some time ago was exhibited. Most of the Premonstratensian abbeys are without an aisle, but where the aisle exists it is on the north, and this is the case at Shap abbey. Cross walls which were probably employed as supports at the time the clerestory was built, the bases of columns and other objects of interest were drawn attention to, and afterwards Mr. Whiteside conducted the members of the Society over the rest of the ruins, which consist of remnants of walls varying in height from the ground level to about 10 feet. He pointed out the site of the canons' cemetery, the base of the staircase of the dormitories which extended about 76 feet in length, the cloisters, chapter-house and other interesting parts of the extensive building. The greater part of the church, he said, was built in the seventy years following 1199, and the whole length of the fabric is about 180 feet. Where now a large tree grows there used to be an arched recess, and there the founder of the abbey, Thomas, son of Gospatrick, rests. Several tombstones were drawn attention to, and pointing to an abbot's grave of stone, Mr. Whiteside said it was questionable if any man could be got into it. He had tried himself, but if he succeeded in getting in his head he could not get in his body, and if he got in his body his head was out. Canon Rawsley had made a suggestion that probably the abbots were buried and afterwards their bones were taken up and encased, and Mr. Douglas suggested that probably the bodies were embalmed and shrank in the process. The position of the doorway at the side of one of the walls of the chapter-house Mr. Whiteside said was almost the only exception to the rule of having the doorways in the centre, and from its position he concluded that the original idea in building the chapter-house had been departed from and that the intention at first was to have a lobby and chapter-house outside the main range, as at Westminster. The abbey

buildings probably extended to the south-west corner of the farm, which has for generations been in the tenancy of the Irvings, and if some 200*l.* or 300*l.* were raised excavations could be undertaken, and Mr. Whiteside believes that much could be brought to light about things which at present are hidden. The Bishop of Barrow having expressed the gratitude which all the members felt to Mr. Whiteside for his contribution to their knowledge of the place the journey was resumed.

Bampton Church and Crosses.

A paper on the church from the vicar, the Rev. G. E. F. Day, was read. The church is Georgian, and was restored very successfully not long ago by Mr. C. J. Ferguson. It is, according to the paper, an entirely modern structure, built in 1725 on the site of an older building, of the date of which there is no record. Mr. Wearing, the vicar from 1695 to 1742, has recorded that "the old church, which without any terms of art was mere rustick and had been enlarged, was about 21 yards in length and 11 in breadth (the chancel whereof was 9 yards long and 5 broad), was become so ruinous and defaced on the whole through antiquity and the disorders of the Civil Wars that it was unsafe to assemble in and incapable of being repaired." With the assistance of Dr. Gibson, then Bishop of London, a brief was procured and the new church built. In 1883 it was restored at a cost of 2,000*l.* The oak used in the pews was, as far as it went, the old remodelled, and on one of the pews is a date prior to 1726. The railing in the belfry is of various periods, and to those interested in old bells those of Bampton Church are attractive. The largest bell is said to have come from Shap abbey. A note in the churchwardens' book mentions the purchase in 1779, but does not say from whom it was obtained. The registers, the earliest of which are in a fragmentary state, date back to 1636. Miss Noble at a later stage in the afternoon explained several of the interesting objects in the church, pointing out the reredos of carved oak and inlay of holly; the cups and paten of Newcastle plate, the gift of William Noble in the memorable year 1814, and a pewter flagon dated 1806. The church also contains numerous books in raised lettering for the blind "to enable John Cookson Gill Head to join the choir and assist at the services." The font cover, an old oak cone inlaid with ebony, was examined by those with an eye to the curious. The font itself, a crude block of stone, is dated 1662. Before quitting the church, Mr. Collingwood read a paper on Bampton crosses. "There is an ancient cross now at the school; there is also a cross-base *in situ* and there are several places where crosses probably existed. Knipe Moor Cross stood until about a hundred years ago on Knipe Moor, where the site is still to be found to the north-west of the junction of the road from Knipe Hall with the road joining Low Knipe and Grange. The cross was removed and used as a gate-post at the schoolhouse; one of the arms was broken off to make it fit closer against a wall. After Miss M. E. Noble bought and rebuilt the school she had the cross placed where it now stands, against the schoolhouse wall. There is no inscription. It is not pre-Norman, but one of a series of Mediæval boundary crosses, of which not many good examples are known in our district, though elsewhere many exist. . . . Christ's Cross Gate, on the opposite side of the valley, is a name which suggests another relic of this type, and at the place where the fence of Hows Moor runs into the road below Scroggs there is the base of a cross yet remaining. Annas or Annette Cross is the name of a hill on the road below Measand." Similar names to Annette, Mr. Collingwood pointed out, occur in Annette Yat and Brow at Bampton, Annas Well at Shap, and Annetwell Street in Carlisle. The origin of the name he was not able to say, but he thought it might be connected with the Thanet Wells of the Kentigern Legend.

Thornthwaite Hall.

Leaving Bampton a short journey brought the members of the Society in view of what at first glance was an ordinary low range of farm buildings lying back some distance from the road. These buildings, known as Thornthwaite Hall, were, however, possibly the death place of the noted Belted Will, of Border fame, and on nearer examination the ancient character of the buildings becomes evident. A passage leads into the spacious courtyard, and opposite the entrance to the yard, looking somewhat modern through recent extension and the introduction of attic windows, are the buildings of principal interest. Mr. A. F. Curwen read a paper concerning the place as far as he had been able to make out, but so many of the important places were full of hay that until he had made

another examination he did not wish anything he said to be taken as final. There was no single date or armorial bearing to help in determining the date of the building, and the only way was to go back into history. In the Court of Requests there was a curious petition dated May 25, 1576, and Mr. Curwen was inclined to believe that in it is the first record of Thornthwaite Hall, viz. Sir Henry Curwen providing an estate for his son Nicholas whereon he could build for himself a home. The windows of the oldest portion of the building accord with this time, and with a little difficulty it may be possible to make out the plan as it was originally built. First of all there would be the tower, erected in imitation of the Border peles, but instead of the vaulted basement of the peles the ground floor was occupied with a chamber having a most delightful six-light mullioned window, looking out towards the south. Sir Nicholas died in the year 1604, and it was his son Sir Henry that sold Thornthwaite to Lord William Howard, probably soon after he came into the property, for they found "Belted Will" receiving the rents of and residing at Thornthwaite Hall in the year 1612. Lord William Howard used Thornthwaite as a convenient house when hunting in the neighbourhood, and to his time must be assigned the extensions consisting of a banqueting-hall nearly 35 feet in length, to which was attached a turret guard built out over a small stream. "The whole building," Mr. Curwen concludes, "has been so pulled to pieces to fit it for a farmhouse that it has now become impossible to further trace back the appearance of this at one time fine old hall of Thornthwaite."

Lowther Park was visited, and soon everybody was examining with wonder two lengths of stone which had been partially excavated, and which the name of "hogbacks" well describes.

The Lowther "Hogbacks."

According to Mr. Collingwood the hogbacks have long been in the same position to the south of the Lowther mausoleum, but it was only during the past few days that the Countess of Lonsdale had had them unearthed. Now they were able to see the pattern, and he pointed out the various features of the thinly cut designs, which indicated workmanship of the time of the Viking invasion. He did not pretend to jump to a conclusion as to the signification of the symbolism, but it was important to have found what the stone said. On the other stone was the representation of a bear scrambling up the end. If they compared it with the photograph or drawing of similar stones at Brompton in Yorkshire they would see at once that it was done by a person who had seen those stones, but could not do the bears as well as the best Brompton carver. Full of symbolism as these stones were, they could not be read thoroughly at first sight. It was a great thing to have ascertained what the details were, but it would be a still greater thing if these most interesting and curious relics could be preserved by being placed in the church. Pointing to a smaller hogback which had been unearthed and was being eaten away by the atmosphere, Mr. Collingwood asked how many people knew that it was a relic which told the story of about a thousand years ago. They were connected with the Danish rather than the Norse settlement. They tell us that the people not only in the days of the tenth century were Christians, but that they were buried in the hope of resurrection; and not only that, but that they had certain rude notions of art and methods of carving. They showed also that the people who lived in the plain between York and Darlington came to this part of the country and reproduced their art at Lowther. Mr. Collingwood concluded his remarks by again expressing a hope that the stones would be taken good care of. A pleasant drive through Lowther Park brought the party to Penrith.

A BURGH ENGINEER'S CLAIM.

THE late burgh engineer (Mr. W. Mackison) has raised an action in the Court of Session against the Dundee Town Council for the sum of 49,601*l.*, restricted to 15,000*l.*, for extra work which he alleges he performed during his term of office, which began in 1868. Official intimation of the fact was made at a meeting of the Lord Provost's committee of the Council by the town clerk, who stated that he had accepted service of the summons.

In the summons it is averred, says the *Dundee Advertiser*, that Mr. Mackison was employed by the Corporation, entirely without his duties as surveyor of police and sanitary inspector, to act as their parliamentary engineer and adviser in the preparation and carrying through of a

number of parliamentary schemes and estimates for proposed Bills, and the execution of the works under the Acts following thereon, and in various ways in connection with said proposed Bills, Acts and works. Special mention is made of the work he undertook in the reconstruction of the town under the Improvement Act of 1871, and parliamentary estimates of the Bills and cost of the works are put down as follows:—Parliamentary estimates of Bills passed, 603,334*l.*; estimates for proposed or withdrawn parliamentary schemes, 270,000*l.*; properties purchased under Improvement Acts for reconstruction and improvement of burgh, and ground feued and feu-duties sold, 600,000*l.*; tramway construction and maintenance, 220,000*l.*; engineering work, 180,000*l.*; and architectural work, 257,000*l.* His employment in carrying out the works was continuous and without interruption from shortly after his appointment as surveyor of police to the present year, and as a matter of fact, certain of the works authorised by the later measures were being carried out at the present time according to his plans. In connection with the Improvement Bill, it is averred that after it passed the then police clerk (Mr. Thomas Thornton), acting for the Commissioners, requested him to render his account. He did so, and wrote the then convener of the finance committee, giving him an unpriced statement of the work done. An offer of 100 guineas and petty expenses for his services in connection with the Bill was refused. He had meetings and correspondence with the treasurer of police and conveners of finance and improvement committees on the subject, and the late Sir Thomas Thornton from the first and all through Mr. Mackison's employment informed him that he would be paid for all work done by him for the town outside his statutory duties. In this particular Bill, while the Corporation offered him a honorarium of 100 guineas, Sir Thomas Thornton told him at the time and on several occasions afterwards that 1,000*l.* would not be too much for the pursuer's services.

Details are given regarding the work he performed in the construction of a line of tramways from the post-office to Dalhousie Terrace, which cost 13,128*l.* and was let to a private company, and for which he received 50*l.* as fees, but which he declined at the time to accept as in full payment; the Dundee Street Tramways Turnpike Roads and Police Bill, 1877-8, in connection with which he states that the Corporation, admitting their liability, requested him to make up a statement of his fees, and this he did, the statement submitted being annexed to a minute dated December 6, 1881; the Dundee Police and Improvement Consolidation Bill, 1881-2; proposals for Rope Tramways Bills from 1883 to 1890; the Dundee Street Tramways, Recreation Grounds, Police and Improvement Bill, 1886-7; the Dundee Boundaries Extension, Police Improvement and Tramways Bill, 1891-2; the Dundee Corporation Bill, 1896-7; the Dundee Corporation Tramways Bill, 1898-9; the Dundee Gas, Street Improvement and Tramways Bill, 1898-9; proposal for a cable tramway system for Constitution Road, 1898-9; and the Dundee Corporation Order, 1900-1. He not only acted as parliamentary engineer for the Bills and proposed Bills and schemes before mentioned, doing all the work usual and incident to such employment, but on the instructions of the Corporation he carried out the whole of the works required in connection with the reconstruction and improvement of the town, the construction of tramways and Esplanade extension works, and also a large number of other extensive and important engineering and architectural works, such as the erection of public markets and slaughter-houses, in reference to which it was, to begin with, contemplated advertising for competitive plans, the laying-out of Balgay Hill accesses and carriage drives, the erection of epidemic hospitals, the reconstruction of and additions to the gasworks, the erection of central and district baths, washhouses, police stations and dwelling-houses; sanitary offices, fire stations and dwelling-houses, police stables and dwelling-houses, and other works.

The whole of these works were entirely outside his duties as surveyor of police and sanitary inspector, and had he not undertaken it the town would have had to employ outside engineers and architects on the usual terms. Before Mr. Mackison was employed to perform this parliamentary work and to act as engineer and architect in other capacities it was the practice, it is pointed out, to employ outside engineers and architects. The work was, however, undertaken by Mr. Mackison, who was only earning a small salary as surveyor of police on the footing and agreement with the defenders that he was to be remunerated therefor by the defenders at the usual rates and charges, allowance

being made for office charges and expenses. The work entailed great labour, and in order that he might be able to overtake it, and at the same time give due attention to his statutory duties, he had to work almost constantly late and early and on holidays. His employment as parliamentary engineer and otherwise, as before stated, was continued without break to the present date, and this in full knowledge that he was charging fees for the work as being outside his duties as surveyor of police and sanitary inspector. Accompanying the summons was a statement giving details of the work for which Mr. Mackison charges, priced according to the recognised fees allowed to architects and engineers, and which totals 49,601*l.*, but, as already stated, the sum sued for is 15,000*l.*

Lord Provost Longair moved that appearances should be lodged, agents and counsel employed, and the action defended. Mr. J. M. Soutar seconded, and said there was no other course open to them except to defend. Mr. A. Speed suggested that an effort should be made to compromise the matter and avoid the expenditure of the rate-payers' money on litigation. Mr. G. Stevenson took the same view, but Mr. Soutar characterised such a proposal as ridiculous. Ultimately it was agreed without a division to approve of the Lord Provost's proposal.

The question of terminating Mr. Mackison's engagement as sanitary inspector, which office he held in conjunction with that of burgh engineer, at a salary, he contends, of 100*l.* per annum, was referred to at a meeting of the public health committee.

The Clerk reported that the convener and himself had interviewed the Local Government Board officials on the subject, and that they were not prepared to interfere with the local authority. Consideration of the matter was deferred.

OWEN JONES PRIZES.

THIS competition was instituted in 1878 by the Council of the Society of Arts, as trustees of the sum of 400*l.* presented to them by the committee of the Owen Jones Memorial being the balance of subscriptions to that fund upon condition of their expending the interest thereof in prizes to "students of the schools of art who, in annual competition, produce the best designs for household furniture, carpets, wall-papers and hangings, damask, chintzes, &c., regulated by the principles laid down by Owen Jones." The prizes are awarded on the results of the annual competition of the Board of Education, South Kensington. Six prizes were offered for competition in the present year, each prize consisting of a bound copy of Owen Jones's "Principles of Design," and a bronze medal. The following is a list of the successful candidates:—Percy Bignall, School of Art and Design, Nottingham: design for a lace curtain; Mabel Eckersley, School of Art, Carlisle: design for tiles; John W. Massey, Technical School, Glossop: design for cotton prints; Stanley B. Potter, School of Art, Macclesfield: design for a woven silk hanging; John T. Shaw, School of Art, Carlisle: design for a stencilled hanging; Charles Walker, Literary and Scientific Institute, Coalbrookdale: design for tiles. The next award will be made in 1907, when six prizes will be offered for competition.



Fireproof Materials.

SIR,—Will you kindly announce in your paper that Messrs. Dixon & Heydorn, of 20 and 21 St. Dunstan's Hill, E.C., would be pleased to receive catalogues of fireproof building materials.

Thanking you in anticipation, we are, sir, yours faithfully,
DIXON & HEYDORN.

Waring & Galloway, Ltd.

SIR,—The attention of my directors has been drawn to certain malicious and unfounded attacks which have been made upon the financial position of this company. I am therefore instructed to state to those who are interested in the company that its funds are not merely ample to meet

its liabilities, but that its financial resources exceed its requirements many times over, and there is no justification whatever for the libellous statements that have been made. The volume of trade in the new premises is eminently satisfactory and far surpasses my directors' expectations.

As you have probably seen from the newspapers, proceedings have already been commenced against the proprietors and City editor of one of the London morning newspapers for libel.

My directors trust that this statement will have the effect of reassuring the debenture and shareholders as to the true position of the company.—I am, yours faithfully,

JOSEPH RITSON, Secretary.

164-180 Oxford Street, London, W. :

September 17, 1906.

GENERAL.

Mr. William B. Bryan, chief engineer to the Metropolitan Water Board, has been elected president of the Junior Institution of Engineers, in succession to Mr. Dugald Clerk.

The Joint Sub-Committee appointed by the roads and bridges and standing joint committees of the Glamorgan County Council to consider what alterations should be made in the duties and salary of the office of county surveyor reported to the last meeting of the local government committee. The committee recommended that architectural work performed by the late county surveyor be separated from the work of the roads and bridges, and the new county surveyor's duties be confined to work under the direction of the roads and bridges committee. The salary of the new county surveyor was recommended to be 600*l.* instead of 850*l.* paid to his predecessor. The suggestions were adopted, as was also a recommendation that Mr. Phillip, the deputy county surveyor, should be appointed county surveyor.

At a Meeting held recently at Middlesbrough it was decided to form a guild of lithographers, bookbinders, artists and kindred arts and crafts, with the object of improving the standard of work done, and combining the interests of both master and workman.

At the Meeting last week of the Sheffield Town Council a query in regard to the payment of 500*l.* to Mr. E. W. Mountford, professional charges in connection with the proposed alterations and additions to the town hall, was put by one of the councillors, who wanted to know whether they were not really paying this sum for nothing, whereas for 350*l.* more they could have the plans. Sir Charles Skelton replied that he was not quite sure that they could have the plans for 350*l.* more, and if they got them he was not certain that they would be of any great use to the Council, as owing to the rearrangement of the departments the enlargement of the town hall would be unnecessary for some time to come. The matter was referred back, however, for consideration.

Two Bronze Groups, each weighing two tons, representing "Industries" and "Education," have just been added to the Queen Victoria Memorial statue at St. George's Crescent, Liverpool, which is to be unveiled by the Princess Louise on the 27th inst. The central figure of the "Education" group is a likeness of Sir Oliver Lodge, formerly of Liverpool University, and now Principal of Birmingham University.

A Public Meeting will be held in the town hall, Ayr, on Tuesday next, in furtherance of the efforts being made for the preservation of the Auld Brig of Ayr, at which an address will be delivered by Lord Rosebery, K.G., K.T.

An Exhibition of a collection of works by Mr. W. Holman Hunt, O.M., D.C.L., is being organised by Messrs. Ernest Brown & Phillips with the co-operation of the artist, and it will be opened at the Leicester Galleries in October. The majority of the works, which have not been seen for over twenty years, are owned by various municipal bodies and private collectors.

The Department of Prints and Drawings in the British Museum has been enriched with a number of sketches by the late Mr. G. F. Watts, R.A. Many of the sketches are studies for some of the master's most important pictures, and from that point of view are of interest to all students and admirers of Mr. Watts's work. The collection is a gift to the nation from his widow.

The School of Art Wood-carving, South Kensington, which now occupies rooms on the top floor of the new building of the Royal School of Art Needlework in Exhibition Road, has been reopened after the usual summer vacation, and we are requested to state that some of the free studentships maintained by means of funds granted to the school by the London County Council are vacant. The day classes of the school are held from 10 to 1 and 2 to 5 on five days of the week, and from 10 to 1 on Saturdays. The evening class meets on three evenings a week and on Saturday afternoons. Forms of application for the free studentships and any further particulars relating to the school may be obtained from the manager. Students connected with the wood-carving trade and professional teachers are admitted to the school at one-half the usual fees but no reduction can be made on the special fees.

A Party of London antiquaries visited the parish church of West Thurrock, Essex, on Saturday, and inspected some interesting discoveries which have been made there recently. The foundations of a circular tower of Saxon date were disclosed under the present square tower. It is 93 feet in circumference. A coffin which had been unearthed beside the stone wall, 6 feet 10 inches long, containing a skeleton, was also viewed, and it appeared that other stone coffins had been broken up and used to repair the masonry of the church.

The Royal Dublin Fusiliers' memorial committee have agreed:—"That the tender of Messrs. Lavery for the erection in Irish granite of a memorial arch at the Grafton Street entrance to St. Stephen's Green Park be accepted, and that the work be proceeded with forthwith, in accordance with the plans and specification approved by the Board of Public Works."

The Stirling Town Council on Monday considered a letter from Mr. Oldrieve, architect to H.M. Office of Works, suggesting that the Council should hand over Mars Work to the Board of Works, to be kept up under the Ancient Monuments Protection Acts, 1882 and 1901. The matter was remitted to the Provost's committee, the Provost observing that the transfer would be a considerable relief, and certainly a guarantee that in all time coming this ancient building would be kept in a satisfactory way.

Although the architect commissioned by the Office of Works to inspect Carnarvon Castle and to draw out specifications of necessary repairs has not yet presented his report, there is reason to believe, says the *Liverpool Courier*, that the Government do not contemplate an expenditure of more than about 3,000*l.* at present. Whatever money is voted will be spent upon repairs pure and simple and not upon any scheme of restoration. Modest as the sum mentioned may appear, it is exactly six times as much as the estimated value placed upon the whole building at one time in its history. Towards probably the close of the eighteenth century the Government of the day called upon a local architect to value the castle for some purpose or other, and he priced it at 500*l.*, which was almost as ludicrous as the proposal of the Corporation at a much later period to white-wash the castle walls.

The Thakeham Rural District Council, Sussex, have agreed to the following resolution:—"That the Thakeham Rural District Council are not prepared to sanction any scheme for the maining or dismaining of roads in their district of West Sussex that does not embody the maining of the old Roman road (commonly known as Stane Street), which runs in a direct line north and south through the county, and which carries an enormous amount of motor and other traffic between London and the South Coast."

The Mozambique Company announce that granite of excellent quality has been found near Beira, and is being quarried and used by the company.

The New Town Hall, which has been in course of erection at Sutton Coldfield during the past two and a half years, was opened on Wednesday. The building is the third hall the town has had. The buildings have been designed in the Georgian style, to harmonise with the existing buildings in the town, the materials used being red bricks and Monk's Park stone, with green slate roofs. The architect is Mr. Arthur R. Mayston, A.R.I.B.A., Great James Street, London, W.C. The total cost is between 11,500*l.* and 12,000*l.*

The Restoration of Holyrood Palace, Edinburgh, is approaching completion, and several alterations have been made. Queen Mary's audience chamber has been transformed by the removal of the partition.

The Architect.

THE WEEK.

THE retirement of Mr. R. PHENÉ SPIERS from the master's office in the architectural school of the Royal Academy is an event in the history of that institution. He was the first holder of the office, and as such had the principal part in the organisation of the architectural school. It is doubtful whether any one of the masters in the other schools has held office for so long a period. It would be difficult to estimate his success. The address which was presented last year in connection with the SPIERS testimonial acknowledged the help which the master had given, his kindness, constant sympathy and interest in the students' exercises and in their subsequent work. It was not to be expected that the Academy school for architecture could rival the provisions for teaching the art available in the French and other foreign schools. The Academy was from the first almost monopolised by painters; then came sculptors, and architecture may be said to have had to shift for itself. That with so many restrictions Mr. SPIERS was able to inspire the students with high aims and to encourage them to strenuous efforts tells much for his ability as a teacher. The school may hereafter have a wider scope, but it is doubtful whether any teacher will be better adapted than Mr. SPIERS for the position of master.

AN Act was passed in the reign of HENRY VIII. by which four justices were to determine the amount to be paid for the repairs of bridges and the highways within 300 feet. If there was any doubt about the precinct that was liable the work was to be done by the county, riding or corporation. If there were two precincts the inhabitants were to repair their respective parts. In the parish of Mattersey, in the county of Nottingham, there is a dispute concerning the reparation of the bridge, which it would be an advantage if four justices, as in the time of HENRY VIII., would determine. The bridge is supposed to have been in existence in 1610. An award dated 1773 declares that the bridge should be kept in repair and widened at the cost of certain proprietors in the parish and their successors. Whether any repairs were then undertaken is not known, but it is certain that the bridge was not made any wider, and it is believed that any repairs to the structure and roadway have always been carried out by the highway authority for the time being. The bridge is on a district road, and until 1903 was under the charge of the Retford Rural District Council. The District Council then informed the County Council that they would not continue to keep in repair the bridge or roadway. Their act was the result of a decision of Mr. Justice BUCKLEY, that where a bridge was erected before 1803 the liability to repair it (which included the roadway) rests with the county, unless it can be shown that others are bound to repair it. The County Council repudiated all liability. According to the award of 1773 the obligation rests on the parish of Mattersey. But that seems inequitable, because the bridge is partly in the parish of Everton. As the bridge is the only means of crossing the river Idle between Retford and Bawtry, the present deadlock not only causes inconvenience, but may lead to danger. As a way out of the difficulty it is proposed to raise funds by subscription in the district to enable the repairs of the bridge and roadway to be carried out. Afterwards the County Council might be induced to take over both. There are not many old bridges surviving in England, and it is to be regretted that the responsibility for them should be so uncertain.

THE late M. FALGUIÈRE at his own cost modelled a large group of the French Republic, standing in a chariot drawn by several horses, as an experiment to

determine whether a similar work would be adapted for the completion of the Arc de l'Etoile. Parisians were not satisfied, and it had to be removed without bringing any commission to the sculptor. He made another experiment for the glorification of France. As the Parthenon used to contain a great statue of ATHENÉ, M. FALGUIÈRE modelled a colossal figure representing the Revolution, which was to extend from the floor of the Panthéon to the springing of the dome. The Government were not sufficiently courageous to order so costly a work. It was therefore removed to the Dépôt des Marbres, which is the refuge for many ambitious attempts. The workmen in some of the ateliers which are lent to sculptors turned the statue into a rabbit warren. But it brought the men only a scanty supply of game, for hordes of wild cats disputed their rights. So much inconvenience was caused by the rabbits and cats, orders were lately given for the destruction of the model. Then it was found that the interior was a cemetery for the two varieties of quadrupeds.

THE announcement that the tower of Saint-Jacques la Boucherie stands in need of reparation is sure to cause some commotion in Paris. As every visitor to the city is aware, it stands within a public garden at one end of the Rue de Rivoli. It is only a relic of the church and was constructed in 1522 at the expense of NICOLAS FLAMEL, a scholar who on account of his wealth was reputed to be an alchemist. In the early days of the Revolution the church was seized as national property, but the tower was allowed to remain. It was, however, utilised by some private people, and the first floor was used as a shot factory. The Romantic movement and VICTOR HUGO's "Notre-Dame" revived the interest in Gothic architecture. The Municipal Council of Paris, responding to a general desire, purchased all rights of proprietorship in the tower and site of the church. It is needless to say that it was restored and that new sculpture was introduced. A statue of PASCAL was placed in the centre of the lower storey. There was some reason for the selection. PASCAL had used the tower for experiments which he made in order to ascertain the weight of the atmosphere. The tower has become since so familiar a landmark that few people care to consider it was ever attached to a building. It is not only one of the most beautiful structures in Paris, but it appears to be absolutely complete, and may be taken as a perfect example of adaptation.

AN international exhibition will be held in Venice from April 22 to October 31, 1907. Invitations will be sent to distinguished artists, but no work which has been already exhibited in Italy will be accepted. The work of artists not personally invited will be submitted to the decision of a jury of admission composed of five members. Except in the cases of collections of certain celebrated artists, either living or deceased, and in other special circumstances, no artist will be allowed to send more than two exhibits of the same class. Gold medals will be awarded. Intending exhibitors must give notice in a duplicate form not later than January 1, 1907. Applications for forms and all subsequent communications must be made to the following address:—Segretario Esposizione Artistica, Municipio, Venice, Italy. The exhibits must reach the exhibition building not later than March 25. Special facilities will be granted to foreign artists. Similar exhibitions have proved a great success, and have been very useful in the promotion of all branches of art. Great credit is due to the municipality of Venice for carrying on every two years so difficult an enterprise, which, however, has obtained approval and praise from all artistic centres in the world. With a view to improving the artistic taste of the public in their everyday life the decoration and fitting-up of the exhibition will be undertaken by selected house decorators. The decoration will harmonise with the works of art exhibited in the rooms.

ABERDEEN UNIVERSITY.*

AT a time like the present, when the connection between education and national welfare is more recognised than formerly, it is satisfactory that the KING and QUEEN were enabled to inaugurate yesterday important additions to the University of Aberdeen. That university may not appear ancient when compared with Oxford and some of the Italian institutions, but it has at least an existence of four centuries, which, when all the circumstances of its position are taken into account, is remarkable. In fact, it might be said that Aberdeen was unique in possessing a pair of universities. King's College, which was founded by Bishop ELPHINSTONE in 1495, long exercised the privileges of a university. A century afterwards, during the reign of JAMES VI., Marischal College was founded by the fifth earl marischal. It was therefore a post-Reformation institution, and much of the property which once belonged to the Greyfriars was made over to it. Not until 1860 were the two universities combined.

Marischal College possesses an interest far beyond the boundaries of Scotland. Romance has thrown a glamour over it. Sir WALTER SCOTT during a dangerous illness created the Ritt-master DUGALD DALGETTY of Drumthwacket, who fought under GUSTAVUS ADOLPHUS and many other leaders of that time, and was as proud of having been a student at the Marischal College of Aberdeen as of any of the battles in which he took a part. His name is likely to live as long as that of any of the learned professors from whom he derived his skill in ratiocination. To many it may seem strange that a warrior or *condottiere* who changed sides as occasion offered should have been a product of a seat of learning. But SCOTT, as usual, knew what he was about in describing the shrewd hero. In other universities there were rows between the students and the outside inhabitants. No doubt they served the same function as rowing and cricket and gymnastics in modern times for strengthening legs and arms. But in Aberdeen education had to be carried out under more serious difficulties. The majority of the students were likely to be poor and could adopt the motto which SYDNEY SMITH proposed to have printed on the title-pages of the *Edinburgh Review*, "Tenui musam meditamur avena;" but, poor or rich, there was always a liability to meet an invasion by the wild Highland clans on one side and of English intruders on the other. Aberdeen, no doubt, endeavoured to protect itself, but from the circumstance that it was the centre of education it was supposed to be wealthy, and was therefore tempting to northern as well as southern enemies. It was not unlikely that men of the character of DUGALD DALGETTY would at an early age learn something of the delight of battle, and would pass from the classrooms to foreign camps, where there was more demand for courage than for book-learn. Indeed, the old warrior said he preserved a very distinct idea of Highland tactics in his student days.

The Ritt-master, as we know, was not altogether an enthusiast for reformed or orthodox ideas. He was quite willing to serve the Royalist party or the party of the Scottish Convention of Estates. That might be ascribed to old associations. Although Marischal College, as we have said, came into existence after the Reformation, yet Episcopalians and others whose sympathies were with the old system were allowed to hold office. It was difficult to steer the university through the troubles which were everywhere in Scotland for a long period, but there were skilful men in the university and through their tact its position remained secure.

The picture which BOSWELL gives of the professors when JOHNSON visited Aberdeen in vacation time shows an established condition which might be compared with that of Oxford or Cambridge. The English writer was treated with extreme courtesy. BOSWELL, who loved

opportunities for recording JOHNSON's power in disputing, tried to get up arguments on special subjects. He imagined, probably, that in such a place Scotch logic would be forthcoming in its most emphatic form. But the professors were aware of their English visitor's peculiarities and let him have his own way; indeed, JOHNSON had to confess that too much was done to entertain him, his only regret being that the Aberdonians had not started a single mawkin (or hare) for him to pursue. A glimpse of the kind is more valuable than a disquisition about the state of university government in Aberdeen. It becomes evident that the professors were gentlemen as well as scholars and were able to set an excellent example to the youths they lectured.

There are two theories concerning a university education which we may call the conservative and the reforming. According to one theory the system which has come down to us through several centuries and has been tested by civilising many varieties of men is no less adapted to the present time than to the future. On the other side it is said that the world advances, changes or develops irrespective of educational systems, and that universities should be altered to suit the existing state of humanity. The Scottish universities between forty and fifty years ago were made the subject of Royal Commissions, and a great many modifications of old principles had to be adopted. We may even suppose that the desire to make the best use of everything compelled even the most conservative of dons to accept the new experiments. One was the unification of King's College and Marischal College and a division of duties between them. More importance was given to science. Then, of course, it was found that ordinary classrooms and oral lectures like those which had been delivered from the foundations of the colleges would not suffice. In the old days the professors formed the university. They could lecture in the open air, in houses, in the seclusion of forests or in academic groves if they were forthcoming. Science not only teaches, but demands space for experiments and for machinery, museums, and in various ways commodious buildings become a necessity. The men whose names were associated with the Aberdeen University prior to 1858 were followers of literature, theologians, historians, preachers, authors, but scientific men could not well be trained in the old-fashioned rooms in which DUGALD DALGETTY studied the humanities.

Fortunately money was soon forthcoming. The Mitchell Hall and Tower will recall the memory of Messrs. MITCHELL, of Newcastle-on-Tyne (one of them was the painter of the noble picture of *Hypatia*, which gained so much admiration in one of the exhibitions of the Grosvenor Gallery), who expended some 40,000*l.* on the work. Lord STRATHCONA gave 25,000*l.* The Government granted 40,000*l.*, and altogether over 200,000*l.* was obtained.

The new buildings are evidence that the money was wisely expended. Aberdeen is known as the Granite City, and the College frontage to Broad Street of 400 feet in a very light grey stone from Kenmay is a worthy addition to the architecture which will support the title. Opinions may differ about the suitability of the style. When Marischal College was founded Renaissance was ascendant, but sentiment counts for much, and Aberdeen is supposed to have been a royal burgh as far back as 1179. The character of the granite was also to be considered, and it will be allowed that the style adopted expresses some of its qualities. The series of buttresses has a peculiarly effective look, and with their pinnacles they are suggestive of a militant building which will offer stern defence against ignorance and prejudice. FERGUSSON, although a Scotsman, considered that granite was not suited to express Gothic grace. The new College buildings are a refutation of his theory. The entrance gateway suggests by its heraldic embellishments the history

* See Illustrations.

of the university. The Mitchell Tower is 230 feet in height, and the entrance to it leads also to the picture gallery and to the assembly hall. The whole of the architectural work has been designed by Mr. A. MARSHALL MACKENZIE, A.R.S.A. The names of the contractors merit to be recorded. They were as follows:—Mason—JOHN MORGAN; carpenter—D. MAC-ANDREW & Co.; slater—ALEX. ADAM & Co.; plasterer—J. SCOTT & SON; plumber—J. BLAICKIE & SON; painter—J. WHYTE; ironwork—JAS. ABERNETHY & Co.; electric lighting—A. B. ROBERTSON & SON; electric lift—ARCHIBALD SMITH & STEVENS, London; warming and ventilation—SHIRRAS, LAING & Co. The fittings and furniture were produced by J. & A. OGILVIE, CLARK & DONALDSON, JAMES ALLAN & Co., BROWN & THOMSON, J. R. WISHART, HENDRY & KEITH and the Art Metal Construction Company, Jamestown, New York. Mr. GEORGE REID was clerk of works and Mr. A. DAWSON, surveyor.

The ceremonies connected with the opening began on Tuesday, when there was service in the chapel of King's College, a procession from Marischal College to the Strathcona Hall, a reception, a banquet and a torchlight procession. On Wednesday honorary degrees were conferred in the Mitchell Hall, there were sports in the recreation-ground, a students' ball and a reception in the new art gallery of the city. Yesterday His MAJESTY THE KING inaugurated the new buildings and Lord STRATHCONA, as chancellor of the University, gave a banquet. To-day there will be further meetings.

The good wishes for the success of the university in its buildings, whether old or new, will not be confined to Scotsmen nor to Great Britain.

NEW BOOKS.

IT is only reasonable that books for professional readers should be issued like those of an entertaining class at the approach of winter. Every business has its fictions, and publishers still imagine that the majority of people find compensation for winter and its long evenings in reading. There is no doubt the belief is general, and it is quite allowable to take advantage of it. The following short notices will suggest the character of the first batch we have received. A second edition has been issued by Mr. B. T. BATSFORD of Mr. RICHARD GLAZIER'S "Manual of Historic Ornament." It is an admirable abstract of the history of applied forms. The 600 illustrations are typical of styles and periods. They are not only selected with judgment but they are finely drawn, and there is no scamping of the elements of composition. None of the intricacies of Byzantine, Scandinavian or Celtic ornament are evaded, and this thoroughness is by itself a lesson for the student. The descriptions are condensed, but every sentence may be taken as the expression of a fact which is worth remembrance. A student who has mastered the book will find himself in a position to commence the creation of ornament on his own account. The manner in which the book is produced aids its purpose.

When it is said that the 200 pages of Mr. WALTER DEL MAR'S "Romantic East: Burma, Assam and Kashmir" (London: A. & C. BLACK) are illustrated by seventy-three full-page photographs of foreign scenes, it will be evident that his book is of a pleasurable kind. The author has an eye for the picturesque, and he gives views of temples, palaces, landscapes and boats which are almost enough to tempt a painter to seek out Burma, Assam and the most beautiful and fertile valley of Kashmir. Unlike many other modern travellers, Mr. DEL MAR does not pose as a politician. He found enjoyment in his travels, and by pen and camera he does his best to make a reader be a sharer with himself. He has the sympathy with natives which should be a quality with all sensible travellers, and he has contrived to give a better account of that part of Asia than is to be found in official publications.

The subject of water supply is receiving much atten-

tion at the present time, but not more than it deserves. It is, however, generally considered as referring to supplies for cities and towns. The purpose of Mr. W. H. BOOTH'S treatise on "Water Softening and Treatment" (ARCHIBALD CONSTABLE & Co., LTD.) is more limited, for it applies to the quality of water for steam boilers and manufacturing purposes. In most places householders are aware of the inconvenience which arises from the deposit of chalk and other materials in the domestic boiler. The filtering in waterworks is insufficient to overcome a danger for which chemical processes more or less elaborate must be employed. The inconvenience assumes a different character when it is found in connection with machinery, and a great variety of apparatus have been invented in order to remove or otherwise overcome impurities which are both dangerous and costly. Mr. BOOTH has investigated the subject thoroughly, and he has been able to obtain detailed drawings of the apparatus manufactured by Messrs. DOULTON, MATHER & PLATT, the Pulsometer Company and many others. His book is therefore one which should be possessed by all who employ steam or water-power in any form.

Another of Messrs. CONSTABLE'S books is on "The Chemistry of Paints and Paint Vehicles," by Mr. CLARE H. HALL. It is an American work, and, as the author says, has been written [from the standpoint of a chemist employed in the manufacture of paints and colours. Those who use colours may find an occasional suggestion which can be turned to account. But it is evident that an expert alone will be able to detect adulteration. The chapters relate to (1) The Determination of the Elementary Constitution of Paints; (2) Raw Materials, Properties, Tests and Methods of Analysis; (3) The Analysis of Dry Colours, Pastes and Liquid Paints; (4) The Matching of Samples; and (5) Paint Vehicles.

The "Handbook on Reinforced Concrete," by Mr. F. D. WARREN, of the Massachusetts Institute of Technology (London: CROSBY LOCKWOOD & Co.), is an addition to the numerous books on a subject which might almost be said to be monopolising the attention of engineering investigators. The author aims at supplying the requirements of designers who have not much time to spend in working out calculations of strength and dimensions. Under each section many tables and diagrams are introduced, and by a little attentive consideration both can be turned to account in everyday practice. Mathematics are only employed to a very limited extent.

"Fowler's Architects' and Builders' Handbook" (Manchester: The Scientific Publishing Company) is a very cheap and comprehensive collection of tables, rules and data. The index alone fills fifteen pages, and from that fact the comprehensiveness of the handbook can be judged. Diagrams are also given, and the book is well adapted to be a *vade mecum*.

A small history of English architecture recently appeared from the pen of Mr. T. D. ATKINSON, architect. He has now produced a companion to it in "A Glossary of Terms used in English Architecture" (London: METHUEN & Co.). It may seem an easy task to write such a book, especially if the definitions in other glossaries are employed. Mr. ATKINSON endeavours to formulate his own explanations, and he has so far succeeded that his pages can be read through as well as referred to when occasion demands. It is well printed, and there are a large number of illustrations which appear to have been especially prepared. We hope that by its aid interest in architecture will be promoted.

PIERRE-PAUL PUGET.

A FEW days ago Marseilles was rejoicing over the inauguration of a statue of the famous sculptor, PIERRE-PAUL PUGET, whom it claims as a son. It is never very difficult to create excitement in the southern seaport, and to make much ado about nothing. But in

this case there was good reason, for PUGET was a man of whom France as well as Marseilles should be proud. The Ministers who attended and who delivered speeches were only expressing the national opinion in their eulogies.

PUGET was born at Marseilles in 1622, or, as M. LAGRANGE asserts, at Séon, near the city. In those days artists did not confine themselves to one branch of art, and his father was described as an architect as well as a sculptor, but was not successful in gaining a reputation in either art. We are afraid it cannot be said he was an affectionate father, for he got rid of his son when the boy was fourteen and apprenticed him to a sculptor, who seems to have been employed mainly in the production of figure-heads for ships, and who also appears to have designed vessels. Young PUGET soon distinguished himself. He was, however, restless, and having heard some of his companions talk about the great artists of Italy, he resolved to go there. In other words, he ran away from his master, and in his fifteenth year he found himself penniless in Florence. He obtained employment with a wood-carver and again displayed his ability. But he was tired of Florence in about a year and then went to Rome. There he found a kindred spirit in BERETTINI, who is better known as PIETRO DA CORTONA. He was one of the prominent men in a period of decadence in Italian art. He was not without ability, but all his efforts were directed to produce startling effects in colour and composition. He was about the last man who was fitted to instruct a young sculptor. But PUGET at the time had no settled purpose, and his highest ambition was to imitate the master as a painter. From the effect of BERETTINI'S influence PUGET was never able to emancipate himself.

After three years PUGET returned to Marseilles, and as he could paint as well as carve and design it was not difficult for him to find employment. The Duc de BREZÉ was then Grand Admiral of France. He heard of PUGET and summoned him to Toulon, where he gave him a commission to prepare a model of the most beautiful ship it was in his power to create. That was the origin of the floating palace the *Monarque*, which was once as famous as the *Livadia* of later time.

Whether PUGET produced also works of sculpture is doubtful. His occupations in his own country could not overcome his longing to be again in Rome. Accordingly he went back to that city, and as his ideas were more matured, he was able to derive greater benefit from the works of art which were before his eyes. In 1653 he left Italy and set up in his native city as a painter. The price he charged for large pictures was about four francs per square foot. He fell ill and a wise physician counselled him to follow sculpture, as it would allow of more exercise of his muscles. Accordingly he gave up painting and took to sculpture. He also professed to have competence to practise as an architect.

The first works he produced caused surprise by their extraordinary vigour. They are the pair of terms or caryatides supporting the balcony of the Hôtel de Ville in Toulon. He could not believe that men or slaves in such a position would have the calmness and indifference of the antique examples. He therefore represented them as if they were as conscious of the enormous weight they sustained as any of the porters on the quays. Louis XIV. quickly heard about them, and he at once commanded that they should be transported to Versailles. As they were made up of several pieces of marble, removal was found to be dangerous, and they are still left to ornament Toulon. Near the Hôtel de Ville is a house which it is said PUGET designed. Afterwards he produced a statue of *Hercules* and a group representing the *Earth Crowning Janus* for a château in Normandy. They were seen by LE PAUTRE, the artist, and he spoke of them to FOUQUET, the superintendent of finances, who at the time seemed to be resolved to surpass Louis XIV. as a patron of

art, and who succeeded in exciting the monarch's envy, although it brought the official to ruin.

In those days the patronage of FOUQUET was a guarantee of good fortune. Having the command of almost unlimited funds, he was enabled to reward services in a grand manner. He first ordered PUGET to proceed to Genoa in order to purchase beautiful marbles. While waiting to have them embarked the sculptor produced the figure now in the Louvre and known as the *Gallie Hercules*. It is far more suggestive of the style of PIETRO DA CORTONA than the caryatides of Toulon. Before PUGET had followed the marbles to France the news arrived of the disgrace of his patron. He therefore remained in Genoa, where he obtained commissions for large statues for churches, some of which he tinted. He also executed a great bas-relief of the *Assumption* for the Duke of MANTUA. The latter was seen by LEBRUN, the favourite painter of Louis XIV., who spoke of it to COLBERT, and the consequence was that PUGET was recalled to France by the king, and was appointed sculptor and director of the works relating to the ornamentation of vessels, or, in other words, became the chief figure-head carver for the royal ships. A pension of 1,200 crowns was awarded to him.

He obtained from COLBERT three of FOUQUET'S blocks of marble. One of them he used for the statue of *Milo of Cretona*, which many consider to be PUGET'S principal work, and some French critics have claimed that, as an expression of pain, it can be compared with *The Laocoon*. He was not able to discover a model who was sufficiently courageous to allow his foot to be compressed in order to impart reality to the statue. PUGET was compelled to enact the athlete, and when his foot was sufficiently distorted by pain a cast was taken of it, which was copied in marble. Although the work occupied the sculptor for four years, COLBERT offered to pay the ridiculous sum of only 6,000 livres for it. Some of the artists who enjoyed Court favour were jealous of the success of the *Milo* and afraid PUGET might become a rival. They contrived to have the *Milo* placed in an obscure corner at Versailles, where few could see it. The king, however, insisted on its removal to a more suitable position; it is now in the Louvre. Another block was used for the relief of *Alexander and Diogenes*, which did not please amateurs. It was said of it that it might have been designed by JORDAENS, and that the horses could not have been studied from nature. But with all its faults it was a courageous undertaking. Louis XIV. ordered a group of *Perseus and Andromeda*, which His Majesty naturally considered to be PUGET'S masterpiece, and the courtiers agreed with the royal critic, but the sculptor was not satisfied with it.

PUGET could not escape the fate of the majority of artists who sought to win the approval of Louis XIV. The defects of his works were magnified. The sums paid for them did not correspond with their value, and in fact he was treated as if he were a provincial journeyman stonecutter. Worst of all, LEBRUN, the painter, presumed to offer designs for works at Versailles to PUGET, and assumed the authority and manner of an overseer. The sculptor could not accept royal patronage on those terms, and he fled from Paris to Marseilles. His last work was a bas-relief representing the *Plague of Milan*, which is now in the Musée of Marseilles.

PUGET has been compared with MICHEL ANGELO. He resembled the great Florentine in his power of cutting the marble without the aid of full-sized models or mechanical appliances. PUGET said, "The marble trembles before me." One of his contemporaries said that while a part of his *Milo* was almost completely finished, other parts were not even roughly hewn from the block. PUGET would have approved of M. RODIN'S system of leaving a part of the marble in the state it left the quarry. PUGET'S works are not to be judged by Greek standards, and it must be allowed that his vigour is sometimes not unlike coarseness. But all must admire the manliness of his life and the spirit in

which in the seventeenth century he declined to bow to courtiers or to officials. He one time broke one of his own statues when the noble who ordered it began to haggle about the price. Perhaps it is on account of his independent spirit as on his ability that the French continue to admire him and have placed his statue in one of the public places of Marseilles, and his bust as pendant to NICHOLAS POUSSIN's at the entrance to the École des Beaux-Arts.

INGRESS HALL.*

INGRESS HALL has a history which dates back as far as 1353, when King Edward III. granted the "Manor of Ingrycce," as it was then called, to the "Prioress and Abbey of Dartford for ever," and it remained in their possession till the suppression of that priory by King Henry VIII., by which means this establishment with their other possessions came into the hands of the Crown.

According to Hasted, a very small time before the Dissolution, viz. September 4 in the thirtieth year of that reign, Jane Fane, prioress, and the Countess of Dartford by their indenture under their conventual seal let "to ferme" for seventeen years to Robert Mariel, of Swanscombe, husbandman, at the yearly rent of 10*l.*, all that their farm called Ingress, with all houses, buildings, lands, woods, pastures, marshes, &c., belonging to it in Swanscombe, late in the tenure of Richard Grove, "fermor of it," and all their cliffs called Downe Cliffs, with liberty to dig and carry off chalk there to the amount of one acre in length and breadth, which lease Martin Mariel, son of Robert, surrendered up to King Edward VI. in his fifth year, and had another granted him of these premises on paying a fine of 10*l.*, to hold for twenty-one years, at the yearly rent of 10*l.* The fee simple of this estate remained in the Crown till Queen Elizabeth in her fifth year granted it to Edward Darbyshire and John Bere, who not long after conveyed it to one Jones, who, in the latter end of James I.'s reign alienated it to Whaley, and he settled it on his kinsman, Mr. Thomas Holloway, who conveyed it to Shires, and he, by Mary his wife, who survived him, left two sons, Edward and Robert Shires, of the Inner Temple, Esqrs., which Mary and her two sons in 1649 conveyed the mansion house, manor and farm called Ingress, and the several lands thereto belonging, chalk cliffs, limekiln, wharf, salt and fresh marsh, to Captain Edward Brent, of Southwark, who by his will in 1676 gave the same to Christian, his wife, for her life, with remainder to Edward Brent, Esq., their son. He conveyed it by way of mortgage to John Smith, of Camberwell. It next passed through several hands until it came into the possession of the Earl of Hyndford, who in 1748 sold it outright to William Ponsonby, second Earl of Bessborough, whose wife and seven children died here of a malignant disease, and he became so disgusted with the place that in 1760 he sold it to Mr. John Calcraft, then M.P. for Rochester, who died in 1788, when it passed into the hands of Mr. John Disney Roebuck, who a few years afterwards conveyed it to Mr. William Havelock, ship-builder, of Sunderland, father of General Sir Henry Havelock, of Indian fame. Sir Henry was not born here (as some have stated), but he spent his early childhood here, until the death of his mother in 1811. When misfortune overtook his father through unsuccessful speculations the latter conceived the idea of converting Ingress into a Royal dockyard, and with this end in view he demolished the ancient mansion; but his naval design was never carried out. In 1820 the estate was bought by Alderman James Harmer. The house was occupied by the unfortunate Queen Caroline before its demolition.

Alderman Harmer was the son of a Spitalfields weaver, and was left an orphan when he was ten years old. He became an attorney in the criminal courts. He was mainly instrumental in the abolition of "blood money" paid to informers, and acquired a practice of about 4,000*l.* per annum. He was the founder and proprietor of the *Weekly Dispatch* newspaper. In 1833 he was elected alderman of Farringdon Without, and sheriff in 1834. He resigned his aldermanic gown on being rejected when next in succession for Lord Mayor. He erected Ingress Hall in 1833 from the stones of Old London Bridge, and for the first time called it "Ingress Abbey," but this is a

misnomer, as it never was an abbey, but was anciently the grange, manor-house or farm attached to Dartford Priory, as already shown. Parker's "Glossary of Architecture" says "granary" is sometimes used for "grange," or *vice versa*, and "most of the religious establishments had farm-houses on their estates." James Harmer was born in 1777 and died in 1853 (aged seventy-six years) at Cricklewood.

A good deal of the old carved woodwork of the former mansion has been reused at Ingress Hall, particularly the hall mantelpiece dated 1668. In the library there is some very beautiful wood carving to the bookcases. In the grounds, which are about 60 acres in extent and well-timbered, are still to be seen traces of the old Grange and farm buildings. An interesting old archway which recently spanned across the avenue leading to Greenhithe has, it is to be regretted, been lately pulled down.

Alderman Harmer died without male issue and left Ingress to his granddaughter, the wife of Mr. Samuel Charles Umfreville, and since his death in 1894 the mansion has been untenanted, and only recently his trustees have disposed of the property to be converted into a cement manufactory. The last resident here, we are informed, was Mr. Holder (of Holder Brothers), shipping merchant.

Eliza Cook, the eminent poetess, used to write verses for the *Weekly Dispatch*. This led to an acquaintanceship, and Alderman Harmer invited her to reside at Ingress. Some trees are still shown in the park under which she used to write poetry. She was born at Southwark in 1818, and was daughter of a London tradesman. She contributed poetical pieces to various magazines from an early age, and issued her "Melaia and other Poems" in 1838, which, along with the issue of volumes in 1864 and 1865, established her reputation as a meritorious verse writer. She conducted *Eliza Cook's Journal* from 1849 to 1854, when ill-health obliged her to relinquish it. In 1864 a pension of 100*l.* per annum was conferred upon her by Government.* She also wrote "Jottings from My Journal," 1860, and "Laconics," 1865. I will conclude with a verse or two from "The World," a poem I learnt when at school, by Eliza Cook:—

Talk who will of the world as a desert of thrall,
There is bloom, there is light on the waste;
Though the chalice of life hath its acid and gall,
There are honeydrops too for the taste.

We murmur and droop should a sorrow cloud stay,
And note all the shades of our lot,
But the rich scintillations that brighten our way
Are basked in, enjoyed and forgot.

Those who look on mortality's ocean aright
Will not mourn o'er each billow that rolls,
But dwell on the glories, the beauties, the might,
As well as the shipwrecks and shoals.

How thankless is he who remembereth alone
All the bitter, the drear and the dark,
Though the raven may scare with woe-boding tone,
Do we ne'er hear the sound of the lark?

The wail of regret, the rude clashing of strife
The soul's harmony often may mar;
But I think we must own in the discords of life
'Tis ourselves that oft waken the jar.

Sir Henry Spelman, in his "History of Fate and Sacrilege," says that when the Prioress of Dartford surrendered the Grange at Ingress she cursed all its future owners, and adds, "all the males have been unfortunate ever since." In Kelly's "Directory" will be found a list of their names.

RICHARD PARKES BONINGTON.

THE position of Richard Parkes Bonington in the history of art is somewhat unique. He is claimed as a representative painter of the French school and also of the English school. There is no doubt that he exercised an influence on French landscape art, and at the same time as Constable, but there was a difference between the two men. Constable had perfected his style in England, and he was appreciated in France because he proved by his works that there were other ways of representing nature besides those followed by the academical artists. Bonington also was a revealer; but what gave most interest to his paintings was that he had gone through the same training as Frenchmen, and had even worked under such a master as the Baron Gros. It is therefore not exact to say Bonington brought

* A paper by Mr. W. F. Potter, architect, read on the occasion of the visit of the Woolwich Antiquarian Society.

* Eliza Cook died at her house in Worple Road, Wimbledon, September 24, 1889.

English methods to bear on French art, for while in England the artist had given no indication of the possession of any special power in art. What is most amazing in Bonington's career is that he was able to display so many indications of power. He had hardly attained his twenty-seventh year when he died. Up to his fifteenth year he had received little instruction. All that he accomplished was therefore the work of a few years, and valuable as are his paintings, if he had lived he must have surpassed them. That was the opinion expressed by Sir Thomas Lawrence, who wrote:—"The last duties have just been paid to the lamented Mr. Bonington. Except in the case of Mr. Harlow, I have never known, in my own time, the early death of talent so promising, and so rapidly and obviously improving. If I may judge from the later direction of his studies, and from remembrance of a morning's conversation, his mind seemed expanding in every way, and ripening into full maturity of taste and elevated judgment, with that generous ambition which makes confinement to lesser departments in the art painfully irksome and annoying."

His early life was not of a kind to promise success unless of the kind which was obtained by George Morland. The grandfather and the father of Richard Parkes Bonington were governors of Nottingham Goal. His father was not suited to the office, for on one occasion he was arrested for riotous and disorderly conduct in the streets, and what was worse he endeavoured to convert the prisoners to his belief in the benefits of a revolution. He was therefore compelled to leave. After resigning his office until his marriage with Miss Parkes he practised as a portrait-painter and also published a few prints in coloured aquatinta. Upon their marriage they set up a ladies' school at Arnold, a village about five miles from Nottingham, where, on October 25, 1801, Richard Parkes Bonington was born. After remaining at Arnold a few years, the family removed to Nottingham and finally settled in St. James's Street, where their school was well supported. Being an only child, young Bonington was regarded with more than ordinary solicitude by his parents. Bonington early displayed a predilection for drawing, but this inclination was never considered in any higher light than such juvenile efforts usually are. The general amusement and occupation of Bonington and a young companion named Samuel Hulse was drawing anything and everything which came before them; but what above all other projects mostly occupied their time and invention was the forming and painting of cardboard theatrical characters, with movable heads and caps. It was then anticipated that Bonington would become an actor, and, like a second Lawrence, his fate was poised betwixt the two pursuits of the drama and painting. What still more tended to strengthen the general belief that the stage would form his future career were the examples he gave of his histrionic powers in conjunction with other juvenile friends at the house of his companion, in a very large apartment which Bonington entirely fitted up himself, having painted all the scenes and played the "acting manager," always to the satisfaction of his "numerous audiences," which generally consisted of as many of his friends as could find room.

The period now, however, approached when the scenes and amusements of youth give place to the more stirring and active movements of life. Through his imprudences, Mr. Bonington forfeited his situation as governor of the county gaol, and by repetition of the like conduct his friends fell off, his school became reduced, so that ultimately he was compelled to leave Nottingham and England, and fly to France, where, by business connected with the lace trade, he supported his family at least until the rising eminence of his son opened another direction to his mind.

It has been said of him that his son's "productions completely confirmed his desire to take every opportunity of leading him to the arts as a profession, and he accordingly continued to direct his attention to the works of the best masters, but above all to nature, the mother, nurse and guide of true genius." Again:—"At the age of fifteen his parents journeyed to Paris, feeling assured that the facilities for study afforded by that capital were much more important than any which could elsewhere be attained." So far indeed from Mr. Bonington's taking "every opportunity of leading him to the arts as a profession," he never considered the subject at all; and the whole training and pupilage of the son was left to his affectionate and accomplished mother. It is true Mr. Bonington practised as a portrait-painter, but it was more in the name than the principle; and even if he had possessed the talent sufficiently for directing his son's abilities, his

inclinations withdrew him always to other scenes and pursuits; for when he ought to have been in attendance on his family and establishment, he was enacting the political mountebank in a waggon in some part or other of the town. It was during one of these performances in the market-place at Nottingham, when a vast assemblage were listening to the "orations" of Mr. Bonington, that young Bonington and his "bosom friend" happened to pass; and young Hulse remarked to his companion, "Look at your father." "Ah!" replied the other with tears in eyes, "this is all I get by it"—at the same time taking a solitary penny bun from his pocket to eat for his dinner, as symbolical of his then lowliness of fortune.

The nature of Bonington was essentially precocious, and though it was not displayed in any of those astonishing efforts of the pencil that characterised the dawning genius of Lawrence, yet the few years in which he was enabled to make himself the "observed of all beholders" showed that his genius was of the highest order. This precocity was further developed in his person and manners. Tall for his age, though only fifteen, his general appearance and manners were manly, and his countenance and stoop of the shoulders indicated great penetration and thoughtfulness.

From his settlement at Paris we must date Bonington's commencement as an artist. His genius, which when at Nottingham was merely exercised on insignificant subjects, now, when surrounded by every incentive that can add fuel to the devouring flame of ambition, and feed the insatiable aspirations of enthusiasm, concentrated its energies to the fulfilment of its high destiny—the glory of the art. It was then that the father felt the full conviction of the genius of his son, and seriously set to work to aid his improvement. The first step was admission into the Louvre—this was quickly obtained. Here his improvement was extremely rapid; and from hence he was entered as a student of the Royal Institute of France, and became a pupil in the atelier of the Baron Gros. But such a circumstance was needless to one of his powers; genius requires but to be shown the first rules to the studying of nature, and rebels if restrained in its exuberance of feeling. Bonington soon provoked the reproaches of Le Baron Gros, because he disdained to follow the dry routine of the academic rules of his master's atelier. However, after Bonington had established his reputation, "M. Gros, who, on what was probably a very frivolous pretext, had shut his atelier against Bonington, eventually did him justice. He recalled him, and in the presence of all his pupils, who were enchanted with the success their comrade had achieved, praised his fine talents, which no one had directed, and begged that he would have the goodness to become one of the ornaments of his school." After quitting the Baron, Bonington continued to draw the living figure at the Institute, and left it only when he felt sufficient confidence that he could proceed without further attendance.

Nature, in Bonington, found an enthusiastic and unalterable devotee; and his sketches and studies of figures and scenery breathed the very elements and air of nature, executed in a style bold in conception, powerful in chiaroscuro, and broad and rich in effect. About the year 1822 he went to "Fair Italy, nursery of the arts," and in his views and studies of Venice he has rivalled the pictorial creations of Canaletto and Guardi.

In Paris, the works of Bonington always met with extensive patronage, whether they were his water-colour or oil-paintings; but to his own countrymen in England he was long unknown. It was not until February 1826 that the generality of Englishmen were aware of the genius they might claim; it was then he exhibited at the British Institution two views on the French coast, which excited much attention and took the critics by surprise. The question of "Who is Bonington?" was echoed from one to another; and one journal set it down that there was no such painter as Bonington, and gravely fathered the pictures on William Collins. When, however, the mistake was discovered, the critic attempted to correct his error by saying, "Can we pay Mr. Bonington a higher compliment?" Assuredly it was a high compliment, though not a very happy one, for, beautiful as the works of Collins undoubtedly are, still his style is very different from Bonington's. But it was no wonder that the two paintings in question should have puzzled the critics, when it is recollected the high style of art in which they were executed. Bonington's work met with that regard and attention which their great excellence demanded. They were so utterly unlike any style of that day, so firm and broad, and exhibited such harmony and breadth and splendid chiaroscuro, such perception of the high principles of art and mechanical skill as have been seldom

found united. His *début* may justly be termed triumphant, and, although his sojourn in the world of art was but brief, yet his short career was brilliant and successful; but, unfortunately, his very prosperity became the insidious destroyer of his existence. Impelled onwards to extraordinary exertions to grapple with the flow of patronage which showered upon him, he exposed himself unguardedly to the great heat of the sun while sketching in the open air, which brought on a brain fever and a subsequent severe illness. He was at Paris when this occurred, which terminated in a rapid consumption; and the anxiety which seized all his friends can scarcely be conceived by those who were not personally conscious of his many endearing qualities, his nobleness and generosity of mind and heart. This insidious disease baffled all human intervention, and left its victim but sufficient strength to travel to London on a desperate attempt to seek relief from St. John Long. On September 23, 1828, at the house, No. 29 Tottenham Street, his mortal career closed in the twenty-seventh year of his age. On September 29 he was buried in a vault at St. James's Church, Pentonville, attended by a numerous assemblage of private friends, Sir Thomas Lawrence and Mr. Howard appearing on the part of the Royal Academy; Mr. Robson and Mr. Pugin as the representatives of the Society of Painters in Water-Colours.

The genius of Bonington was of the highest order of originality and flexibility; of that flexible nature that, while it made the works of others the proximate cause of its own elevation, still could preserve itself free from the taint of mannerism. He never designed anything purely historical, nor would he have succeeded if he had; his eye was too luxuriant, too much imbued with the feeling for colour. His forte was dramatic painting and delineations of actual objects of nature; and we have only to compare his figure compositions with his coast views, to confirm our opinion. His works in the latter style are fine—so entirely original and masterly, and his sketches in water-colours are really and truly "gems of art." The paintings he exhibited at the British Institution in 1826 have already been mentioned, and he was satisfied with the manner in which they were placed. This was not, however, the case with his treatment by the Council of the Royal Academy in 1828, when he sent there two pictures, one of "Henry III. of France," and the other "A View in Venice." In the January following (1829) at the British Institution appeared his last picture, "A Turk Reposing," which was treated with masterly feeling and was exquisitely rich in colour.

We have before slightly alluded to Bonington's studying the various styles of the different masters eminently distinguished for any peculiar mark of excellence, and the still unmannered and original feeling of his own. He founded a style, the great characteristics of which are a fine perception of the beauties of both nature and art, well balanced management of chiaroscuro, a vigorous and masterly handling, united to a vivid and refined imagination and profound knowledge of the high principles of art. Embodying therefore these varied points of excellence, it is not surprising that he should have been the cause of many individuals becoming his imitators.

There can be no doubt that, had Bonington lived, he would have risen to very great eminence and estimation among the patrons of art in this country, as indeed the high reputation in which his works are already considered fully warrant us in saying—accomplished, too, ere he had reached the age of thirty. In Paris his patrons were many, by which means he was enabled to live in good style and mix with the best society of Paris in a house well fitted up with galleries for his works in the Rue St. Lazare. Indeed, such is the high estimation in which the French hold Bonington that they will scarcely allow he was an Englishman and consequently an English painter. When Sir Thomas Lawrence was invested with the Star of the Legion of Honour by Charles X., and Constable and Copley Fielding were awarded gold medals for their respective works then exhibiting at the Louvre, Bonington also received a gold medal for a marine view.

It has been remarked as extraordinary that Bonington should never have sent any works for exhibition to England before 1826, but no doubt the patronage which he received in France, combined with the general interest which he must have felt for the place where he had been nurtured, strongly actuated his feelings on this point. On his death the French testified their grief for his loss, and universally paid a just tribute to his genius.

The personal appearance of Bonington was singular and striking, bespeaking the man of genius most strongly. In

height he was about 5 feet 11 inches; his eyes, dark and penetrating, were overshadowed by brows thick and reflecting, the forehead square and lofty, the nose long and of the Grecian mould, and the mouth evidence of mildness and resolution. The general expression of his countenance was thoughtfulness, approaching to melancholy. His disposition was mild, generous and highly affectionate, and in every point was the exact counterpart of his mother, whom he loved most tenderly. Like most men of great genius his temperament was uneven, at one time all spirit and animation, full of humour and fun; at another melancholy, quiet and scarcely capable of speaking beyond monosyllables.

His water-colour drawings exhibited, perhaps even more than his paintings, the character of his genius, and his drawings on stone, which were published in France, no doubt restored there the true feeling for that species of art which his works altogether were calculated to improve. He effected a great revolution in the French school, and had he survived a few years his works would perhaps have given a higher tone of feeling even to the English.

Bonington tried all styles, except that which is called historical. What he had intended to do was to borrow from the Middle Ages subjects for a series of easel pictures, in which he was desirous of combining and showing the value of the finish of the Dutch, the vigour of the Venetians and the magic of the English. How deeply it is to be regretted that death struck him ere he could put such a plan into execution. He succeeded equally in marine subjects, in architecture, in landscape and in interiors. Whether he disported with the crayon (so despised since Latour, but the credit of which he re-established), painted in oil or water-colours, or handled the lithographic chalk or pen, he did remarkable things. Water-colours had not been much esteemed in France; Bonington revived them and produced that admirable picture, the "Tomb of St. Omer," which may in point of finishing, solidity of tone and force of effect, compete with Granet's finest works. The beautiful "Picturesque Journey," by Taylor, Nodie and Cailleaux, and a separate collection published by the young artist, attest his superiority as a draftsman of romantic ruins. That which ought not to have happened, happened. The "Fragments" into which Bonington had thrown all the originality of his genius, met with but moderate success. The amateurs did not understand those delightful drawings, but the reception which they experienced from the artists consoled Bonington for the bad taste of the public and for the pecuniary loss which he sustained in consequence.

ROMAN REMAINS AT WINCHESTER.

ROMAN remains deep down under the walls of De Lucy's Early English structure at Winchester Cathedral, according to discoveries lately made by Messrs. Thompson's staff, would seem to fully justify the tradition that on this spot the Roman residents and the Romanised Britons had a temple and rich residences. A Temple of Thor was raised on the spot by Cerdic. The relics of Rome already found include fragments of beautiful Samian ware bowls and domestic vessels, a mortarium, a crucible, a bronze stylus, and two or three much corroded bronze coins, besides flanged tiles. These reminders of a long-past civilisation are carefully preserved by the clerk of the works and the foreman.

The largest Samian ware bowl is represented by two large fragments, showing that the decoration consisted of a hunting scene delineated with great spirit, the decoration of the upper portion, or rim, being a pretty tongue-like ornament. The smaller bowl has a similar ornament, but its chief decoration cannot be ascertained. After its long burial this lustrous ware remains unhurt, and one laments that we have only fragments of vases broken by careless servitors, who threw them away. Amongst the coarser fictilian fragments were part of a large mortarium, of a large vase and some cooking utensils, memorials of the shortcomings of domestics some 1,600 or more years ago.

It is interesting to recall that tessellated pavements have been found on the Close, near the cathedral, and also just outside its lofty and massive wall or boundary. During the works at St. Thomas's Church last week several fragments of common Roman fictilia were found, the site of the church when built on some sixty years ago yielding relics of Romano-British Wintanceastre.

NOTES AND COMMENTS.

IN 1606 JAMES I. granted a Patent to what was called the London Company of South Virginia. Three ships sailed containing in all 105 men. They arrived at Virginia in 1607, and on May 13 fixed on a position for a settlement, which they called James Town in honour of His MAJESTY. Before the year was ended half the number of men had died. The remainder were discontented, and if it were not for Captain JOHN SMITH the whole of the emigrants would have perished. In 1607 he went on an exploring expedition and was taken prisoner. His life was saved by the efforts of POCAHONTAS, "La Belle Sauvage." SMITH had to return to England in 1609. There were then 500 inhabitants in James Town, but in six months the number was reduced to sixty, and as they wished to go elsewhere they proposed to set fire to James Town. JAMES afterwards cancelled the Patent, and in Virginia many difficulties had to be encountered during several years. A wiser policy was adopted by WILLIAM III., and the seat of government was removed to Williamsburg. The tercentenary of James Town is to be celebrated next year, and the occasion has been utilised to restore the parish church at Williamsburg. The first church was erected in 1640, but the building, with the exception of the tower, was destroyed by fire in 1676. The foundations of the original structure still exist, and care has been taken to preserve them. It is now impossible to say what style of building was the Williamsburg church. In the absence of evidence, it has been decided to imitate another seventeenth-century church, which is found in Smithfield, and is also in Virginia. The inhabitants of the Southern State can claim as long an antiquity as the people of New England in the North, and they are right in preserving or creating memorials of their former connection with England.

THE members of the Devon Diocesan Architectural and Archæological Society last week visited the remains of the Abbey of St. Germans, in Cornwall. The church was erected into a cathedral by EDWARD THE CONFESSOR, who with his queen personally enthroned LEOFRIC therein as its first bishop. It was originally an abbey church and probably built in 1023 after the destruction of its predecessor in 1003. The original west end and adjacent portions are the remains of the commencement of the Norman building of 1184. In 1161 the new choir and probably the upper part of the north tower were completed. In 1360 the side chapel was built for the reception of some remains of St. GERMAN from Auxerre. In 1430 the existing south aisle was built, after the western part of the Norman south aisle was taken down, to serve as a parish church. In 1530 the priory met with the fate of others at the Dissolution, and in 1540 the choir, which extended eastward, was abandoned, and the present east window inserted from the choir, similar to that which took place at Exeter Cathedral by the insertion of the fine Perpendicular window. The fall of the chancel in 1592, and its rebuilding in 1600, completes the story of the building vicissitudes of the church in Mediæval times. An abstract of EDWARD's grant is given in the "Monasticon." The king says the Cornish diocese obtained an episcopal throne in memory of the blessed GERMANUS, but on account of the fewness of inhabitants and the devastation by pirates it was prudent to have a safer defence in the city of Exeter. EDWARD therefore willed that Cornwall and Devonshire, with all their churches, should be under the control of one bishop.

ILLUSTRATIONS.

MARISCHAL COLLEGE, ABERDEEN.—GENERAL VIEW—
THE MITCHELL HALL.

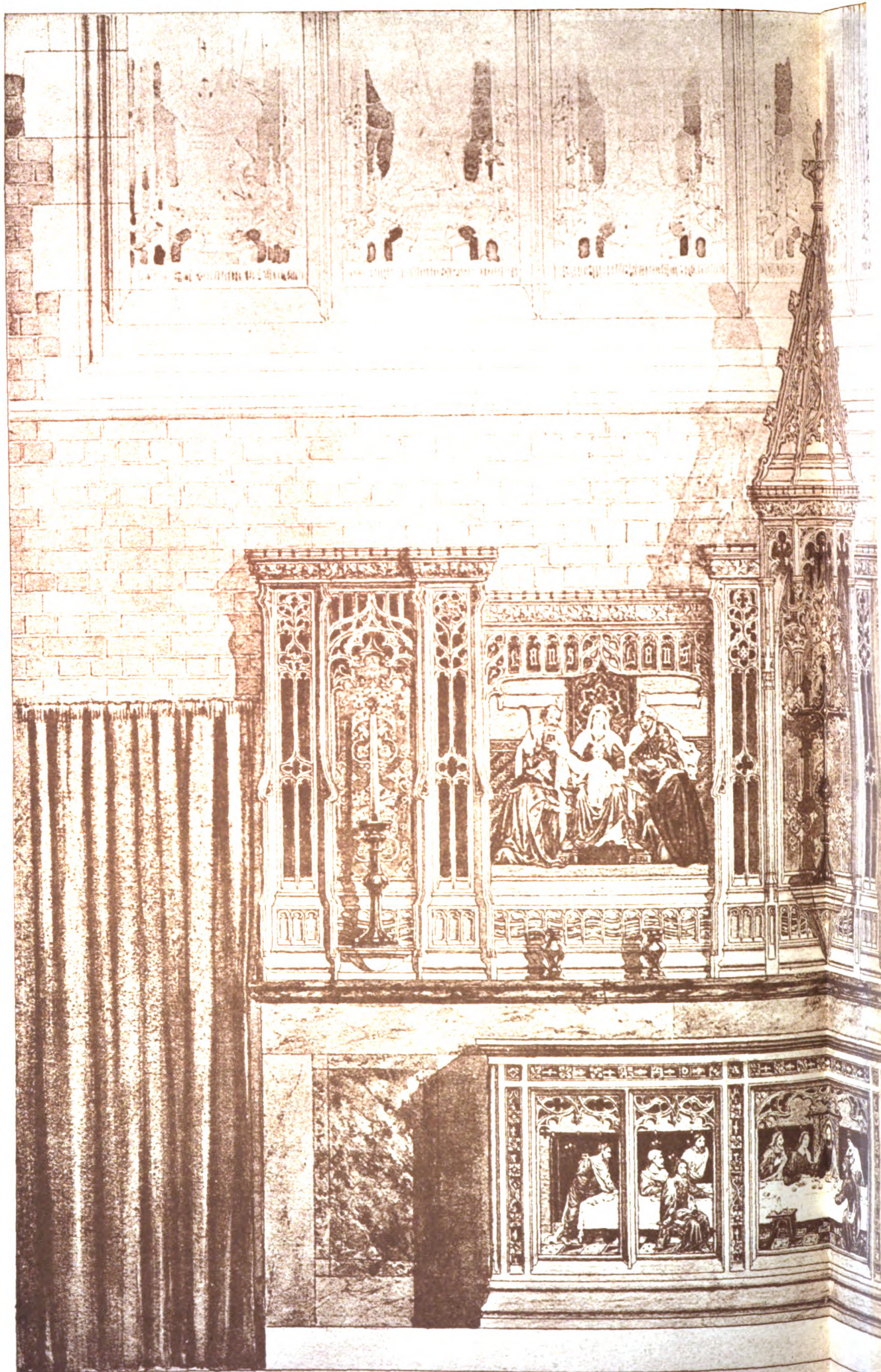
ON another page some account is given of the new buildings of Marischal College, which were opened yesterday. It may be said that the work was inspired by the gift of the Mitchell Hall. The late Dr. CHARLES MITCHELL was a citizen of Aberdeen, and he fought his way upwards until he became a partner in the engineering firm of ARMSTRONG, MITCHELL & Co., Newcastle-on-Tyne. He was generous with his money, and his son also, who appeared destined to attain a place among the most successful painters of the nineteenth century, was liberal to the college. The Mitchell Hall is 116 feet long, and is well adapted for university ceremonies, and might be taken as suggesting the wealth of the institution. There is also a large picture gallery near the hall. The tower rises to a height of 260 feet above the lower quadrangle, and is therefore within 80 feet of the Victoria Tower, Houses of Parliament. The effect of it behind the new buildings is impressive. Marischal College is at present the scientific part of the university, the arts and divinity finding their home in King's College. The architects are Messrs. A. MARSHALL MACKENZIE, A.R.S.A., & SON, of Aberdeen.

NEW SESSIONS HOUSE, OLD FAILEY, E.C.

ON June 29, 1900, we published the perspective view of the proposed Sessions House, by Mr. MOUNTFORD. We now give a photograph of the building as it has been constructed, and students of architecture will find an interesting exercise by comparing the two and endeavouring to discover a reason for the few changes in detail which have been introduced. The building is supposed to have cost about 400,000/. The contract was carried out by Messrs. HOLLOWAY BROS. On the ground floor is a great hall which unites double corridors, and in which foreign marbles have been employed. They lead to the large refreshment-room on one side and to the offices of the officials on the other. There are rooms for witnesses, jurors, &c., all of which are marked by spaciousness. On the first floor is the great hall, which leads to the different courts. It is approached by a staircase ornamented with marbles, and it is surmounted by a dome, the panels of which have been painted by Mr. G. MOIRA. The pendentives represent the four cardinal virtues—Justice, Prudence, Mercy, Charity—which have been carved by Mr. POMEROY, A.R.A. The lunettes in the adjoining hall have been painted by Sir W. RICHMOND and Mr. MOIRA. The stained-glass windows further increase the pictorial effects. There are four courts and they are panelled with oak. There are separate entrances for judges, counsel and the public. On the second floor are rooms for committees, counsel, the press and clerks, while on the third floor are kitchen and other offices. The Sessions House is an important addition to the architecture of London. It adds to the interest of the great thoroughfare from the west of London to Cheapside, which by some is considered at least equal to the thoroughfares through the Strand and Fleet Street.

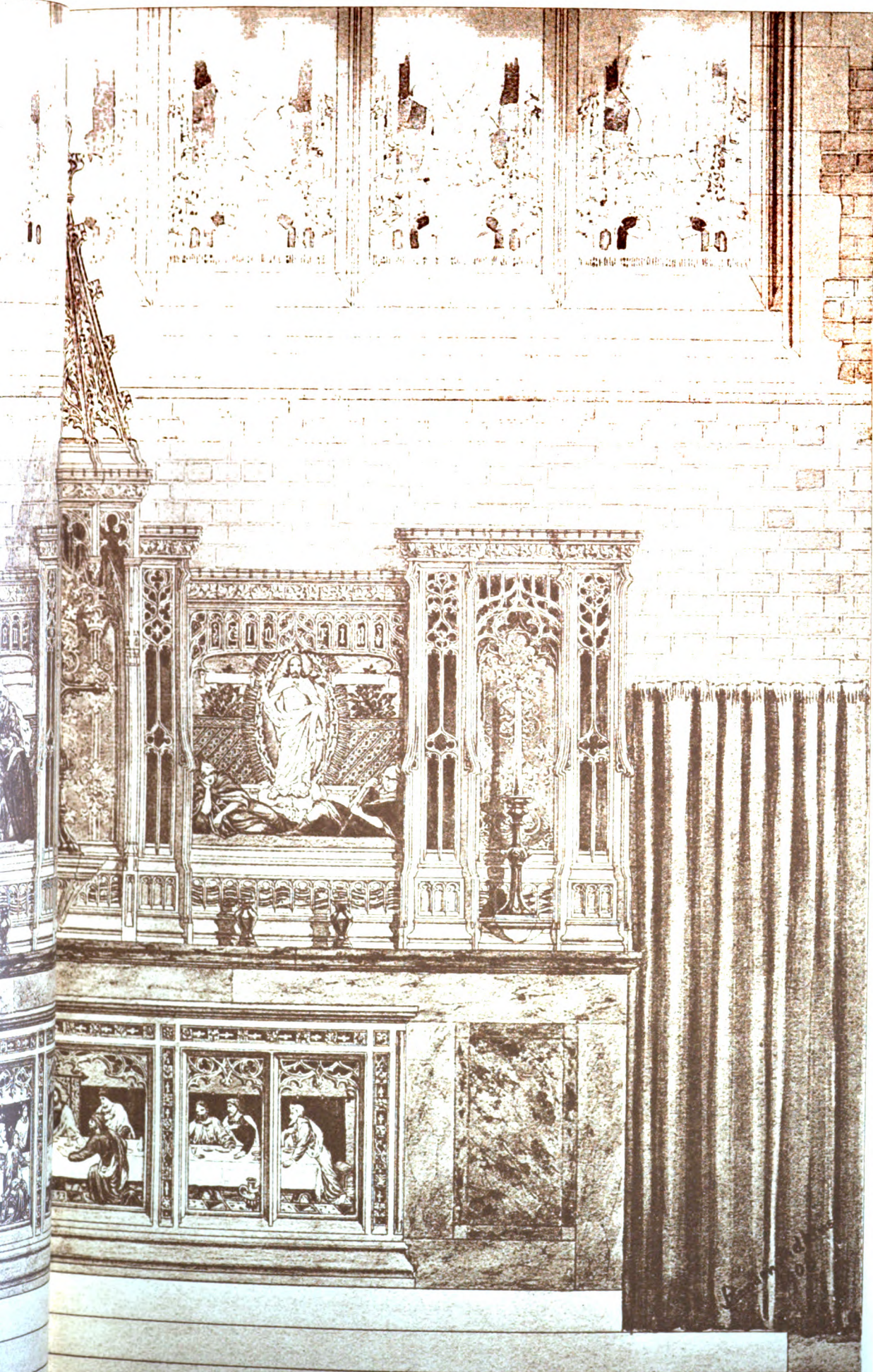
REREDOS, CHURCH OF ST. PETER, HORNSEY.

THIS is a sketch for the completion by painted decoration of the reredos of St. Peter's Church, which was illustrated in our issue of January 26 of the present year. The drawing, which was exhibited in the Architectural Room of the Royal Academy, has been prepared in collaboration by Mr. F. G. CHRISTMAS, of St. Oswald's Studio, West Brompton, and Mr. J. STANDEN ADKINS, the architect of the church.



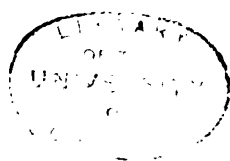
RERADOS

Church of S. Peter, Hornsey.

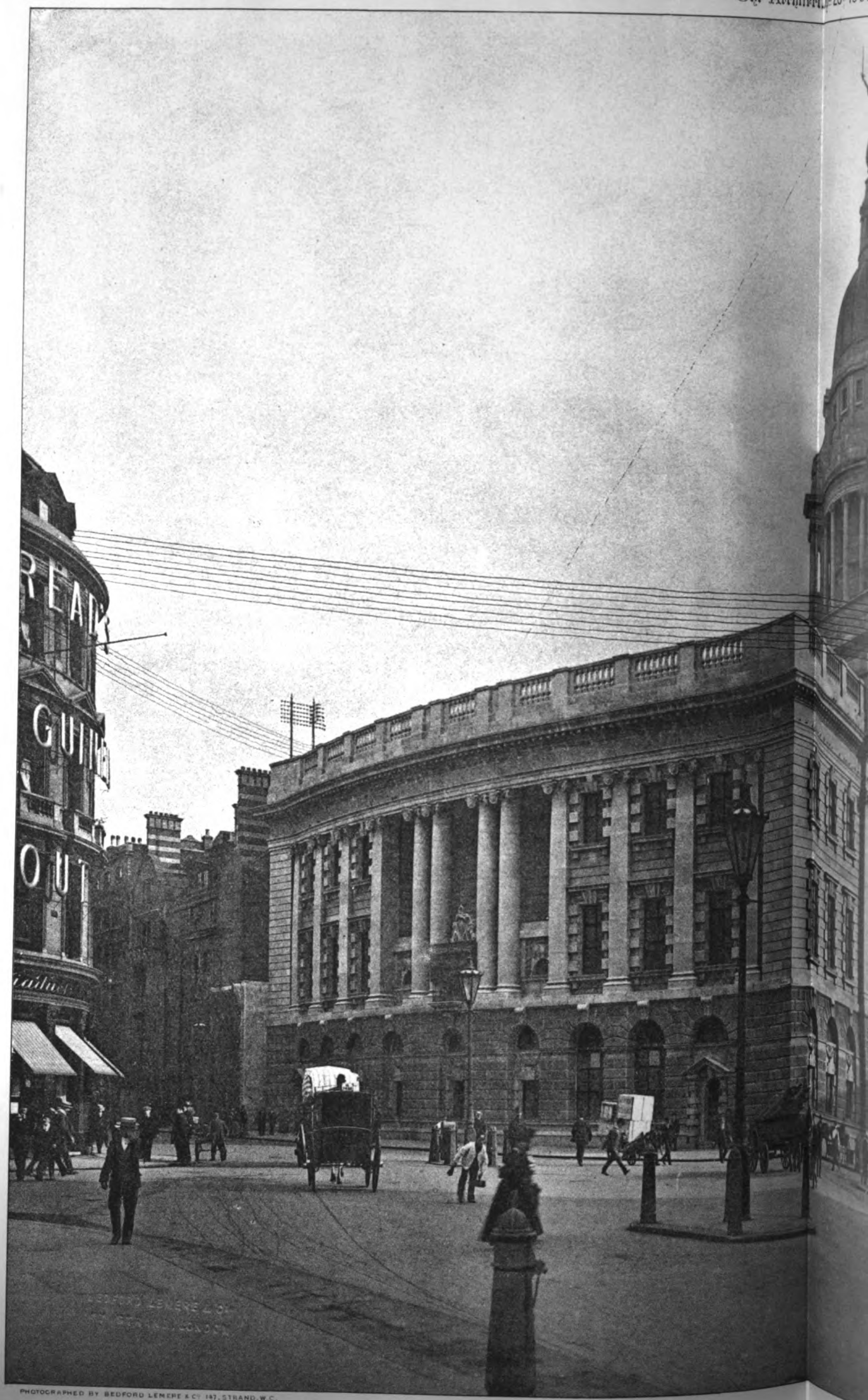


JAMES BROOKS SON & ADKINS ARCHITECTS
PANELS BY CAMPBELL & CHRISTMAS.

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Sep 28th 1906.

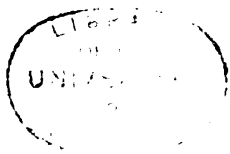


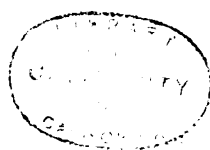
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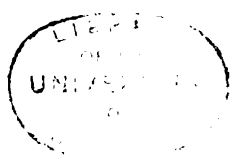
OLD BAILEY, E.C.

R.I.B.A., Architect.

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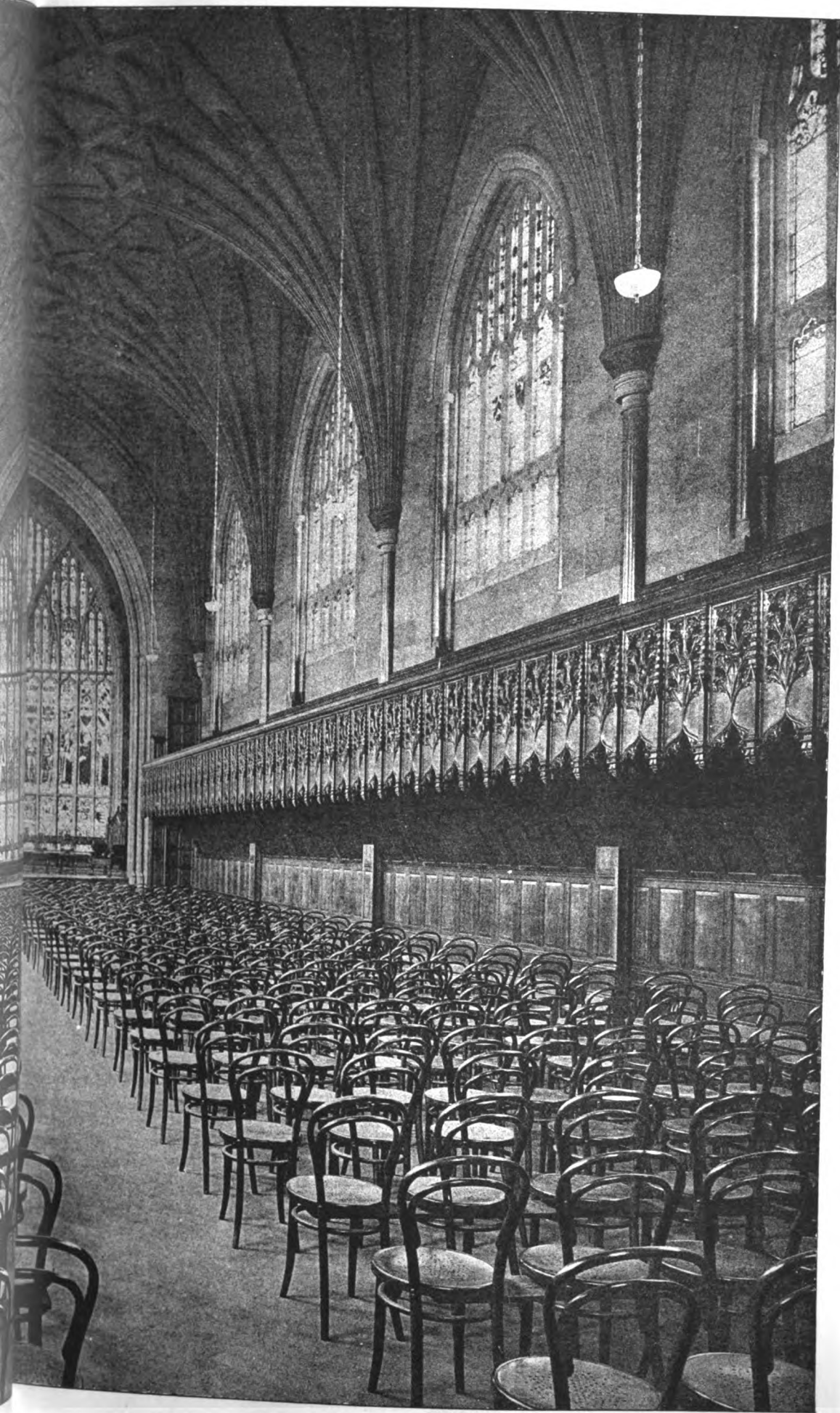




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MARISCHAL COLLEGE, ABERDEEN: THE MITCHELL
Messrs. A. MARSHALL MACKENZIE & SON, ARCHT.

Sept 28th 1906.



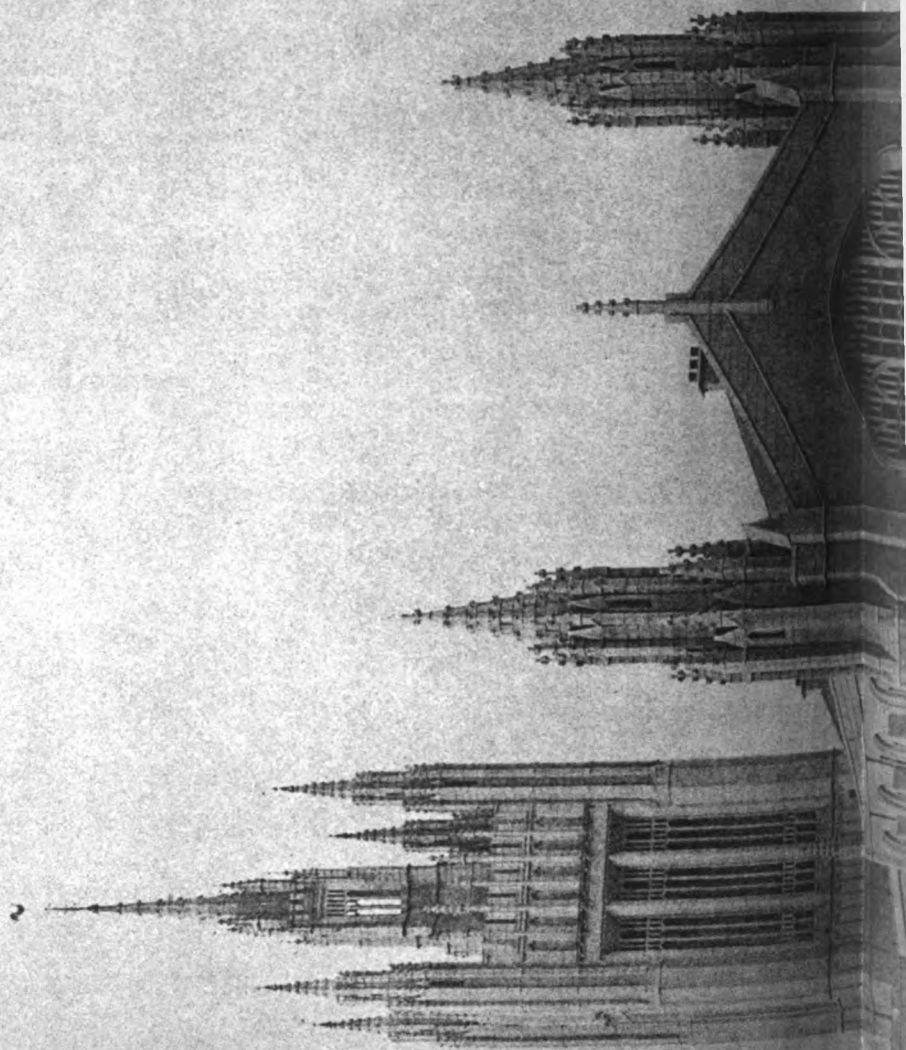
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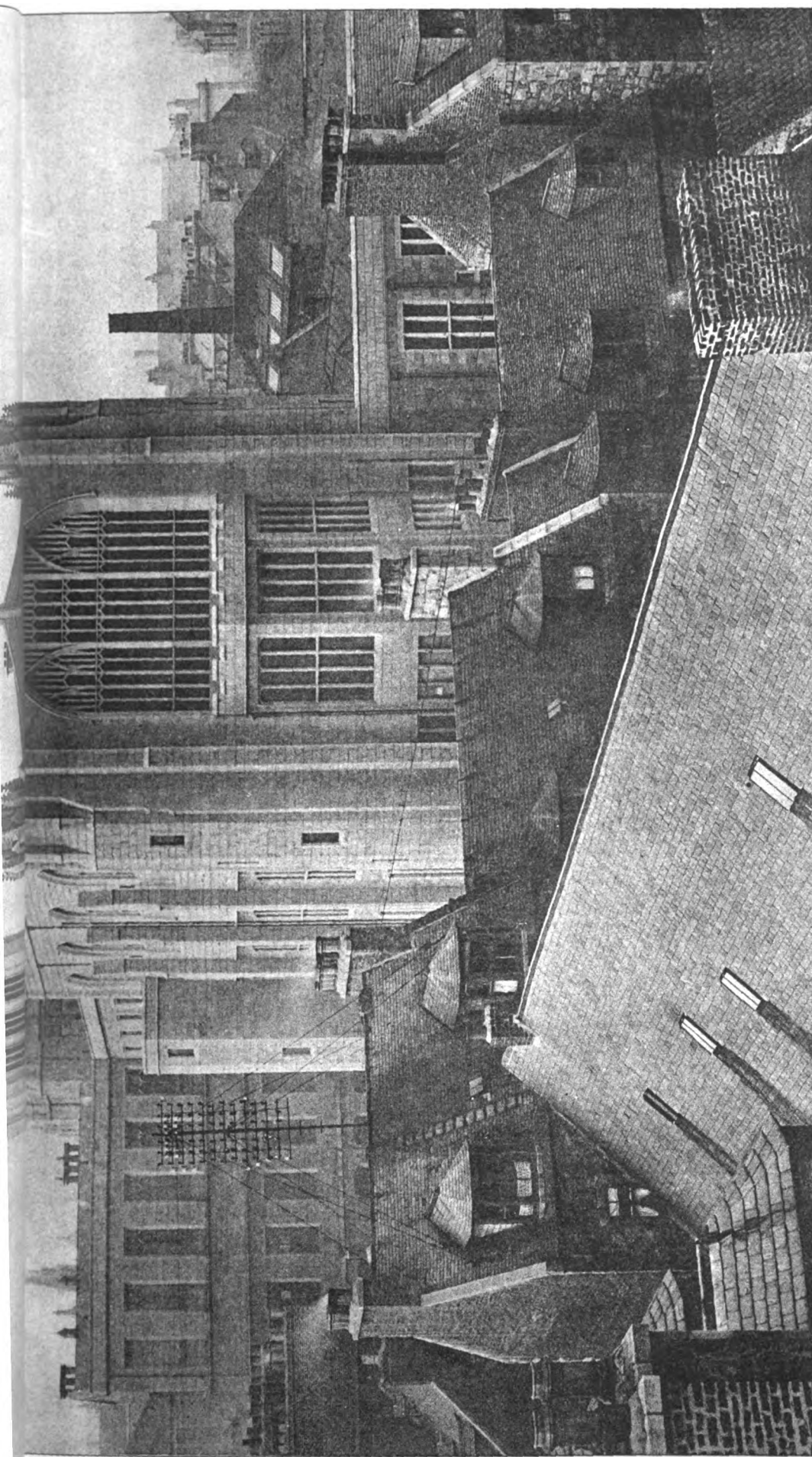
THE MITCHELL HALL.
E. A.R.S.A., & SON, Architects.

(12)



Die Architect. Sept. 28th 1906.

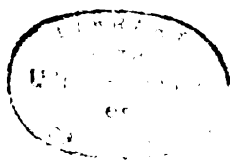




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MARISCHAL COLLEGE, ABERDEEN: GENERAL VIEW.
Messrs. A. MARSHALL MACKENZIE, A.R.S.A., & SON, Architects.

PHOTOGRAPHED BY BEDFORD LEMERE & C^Y 197, STRAND, W.C.



JOHN EVELYN AND WOTTON.*

JOHN EVELYN, whose beautiful home we are privileged to visit to-day by the courtesy of Mr. John Harcourt Chichester Evelyn, M.A., commences his famous "Diary" with these words:—"I was borne at Wotton, in the county of Surrey, 31 Oct., 1620, after my father had been married about seven years, and my mother had borne him two daughters and one son, viz. Eliza, 28 Nov., 1614, Jane, 16 Feb. 1615, George, 18 June 1617. They had another son after me, Richard, born 4 Dec. 1622." He died February 27, 1706, and thus lived through the times of Charles I., Oliver Cromwell, Charles II., James II. and William. The diary opens with a character sketch of his parents. His father, Richard Evelyn, was a man of retiring disposition, and paid, in order to avoid receiving the honour of knighthood, "the somme of fifty pound." "Wotton, the mansion house of my father," he says, "left him by my grandfather (now my eldest brother's), is situated in the most southern part of the shire, and tho' in a vally, yet really upon part of Lyth Hill, one of the most eminent in England (993 feet) for the prodigious prospect to be seen from its summit, tho' by few observed." He goes on to say that twelve or thirteen counties may be seen from it, with part of the sea on the Sussex coast, on a serene day, and describes the house in terms as applicable at the present time. "The house is large and ancient, suitable to those hospitable times, and so sweetly environed with those delicious streams and venerable woods, as in the judgment of strangers as well as Englishmen it may be compared to one of the most pleasant seates in the nation, and most tempting for a great person and a wanton purse to render it conspicuous; it has rising grounds, meadows, woods and water in abundance." He tells us that he will say nothing of the "ayre," because the pre-eminence is universally given to Surrey, and after further dilating upon the incomparable advantages of the mansion and its neighbourhood

coffee, a custom which did not come into England till thirty years after. In 1639 he began to travel in his own country, and favoured the towns of Bath, Bristol, Cirencester, Malmesbury, Abingdon and others. In the same year his younger brother joined him at the University, and in 1640 they took rooms in the Temple. Evelyn's father died in this year, and was buried in the church at Wotton, near his formerly erected monument, with his wife. In 1641 he saw the execution of Strafford, and had his portrait (now at Wotton House) painted by Vanderborcht. Then he started his continental travels, embarking at Gravesend and beginning with Holland. He visited Leyden, Rotterdam, Delft and The Hague, describing them with such minuteness that we to-day can picture many scenes which he saw, so little have parts of Holland altered in the course of 200 years. Then he went to Belgium, to "Sweete Antwerp" and to Brussels by water, and then to Ghent, with its memories of John o' Gaunt, to Bruges and Ostend, and then home again to his lodgings in the Temple. He was now twenty-one years old, and paid a visit to his brother at Wotton, and spent his time for a while studying a little but dancing and fooling more. Then he went afield to see more English towns—Chichester and Winchester, Hatfield House, Hertford, and "His Majesty's house and gardens at Theobalds, since demolished by the rebels." Then he saw Cheapside Cross demolished, and as the rebellion against King Charles was beginning to gain strength, he desired to possess himself in some quiet if it might be in a time of so great jealousy, and built by his brother's permission a study, made a fishpond, an island and some other solitudes and retirements at Wotton, which gave the first occasion of improving them to those water-works and gardens which afterwards succeeded them. Again on the move, he went to France and Italy, and for four years travelled in those countries, recording all he saw in a most appreciative fashion, and showing rare archæo-



WOTTON HOUSE FROM THE HILL.



WOTTON HOUSE.

pays a generous tribute to "the present possessor, my worthy brother, and his noble lady." Under the date 1624 he commences the personal portion of his "Diary" by telling us that he was not initiated into any rudiments till he was four years of age, and then he was instructed at the church porch of Wotton by one Frier, adding that he perfectly remembered the great talk and stir about the Spanish ambassador, Count Gundamar, and his duties in relation to the proposed match between the Prince and the Infanta of Spain. Then in 1625 he was sent to Lewes, where he passed his childhood, and in 1626 had his picture "drawn in oyle by one Chanterell, no ill painter." He lost his eldest sister in 1634, and his mother in 1635, and both were buried in Wotton Church, "in our dormitory joyning to the parish church of Wotton." Evelyn was admitted to the Middle Temple *in absentia*, and while still at school; leaving school in 1637 he went to Balliol College, Oxford, where his tutor was the son of the rector of Ockham, Surrey. His well-developed faculty of observation and annotation at once appears, for he records under this date the coming to the University of Nathaniel Conopios from Greece, a man who afterwards became Bishop of Smyrna, and he records that this man was the first he ever saw drink

logical and architectural knowledge for those times. In Paris he was married at the end of this tour, and, being called into England, left his wife in good hands while he returned to Wotton. At Hampton Court he had the honour to kiss His Majesty's hand, and gave him an account of several things he had in charge, "he being now in the power of those execrable villians who not long after murder'd him." Sayes Court, in Deptford, which afterwards became his property, received a visit from him, as did old Bartholomew Fair. To Godstone he went to see Sir John Evelyn, where was also Sir John Evelyn of Wilts, and, as he says, "I took leave of both Sir Johns and their ladys." In 1642 he went to see one Mark Antonio, an incomparable artist in enamelling, who affirmed his knowledge of a man who had arranged that one pound of lead should obligingly be converted into a quarter of a pound of gold. In this year he made up his mind to stay at home, and went to Deptford with the object of settling down. He went with his brother to Wotton to give him what directions he was able about his garden, which he was desirous of putting into form. He was to remove a mountain overgrown with huge trees and thicket, with a moat within ten

* A paper read at a meeting of the Upper Norwood Athenæum on August 25, by Mr. Charles Wheeler.

yards of the house. They found that by digging down the mountain and flinging it into a rapid stream, it not only carried away the earth, but filled up the moat and levelled that noble area where now the garden and fountain is.

His brother, the owner of Wotton, died in 1699 at the age of eighty-three. He left one son who died at an early age. His brother left John Evelyn his library and pictures of his father and mother, &c. In May 1700 he left London to take up residence at Wotton as owner of the estate, removing the rest of his goods from Sayes Court. He died in London on February 27, 1706, in the eighty-sixth year of his age, and was buried in Wotton Church. His wife died in 1709, aged seventy four.

VENICE UNDER REPAIR.

THE Venice correspondent of the *Morning Post*, in a communication of the 21st inst., writes:—

More than four years have now elapsed since the Campanile fell, and at the present moment the highest part of the new tower is not more than 18 feet above the surface of the pavement, there thus remaining 304 feet to be constructed before it reaches the elevation of its predecessor. Much time was necessarily devoted to the foundations, which have been laid with the utmost care, and which were finished last year, but since the beginning of July not a single stroke of work has been done at the tower, nor is there any probability of its immediate resumption. The cause of this stoppage is the opposition which has arisen to the construction of the tower and the consequent appointment of a Commission to inquire into and report on the work done. Pending the final report of this Commission—a preliminary report has already been issued—all work has been suspended.

The objections raised to the new tower are mainly four. Critics object that the bricks employed contain a large percentage of sulphates which exude through the sides and form a white deposit on the outside of the tower. This phenomenon is obvious to all who examine the building; I have myself rubbed off a layer of white deposit from some of the bricks. But people who have lived many years in Venice point out that all, or most, of the bricks used in the Venetian buildings are discoloured in the same way, and that it does not in the least follow that the bricks of the new tower will crumble away any more than that the white efflorescence will affect the mortar in the interstices and tend to dissolve it. From the part of the tower which is exposed to the sun the white powder has entirely disappeared; it is only on the shady side that it is still to be found. The second criticism is directed against the mortar, which is of the nature of Portland cement. It is argued, not without some reason, that pozzolana, the most binding and most durable of all mortars, should have been employed for a work which is intended to defy the ravages of time. Roman architects are wont to compare the extraordinary durability of the ancient Roman buildings, in which pozzolana was used, with the greatly inferior powers of resistance exhibited by Mediæval buildings at Venice and elsewhere, in which other cements were adopted. But there was this objection to the use of pozzolana for the new Campanile, that though it is not more expensive than the cement actually employed, it takes twice as long to set, and therefore the tower would have occupied much longer to construct—a feeble argument in the case of a monument which should be *ære perennius*. From the materials used the critics then turned their attention to two details of construction. It will be remembered that the new Campanile was to be an exact copy of the old. But it does not seem to have occurred to any one to ask the simple question which particular period in the old Campanile's long life was to be copied. Some not unimportant details of that venerable building varied with age. For example, it was originally constructed with five steps at the base, and the new tower faithfully reproduces these five steps. But at the time when the old Campanile fell and for at least a hundred years before, owing to the rise in the level of the Piazza, two of the original five steps were below ground and only three were visible. Therefore, argue the critics with truly Byzantine subtlety, the new tower should, like that which we were always accustomed to see, have only three. Finally, the inside of the old tower was supported by eight pillars, while there are only four within the new, and this deviation from the ancient model has naturally not escaped the notice of the opposition.

"The Opposition" is, indeed, the right word to use, for politics, as they are understood in Venice, enter largely into

this question. I do not mean that the supporters of the Triple Alliance are necessarily advocates of five steps, or that pozzolana instead of Portland cement is an essential item in the Irredentist creed. The fact is that politics here are largely a question of local persons, *campanilismo*, as the Italians call it, which very appropriately settles round the Campanile. The defenders of the new tower maintain that full and elaborate plans and models were publicly exhibited before the work began; that none of the present criticisms were then heard—though there was a party which was opposed to rebuilding the tower at all—and that now, when nearly a year has been spent in building the first section, the then silent critics have opened their mouths and have caused the suspension of the works, perhaps as a preliminary to a fresh start being made from the foundations. Professional jealousy is perhaps not more acute in Venice than elsewhere, but I have heard it said that if at the outset the authorities had put every Venetian architect on to a committee for the Campanile these acute rivalries would not have arisen. Everyone's ambition would have been satisfied and a small sub-committee chosen from the larger body would have really done all the work. Such expedients are used, as everyone knows, by modern British Prime Ministers; eighteen or nineteen people with "claims" form the Cabinet; three or four of them actually govern the country. As it is, were the Campanile resumed on the present plan to-morrow, three years more must elapse before Cook conducts his first tourist to the top.

Happily, the more celestial minds engaged in the task of saving St. Mark's from destruction are not torn by these professional feelings. Except in the case of the workmen employed in the Roman Forum, I have never seen men so devoted to their work from sheer love of it as those employed on St. Mark's. The greatest of all Italian churches inspires even the humblest mason with something of that sentiment which the ancient Athenians felt for the Parthenon, which an English verger sometimes shows for the grey fabric which dates from the dim days of the Saxons. "No expense could be too great to preserve the basilica of St. Mark's," a Venetian architect observed to me, and the speaker was a man whose whole life centres in that gorgeous fabric. But long years must elapse before the last piece of scaffolding is removed from the church of the Evangelist. At the present moment work is being actively prosecuted in no less than four separate points of the building, while at two others the preparations for repairs are now made. First and most noticeable is the task of making good the fissures that have appeared in the atrio, or vestibule. The part to the right of the main entrance is now entirely closed to the public, and there the engineers have had a difficult problem to solve. The great columns which stand there have been split by the oxidation of the iron clamps inside the base and at the top of each, and it has been necessary to raise the capitals, which fortunately have nothing resting on them, by means of a crane, extract the oxidised iron, replace it with bronze, lift up the whole column for the same operation at its base, and then replace each column and capital in its former place and at its former angle, slightly out of the perpendicular. Two columns have already been treated successfully in this way. In a fortnight's time another pair will be taken in hand. Inside, right up to the roof, there now stands a vast and massive scaffolding, four storeys in all, made of American pitch pine, which looks as if it were meant to last for ever. The roof was cracked in this part, and the mosaic has consequently been partially removed. Complaints are made in Venice that this operation is frequently misunderstood abroad, and it may therefore be well to describe how it was accomplished. An impression of the mosaic is first made on specially-prepared paper—*carta da fillre* as it is technically called—which, being porous, receives an exact impression of each separate piece of mosaic. This paper is then coloured with the precise colours of the original and serves as a pattern. The mosaic is then taken off in strips of about 2 or 3 feet in length and is laid on the wooden floor of the scaffolding in exact order just as it was on the wall of the basilica. All the mosaics of the Tribune of the Patriarch, for example, which had begun to fall, are now lying in this position. The architects claim that when a wall has been repaired and the mosaic replaced it is impossible to distinguish any difference between that which has never been moved and that which has been temporarily taken off. Certainly an untrained eye finds it impossible to say where the division between the two begins.

From the vestibule we pass to the above mentioned

Tribune of the Patriarch, now stripped of its splendid dress. Here one of the arches has given way, part of the Byzantine cornice has slipped about an inch, and the circle of the cupola has been so displaced as to be now an ellipse. Emerging through a dark and narrow passage on to the roof and scrambling over the leads we find that the men are at work on the central cupola, where more than half of the woodwork and the lead which covered it has to be renewed. At the cupola of the Madonna the mosaics have been already replaced, but the work of strengthening the supports of the cupola is not yet finished. More serious will be the repairs at the corner of Sant' Alipio, which faces the Piazzetta dei Leoni, and which needs drastic overhauling, as its walls are in a bad state. The last item in the present programme is the repair of the dome of the Apocalypse, the plans for which are complete. There is no lack of funds for St. Mark's. The Austrians endowed it with 2,040*l.* a year, and for many years there were large savings out of this income which are now available.

ARCHÆOLOGICAL EXCAVATIONS.

THE recent heavy rains will bring some excavations to a close earlier than was intended, says the *Manchester Guardian*, but already the work is practically concluded on a number of sites. The annual meeting of subscribers to the excavations at Caerwent was held last week, when a party visited the site under the guidance of Messrs. Ashby & Martin, who are directing the work there. Much time has been occupied this year in filling in the part already examined; the (so-called) amphitheatre, however, is to be left uncovered and railed in. The southern gateway has been nicely cleared, and is one of the finest specimens left in the country. Twenty-eight large houses have now been excavated at Caerwent. The main result of this year's work has been the uncovering of the foundations of the house marked VII. N. on the plan, only a corner of which had been exposed previously. This house—not by any means the largest found—contains about sixteen rooms. In the course of excavating it the workmen came upon a large urn or amphora, in perfect preservation, containing curiously a number of smaller vessels, some decidedly Roman, others having the appearance of British ware. Another fresh object in the museum is the case filled with shoes obtained from the bottom of one of the many wells which have been cleared out. As mentioned last year, not a single marked tile has been found in the excavation of the city; recently, however, a fragment of brick has turned up bearing the letters "AUG," which are evidently part of the stamp of the Second (Augustan) Legion, which occupied the neighbouring station of Caerleon. This year a considerable amount of attention has been paid to the excavation of the vallum, which stands some distance within the wall, and on the berm of which the wall was apparently (subsequently) built. The bank is of beaten clay and of great size; the wall which now stands between the vallum and the fosse is 9 feet thick, and on the south side of the city it still stands nearly 20 feet high. The inscription on the base of a small statue dedicated to Mars has now been made out as follows (missing letters are supplied):—

"Deo Marti Leno sive Ocelo Vellauno et numini Augusti Marcus Nonius Romanus ob immunitatem colliqui donum de suo dedit Glabrio et Homulo consulibus ante diem x. Kalendas Septembres."

The date is thus fixed as August 23, A.D. 152. Lenuis, it seems, is a common name of Mars in Rhenish inscriptions, while Ocelus has been found in one inscription at Carlisle. It is a Celtic word, probably the name of a British god here identified with Mars. Tessellated pavements are still found, and the last printed report of the excavations contains a lithograph of a fine mosaic pavement found in room 36 of house No. XII.

Mr. Ashby calculates that the new area on which Lord Tredegar has given permission for excavations to be carried out, and which covers some four or five acres in the centre and north-eastern part of the city, will furnish work for four more years at least.

During the summer the committee of the Classical Association have taken in hand the removal of the many tons of earth and stone which still encumbered the headquarters building at Melandra, and there was some hope that the vault or pit which has several times been

found in such buildings might be discovered. To Mr. Hamnett belongs the credit of finding the first traces of buried remains. In the north-east corner of the courtyard he came across a pit containing a great quantity of building stones, beneath which was concealed, with other remains, the upper part of an altar. This is the first altar found at Melandra. On comparing the sculpture with that of the many altars found along the great wall at Chester, at Carlisle, or elsewhere, it is perhaps safe to say that the Melandra fragment shows as good workmanship as any. So far only the top of the altar has been found; this is cut out of a single block of stone rather more than two feet long and nearly a foot thick. On the upper face are the two scrolls, ornaments or bundles—whatever their significance may be—which are such a common feature of the Roman altars found in Britain, and which appear to correspond to the scrolls found on the altars of the Greeks. The appearance is that of a bundle of twigs bound together with a rope in the centre. One scroll is perfect, the other is broken.

Perhaps the most remarkable case on record of the discovery of buried altars on the site of a Roman fort is that of the well of the goddess Coventina at Procolitia, which will at once occur to those who are familiar with the wall of Hadrian. This well, which was cleared out in 1876, was found to contain twenty-four Roman altars, nearly 20,000 coins, a massive votive tablet, vases, rings, beads, brooches, and many other relics. It is generally supposed that the altars were thus hurriedly buried when the fort was abandoned.

ROTHERHITHE TUNNEL.

THE members of the Society of Engineers, on the 19th inst., visited the Rotherhithe tunnel now in progress. This work, which is being carried out by the London County Council, consists of a carriage and footway tunnel with approaches, commencing in Lower Road, Rotherhithe, and terminating in Commercial Road, Stepney. The total length is 6,883 feet, of which 2,020 feet is open approach, 1,122 feet cut and cover and the remainder 3,741 feet tunnel lined with cast-iron and concrete. There are four vertical shafts, one on each bank of the river near the water's edge and one at each end of the iron-lined tunnel further inland. These shafts vary from 70 feet to 100 feet in depth; they are each 50 feet diameter inside, the sides consisting of two steel skins, 5 feet apart, with the intervening space filled with concrete. Openings are provided in the shafts for the tunnel; these openings are temporarily closed while the shafts are being sunk and until the tunnel is connected up with them. The under-river portion of the tunnel is about 1,500 feet long between shafts and crosses the river diagonally in order to clear the entrances to the Surrey Commercial and the London and India Docks, which lie opposite each other at this point of the river.

The tunnel proper is circular in section, the outside diameter of the cast-iron lining being 30 feet, with a thickness of metal of 2 inches under the river and 1½ inches elsewhere. The lining is put together in rings each 2 feet 6 inches wide, and composed of sixteen segments with a key-piece. The rings are bolted together by means of bolts through the internal flanges, which have a depth of 14 inches. These flanges will be hidden when the work is completed by the concrete lining, which will have an internal diameter of 27 feet. The faces of the iron at the joints are all machined for a width of 12 inches and the segments fit metal to metal. The remaining 2 inches at the internal edge of the flanges are recessed for caulking with lead and rust cement.

The tunnel is being constructed by the shield system under compressed air. A small pilot tunnel 12 feet 6 inches external diameter was first driven across the river, and it is being followed by the main tunnel. The strata met with are known as the Woolwich and Reading beds, and consist chiefly of clay with beds of sand and shells, overlying a bed of marl or rock of a chalky nature. Below the last occur a compact bed of pebbles and a thick bed of sand.

The cut and cover portion of the work consists of a brick barrel 1 foot 10½ inches thick, surrounded with concrete. The internal diameter of the brickwork is 27 feet, the same as in the case of the concrete lining in the iron tunnel. The surface of the roadway will be 5 feet below the axis of the tunnel in order to obtain full advantage of the available width. This will allow of a 16-foot carriage-way and two

4 feet 8½ inch footpaths. Below the roadway the section provides for a subway which can be used for gas and water mains, electric cables, &c.

In the case of the open approach the section consists of concrete retaining-walls with battering face, surmounted by a brick parapet. A concrete invert fills the space between the footings of the side walls, and upon this the roadway is to be placed. The tunnel faces on each side of the river are built of red Aberdeen granite surmounted with a massive granite parapet, the surface of the whole being polished. Both the cut and cover portion of the tunnel and the open approaches are made watertight with asphalt. At one point, viz. on the south side of the river, the tunnel approach crosses the East London Railway. The crossing occurs at the Rotherhithe station, and it has been necessary to cut away a portion of the railway tunnel, build new retaining-walls and carry the new roadway across the station platforms and the rails by means of a girder bridge. At the present time the approaches and cut and cover portion on the south side of the river are nearly completed. All the shafts have been sunk, and the tunnel has been driven rather more than half-way across the river. On the north side of the river the open approach and cut and cover portion of the work are in progress. An extensive plant for air-compressing and hydraulic purposes has been installed, including six air-compressors capable together of dealing with 1,000,000 cubic feet of air per hour. About half that quantity is at present being delivered into the tunnel. The contract was let to Messrs. Price & Reeves early in 1904, and the work is expected to be completed in 1909. The cost of the work will be about 1,000,000*l*.

The engineer-in-chief is Mr. Maurice Fitzmaurice, C.M.G., M.Inst.C.E., chief engineer to the London County Council, the resident engineers being Mr. E. H. Tabor, M.Inst.C.E., assisted by Mr. A. G. Drury, Assoc.M.Inst.C.E., member of Council of the Society, by the latter of whom the visitors were received and conducted over the works.

MEDIÆVAL COLLEGE LIFE.

IN the *Glasgow Herald* are interesting articles on "Four Centuries of Academic Life" by Mr. R. S. Rait. In the course of the first article relating to the studies in King's College, Aberdeen, he says:—

Immediately after obtaining from the Pope a Bull for the institution of a university in 1495 Elphinstone took steps to found a fully-equipped college to carry on the work of teaching the ignorant North. He provided endowments for students and teachers in arts, in medicine, in canon and civil law and in theology. He built a noble college, whose beautiful chapel still survives, with its Crown Tower, similar to, but to a Northern eye more beautiful than its sister at St. Giles's. The fabric of the college was not completed when the bishop died. As became a Mediæval prelate, his first care was for the House of God, and he left his successors to complete the range of dwelling-rooms for his masters and students. It is, however, clear from our records that temporary provision of some kind was made in his lifetime, and that full academic residence and discipline began exactly 400 years ago. From the documents that have come down to us we can reconstruct the daily life of the members of Elphinstone's completed college; we can picture to ourselves the rooms in which they slept; the hall in which they ate has not yet vanished from living memory, and their twentieth-century successors still worship God, though in different forms, in the chapel which held so great a place in their lives.

The life of the Mediæval King's College student is sometimes described as "monastic." Life within the walls of King's was not in any sense monastic; it was governed by rules and regulations just as is the life of an English public schoolboy to-day, and these rules and regulations laid more stress upon religious ordinances than is done now in even Roman Catholic schools. Any list of the numerous religious services would be misleading, because, while the canonical hours were duly kept in the chapel, and many Masses were said every day, most of these observances were the duty of the chaplains, and did not affect the undergraduate student or his teachers. At four o'clock in the summer and five in winter one of the Elphinstone's bells in the Crown Tower would ring out, and the principal would rise from his curtained feather bed and dress by the meagre light of his hanging brass chandelier; his colleagues and the students would soon emerge from their humbler dormi-

tories, known by the names of the planets and the constellations. Woe to the laggard who tarried too long in "Jupiter" or the "Ram," for by the sixteenth century the Mediæval student had lost all his early rights, and the later college founders in England and Scotland knew of only two remedies for lateness and similar crimes—fining and the birch. Fining meant for the bursars the mulcting of a portion of their food, and as this was clearly inadvisable the other alternative came more and more into operation in the sixteenth and seventeenth centuries. After Mass some hours' work would follow, the teacher dictating some of the Latin translations of Aristotle, with the popular commentaries of the day, illustrating the use of the globes, explaining the method of the calendar, or, in the case of the Bajans, enforcing the rules of the Latin grammar of John Vaus, the first King's College professor of humanity. Graduate students would attend prelections in theology, in medicine, or in law, according to the profession of their choice. The tedium of the long day was broken by religious services, by meals and by recreation. There were probably two meals in the day, one about 10 A.M. and the other before lights were put out and the gates closed at nine in the evening; but if human nature was what it is, there were probably private raids on the kitchen in the course of the long morning hours, where benevolent cooks could give the hungry youths some of yesterday's scraps. The regular meals were substantial enough. We read of purchases of beef and mutton, fish and partans and eggs, white bread and oatbread, best ale and second ale.

All conversation had to be carried on in Latin or French, not only at meal times, but also during hours of recreation. The only recognised form of recreation seems to have been walking, but doubtless simple games of various sorts, including probably football, were winked at by the authorities or engaged in surreptitiously. On Saturdays there were no lectures, and the day's work took the form of the characteristic Mediæval disputation. The whole college met in the public school, a thesis was proposed, and was impugned or attacked by one student and propugned or defended by another, while the audience followed the arguments and learned the methods of debate. On Feast days (*i.e.* Sundays and Saints' days) there was neither lecture nor disputation, but everyone attended a larger number of chapel services, and there was more time for recreation and for conversation—even in the vernacular. We can picture the High Masses on great days in the chapel, then adorned with all the requisites for the splendid ritual of the Roman Church. We can still point, in the magnificent oak screen, the sole survivor of Elphinstone's furnishings, to the seat occupied by successive principals of the college (abandoned in recent times for a much less appropriate place). Each member of the foundation had his proper stall, and the details of the arrangement are known to us.

When Elphinstone drew up his scheme for the life and work of King's College the Mediæval system was already tottering to its fall. The Reformation, alike in religion and in education, came late in Scotland, and it came thorough. The subjects taught and the methods of teaching them were alike changed in the universities, as the doctrines had been changed in the churches. There was, of course, a strong opposition to these innovations, and nowhere was this opposition so strong and so persistent as in Old Aberdeen. Despairing of reforming King's College in the light of the new ideas, George, fifth earl marischal, adopted the bold expedient of founding a rival university in the city of Aberdeen, and from 1593 to 1860 the two institutions were separate corporations, unconnected in any way. The older college meanwhile passed through stirring times. There came a day when its Roman Catholic principal armed the students and successfully defended the chapel against a Reformation mob bent on the plunder of the temple of idolatry. There came a day when that principal and those of his colleagues who remained loyal to the old Church were deposed from their offices, and the earl marischal made his unsuccessful attempt to persuade the college to accept a new foundation and to abandon the study of Aristotle for that of Homer and Horace. This new foundation tried to abolish not only the Professor of Canon Law, but his colleague the Professor of Medicine, though it is difficult to see why the most zealous Protestant should have considered his office unnecessary. The accession of James VI. to the English throne, and the consequent establishment of Episcopacy in Scotland, gave a partial victory to the conservative party, but, curiously enough, they used it to abandon philosophy for the humanities, which were beginning to be distrusted

by the more extreme Presbyterians. At the outbreak of the Civil War Marischal College was so far in line with the tenets of its founder that it escaped any drastic treatment at the hands of the victorious Covenanters, but the Episcopal principal of King's College shared the fate of his Roman Catholic predecessor. A decade later another turn of fortune's wheel placed the Cromwellians in power, and they proceeded to depose the orthodox Presbyterian whom the Covenanters had appointed, and to replace him by a man with distinct tendencies towards Independency. John Row, who thus became principal, was a man of considerable distinction, and in his short tenure of office he showed the qualities of a firm and energetic ruler. It is under Principal Row, in the middle of the seventeenth century, that we have our next complete glimpse of the internal life of the college.

The hour for morning chapel is now half-past six o'clock in winter and six in summer—a decline in virtue from Elphinstone's Spartan rule. The roll was called before chapel—"Let no one answer 'Adsum' for another, *est enim splendidum mendacium*." The punishment for this kind of "lying in state" is not specified; about this date the use of the birch became much less frequent, though there are still references to it. But the whole record of Principal Row's Cromwellian administration leaves the impression that he was a bold youth who adopted Sydney Smith's morning rule that "one good turn deserves another," and so failed to answer his name at morning prayers. After chapel (there is no hint yet of any morning meal) all betook themselves to the public school or to their public lecture-rooms to be examined on yesterday's work and to receive the prelections for the day. There was a short interval at ten o'clock, when there was another roll-call, and at eleven they all trooped in again to the public school to learn by heart the morning's lecture, which had been carefully dictated. At noon came dinner, for which Principal Row promulgated an elaborate code of rules. The whole duty of the polite student is carefully prescribed. He is to take his proper place at the table with clean ungloved hands and with a bare head. He must have a cheerful countenance and help himself to salt with his knife and not with his hands. He will grasp his food with three fingers and use his knife before his teeth. When his fingers become soiled he will not lick them, but wipe them with his napkin, and he will not cut the table with his knife. He will order himself reverently towards his pastors and masters, and will replace bones on his plate or drop them on the floor; if he throws them at his neighbours he must not complain if he is whipped. He will sit erect and keep his feet still. He will drink sparingly and always wipe his lips after he "drunken his draught." He will take what is nearest him and give his neighbours their turn. Above all, he will remember that he eats to live and does not live to eat. His conversation is to be unto edification; but there cannot have been much of this if the rule was observed which ordered the reading of profane history during dinner and of sacred history at supper.

The roll was called again at two o'clock, and on three afternoons a week work followed. On other three afternoons excursions were made to the links for recreation. Even in hours of recreation conversation in Scots or English was forbidden. "Let everyone's speech be in Latin, Greek or Hebrew. On account of the ancient alliance between the French and the Scots, our Foundation adds French. But let all avoid the vernacular and attempt to talk *Latine*, and not merely *Latine*, but *Latinus* and *Latinissime*." One can scarcely imagine this rule being carried out on the links; if it was, it must have produced some rare specimens of dog-Latin, the prevalence of which the rules deplore. All games of chance or cards and all dangerous games were prohibited. In the freedom of the links the students might indulge in games of ball; but all such games and all throwing of stones or snowballs was strictly forbidden within the walls of the college. On afternoons when recreation was not permitted, the links were patrolled by a senior student, who searched for truants and conducted them with ignominy to the sub-principal. On lawful afternoons games on the links lasted from two o'clock till five, when the shades of the prison-house again closed. At six came evening prayer, followed by an exposition of Scripture. Supper, followed by metrical psalms, was at eight; and the college gates were closed at eight in winter and at nine in summer. The routine of Saturdays differed from that of other week-days, for the ancient practice of disputation still survived. Thus the college year went by from the beginning of October to the middle of June, when the students dispersed for the vaca-

tion, the only holiday in the year, now that Christmas and Easter and Saints' days were regarded as superstitious observances. It was in keeping with the austerity of the times that Principal Row made an effort, fortunately unsuccessful, to abolish the red gown and substitute for it one of a black or dark colour; and to wear a blue cap was also an offence involving an ominous visit to the sub-principal.

DESIGN AND THE CHOICE OF MATERIAL.

WHAT would be thought of a goldsmith who laboured long and lovingly at a hoped-for masterpiece, and then left it for the decision of the purchaser whether the work should be used as a setting for brilliants, pearls or jade? Or, to give a more commonplace instance, should we expect a woman to choose a pattern for a gown and then leave to the determination of cost and expediency whether the material should be silk, lawn or calico? Such examples as these of the utter disregard of congruity between design and material are almost unthinkable. But every day, writes Mr. F. W. Hoyt, in the *American Architect*, architects of the highest rank and of the utmost refinement of taste are called upon to confront just such a condition. They furnish a design for some great building that might be their masterpiece, and serve to keep their names alive in the annals of their art. The design is approved and calls out delighted comment. Then it is handed over to the specification-writers, and the estimators are called upon to furnish "alternative bids" in granite, marble or limestone. The man who gives the commission, or the building committee if it be a public structure, decides by the item of cost, the time-limit of construction or even through "wire-pulling" and "influence," which material shall be used to embody the architect's conception. No one would deny that the architect's opinions sometimes carry great weight, and that a few builders (using this term to designate those for whom the structures are to be erected) are guided by considerations of art and fitness. But still dollars and cents and days and weeks play an extremely important part in all building operations. Hardly a day goes by without contributing an instance of some notable building, originally contemplated in one material, being changed to another through influences of expediency rather than congruity. That American architecture has reached a high plane under so manifest a drawback is surprising. It is certain, however, that our architects will never show the full fruition of their genius until they are freed from this incubus; until they are allowed absolute discretion in the adaptation of design to material.

How much the artistic effect of the great buildings of all time depends upon the exquisite adaptation of material to design is familiar to every student of architecture. We may be sure that the happy combination was not secured by chance, and that the buildings were not conceived and planned in ignorance of the structural material that was to be used. Does anyone believe that those who reared the Parthenon would have wrought in the same fashion if granite or sandstone had been the only quarry product at hand? We may go even further, and ask to what extent the architectural art of the ancient world was inspired and modified by the nature of the building material that was available. It is a fruitful subject for investigation. Greek and Egyptian architecture and sculpture are as far apart as the poles. We are taught that this is because of the nature of the people, the state of their civilisation, their religious beliefs, their philosophy of life, &c. But has there not been an ignoring of physical conditions? The Greeks wrought in free-working stone, and had the brilliant marbles of Pentelicus, Paros, Thasos and Naxos to call out their most delicate fancies. The Egyptians, on the contrary, worked largely in the sombre and intractable granites, syenites and porphyries. Who can tell what modifications there would have been in the architectural styles of each of these peoples if there had simply been a substitution of the rock formations of one country for those of the other?

In a general way there is a widespread recognition of the fitness of various stones for certain purposes. The judgment of the ages has fixed upon granite for structures in which the keynote is solidity, strength and dignity. Marble is the material necessary to carry out the Classical style in its purity, while any form of light-coloured freestone is suitable for highly-decorated and Flamboyant architecture. Every architect naturally seeks to work within these bounds and limitations, unless he is

hampered by the "alternative bid" system. But it is when he goes deeper than these general principles, and gives close and detailed study to the capabilities of every variety of stone that the architect secures the most perfect result in the carrying out of his designs. He recognises that half a dozen qualities besides mere manual ease in carving have an important bearing on the finished ornamental work. He rejects a hard, tough granite for a façade requiring a mass of delicate carving, not only because the cost of cutting would be prohibitive, but also because the nature of the stone is such that, even if the work were done, the effect would be wholly unsatisfactory. The qualities in a stone that must be taken into consideration in judging its adaptability for particular work are texture, hardness, life (not durability, but liveliness) and colour, the above enumeration being, perhaps, in the order of their importance. The word "texture" (at first glance seemingly inappropriate in this connection, as it comes from the Latin *texere*, to weave), as applied to stone, means the manner in which the various constituent mineral particles are united, and incidentally takes into account the size, shape and nature of the individual particles. No science has a more extensive and confusing terminology than geology. Scores of terms are used to describe the minute variations of rock structure, but it is enough to consider the building stones under the broad classification of crystalline and fragmental. The crystalline structure of the granites and limestones varies almost infinitely. We roughly distinguish these stones as fine, medium and coarse-grained. For the purpose of considering their fitness for architectural use, it is desirable to employ two more scientific terms. A saccharoidal formation is that in which the grains and structure are similar to loaf sugar. This is common in the crystalline limestones classed as marbles. Porphyritic rock is that which consists of a compact or fine crystalline ground mass, through which are scattered larger crystals. Granite very frequently assumes this formation. It needs no argument to show that the saccharoidal structure is most suitable for work where the *motif* of the carving or decoration is delicacy and grace. On the contrary, these qualities would instantly be sacrificed if an attempt were made to render them in a stone of porphyritic formation. Here the only qualities that can be expressed are strength and solidity, and the decorative features must be conceived along the line of boldness and vigour. To carry the idea still further, these features of a stone have weight, even in plane flat surfaces. If a fine-grained, pure, white marble is used for wide, unbroken wall-spaces, and is left in the smooth, sand-rubbed finish so much affected, the result looks like a bit of plasterwork or a confection by a caterer wrought in sugar. This is in large measure obviated if the stone contains the blue veins and cloudings natural to a true marble. These are generally barred out, because there is a craze for "white" buildings. The effect can also be avoided by a tooled finish, but the better way is to make use of a marble of coarse crystallisation. In contradiction to this dictum, someone may point to the Classical buildings of Greece, in which the fine-grained Pentelican marble was used for large, smooth surfaces. But the Grecian marble has a distinct cream tint, and there is a peculiar translucent quality that we cannot match in any of our stones. Besides, who shall say that it was not a desire to avoid a plaster or sugary effect that led the Classical builders to make so free use of pigments in staining stonework?

Stone of very coarse grain or of porphyritic formation does not give any appearance of dull uniformity in unbroken surfaces, and its use is suggested in all such cases where possible. But it is completely out of place where it is often seen, in buildings made up of small wall-spaces like narrow window-piers. Here it looks as if shorn of its most vital quality, strength.

The second variety of rock formation to be considered in this connection is the fragmental, as this manifests itself in the granular or oolitic form. The granular structure is that of all the common sandstones. In some of the sedimentary rocks the grains are so minute and the texture of the stone so compact that there is scarcely any appearance of granular structure. Stone of this nature, however, is so rarely used in the building trades that it may be dismissed from further consideration. The oolitic formation is most familiar in the Indiana limestone, and the trade application of the term is limited solely to this and kindred varieties of stone. Most of the sandstones and oolites come within the category of freestones. The texture is nearly always fine and even, and consequently they are, in the main, suited for delicate and elaborate ornamentation, save

as there comes the modification of colour, to be spoken of hereafter. In the granular and concretionary, or oolitic structure, the constituent mineral particles are held together by a cementing material, which is dull of colour. Thus there is never the liveliness shown by the crystalline rocks. There is none of the play of light that comes from the facets of a crystal, and that is never completely lost, even though the exposed surface of the crystal be smoothed by the rubbing-bed. For this reason the natural treatment suggested is that ornamentation be carved in greater relief than in a crystalline stone, so that there may be the play of light and shade from without. It also suggests that in plane surfaces the stone always be tooled or left in rock-face, unless there is a warmth of colour. The ordinary greys, blues and buffs of freestone, if sand-rubbed, are as dull and lifeless as concrete, and the architect might better give the preference to the cheaper material. The pink, red and brown stones, however, are best shown in plane surfaces, smoothed, with sufficient moulding and simple ornamentation to prevent severity. In the very dark stones carving loses the greater part of its effect unless it is wholly in the round, like pinnacles, finials, crockets, &c., owing to the indistinctness of the shadows. Of course this is not true of the light reds and pinks. But all of the colour is due to the presence of mineral ingredients that tend to hasten disintegration if exposed surfaces invite the entrance of moisture. Besides, wise restraint is the soul of art, and rich body-colour and elaborate ornamentation rarely harmonise in architecture.

One quality of the freestones that particularly fits them for ornate and highly-wrought carving is difficult to put into words. This is not the mere ease of working, but the direct and delicate response to the chisel, so that the finished surface might almost be called the autographic record of the artisan. There is an individuality that can be had in nothing else save the finest of the marbles. This it is that makes it possible to carve architectural statuary in a stone that has little natural life, and yet that does not show a hard unfeeling result. One has but to glance at the many caryatides and atlantes carved in granite and limestone on our city buildings to see how the former stone yields in beauty and effectiveness to the latter for work of this nature.

In certain varieties of ornamentation it is particularly desirable to make the tool-marks plainly manifest. One of these is the Celtic pattern, and another is vermiculation. The reason for the desire to retain the tool-marks is that there shall not be too much regularity in the ornament, but that it shall look, in the first instance, as if the design were made separately by actual braiding and then applied; in the second case, the desire probably is to simulate the work of worms. When the ancient Celts used the braided-work for their famous crosses, they did not employ any of the fine native granites for the purpose, but rather the Irish limestone. This was not for ease of working, for it cuts as hard as many granites. It is a dense crystalline stone of a fossiliferous nature. It is a dark blue-gray in the fractured surface, but a peculiarity is that it tools almost white, and the light tool-marks never fade away to the original colour of the rock. A stone of an identical nature is found in the central part of New York State. The use of such a material would permit of artistic effects where a marked contrast is desired between the worked and the unworked surfaces.

Every city in this country can show scores of instances where no attention has been paid to the above very obvious limitations of structural stone. In few cases is the fault due to a lack of perception on the part of the architect. What chance had he to adapt his design to the material when at the time of drawing it he could not tell how much his patron would be swayed by questions of cost or time? He must either trust to chance that his design will find a fitting material or try a compromise with his artistic instincts, always a dangerous expedient. One of the handsomest and most elaborate buildings in New York has a profusion of ornamentation in the form of festoons and bosses, all rather ponderous and heavy in design. This was evidently conceived with the idea that it would not be ruined if carved in either granite or marble. As a matter of fact, the stone finally chosen was one of the most delicate and fine-grained of American marbles. The nature of the stone would admit of the most exquisite refinement in carving, and it stands out as an opportunity wasted. Another building has panels and spandrels filled with sculptured figures and the most delicate floral designs of the later Renaissance style. But it is in granite fortunately of a fine, uniform

grain and of light colour. It is a superb example of stone-carving in itself, but the figures especially have the hard, repellent look that must always follow any attempt to render the human form in a material which is not fully responsive to the chisel. The artistic effect would have been superior and the cost far less, if the design had been carried out in marble or any light freestone.

The above discussion of the limitations of the various stones used for structural purposes clears the way for a suggestion of the general principles underlying the adaptation of design to materials. There is no pretence that the matter is to be settled by the dicta of any man, and this claims to be nothing save a contribution to a subject that has been strangely neglected. Reduced to briefest form, I conceive the natural treatment of our building stones to be as follows:—For coarse-grained stone of light colour, bold and vigorous ornamentation, simple mouldings and large plane surfaces are most suitable. Fine-grained stone of soft and even texture, liveliness and light colour, calls for ornamentation of Classical delicacy and refinement, with flat surfaces tooled. Light-coloured freestones are most effective with elaborate ornamentation, carved in high relief, and with flat surfaces invariably tooled. All dark or highly-coloured stone should have rubbed or hammered surfaces and few and bold ornaments and mouldings.

Painters work with oils, water-colours, charcoal or pastel, but they never seek to override the limitations of their *media* unless they are faddists or seeking cheap sensationalism. Americans who commission architects should be forced to a realisation that the limitations of structural material are far more rigid. No considerations should be weighty enough to justify a disregard of them. Architects must be unfettered by sordid considerations. In the good time coming no finished design will be drawn, even at Government dictation, until the general nature of the structural material to be employed is irrevocably determined.

TESSERÆ.

Goltzius's Etchings.

THERE is a style of etching, which for the sake of distinguishing it from any admixture with the graver may be called the painter's style, which requires little besides the hand of a master, more than the knowledge of the character and form of the figure or group, and is in fact nothing more than the artist's drawing upon copper, which emanating from the mind of the painter often possesses a spirit and character equal to the first thoughts or the sketches of the master. In this practice most of the eminent painters indulged both in the Italian and Flemish schools, and these performances have been highly and deservedly valued as well by the amateur as by the artist. In the meantime, the estimation in which they are and have been held by collectors and others has given rise to much fraud and some prejudice. One case related by Charles van Mander is amusing. Goltzius, after his return from Italy, where he had studied the different manners or tastes in engraving, undertook six prints. The designs were his own, but he engraved them in the tastes of six different masters, to try if he could deceive the virtuosi, and what is surprising, he engraved the plates in a very short time. He showed them to a few persons only, being determined to have some diversion. For this purpose he fixed on the "Circumcision," which he had engraved after the manner of Albert Dürer. He took a red iron and burnt that part where the name was, and took care it should be smoked, in order to make it appear antique. The print thus disguised passed to Rome, Venice, Amsterdam, &c., where it was received by the connoisseurs and critics with vast rapture, and purchased at a most exorbitant price, the purchasers esteeming themselves lucky in getting such a print into their possession of Albert Dürer's, hitherto unknown. And what was not a little flattering to Goltzius was to hear himself esteemed above himself; for when anyone asked if Goltzius was not the engraver, the connoisseurs made answer that Goltzius was not equal to anything like this work, it being one of the finest prints they had seen of Albert Dürer's. "Some of the critics added that Albert Dürer had engraven a plate which he ordered to be kept a hundred years after his death, and if his works were then in repute that an impression should be thrown off, and not otherwise, and this they affirmed to be the very print. But after many extravagant conceits and encomiums the print appeared fresh and entire, with the name and portrait of

the engraver. The gentlemen connoisseurs were astonished and confounded; some of them even flew into a passion and conceived a pique against Goltzius for pretending thus to impose on them." Van Mander was not sufficiently aware of the nature of prejudice if he imagined it was to be removed even by facts thus adduced. Similar instances of the same kind have taken place since that time and will continue to be repeated again and again, but prejudice still remains.

Mediæval Fortifications.

In the Middle Ages fortifications were made by great baskets filled with earth and stones, paling, hurdles, dead bodies of animals, wine-casks filled with stones as substitutes for paling, ditches and paling, plain boards only, double ditches, bastilles, *i.e.* fabrics of 10 feet thick with towers, furnished with provisions, arms, engines, &c., and made of wood upon sea to act as floating batteries; earthen bastions, blockhouses, sometimes built in such situations that none could enter harbours to reinforce or revictual them. To protect gates from being forced, faggots, beams and casks filled with earth and stones were used to close the entrance, and palisades and a vast quantity of thorns and brambles were put in the front of walls to prevent the men-at-arms passing through. Froissart describes redoubts made of wood, very strong and well built, capable of holding about 1,000 men. Of fortifications of the fourteenth century we have a fine specimen in the outworks of Caerphilly. They are of great extent, and consist on the north-west side of the old moat of a pentagon entrenchment of earth, with circular bastions at the angles; and further north-west, and only divided by another moat, is a large triangular field moated round with a circular moat at each corner. The works that lie to the north-east have a moat of a modern fashion before them. The gate on this side seems more recent, and does not run parallel with the inner gate and eastern drawbridge. The castle was besieged in 1326. These works were then probably raised. Evrard of Bois le Duc, who served under Henry IV. of France, is the first person known to have published a system of fortification.

Piranesi.

Remarkable for his rare ability as an engraver, to which he is principally entitled for his eminence in the history of the arts, Piranesi was as singular in his mode of execution as for the originality and boldness of his designs. He is said to have generally drawn his design upon the plate itself, without any or the slightest preparation, completing it for the most part upon the spot and performing the whole of the operation by the agency of the aquafortis alone, with but very immaterial assistance from the engraver's tool. Though not repeated by the son, tradition reports, with every appearance of probability, that it was a favourite plan with him, having previously selected the particular object of study so as to have his mind well imbued with the minutiae of the buildings, to complete his designs of the vast architectural piles at the period of the full moon, and effect those bold and masterly productions which have so deservedly obtained the decided admiration of the world of taste. This story might appear to owe its origin to the strong chiaroscuro of his designs, but it appears certain that he often used to shut himself up at such periods from his family and friends, and it would be difficult to account for the peculiar effect of many of his works without adopting such a supposition. He worked with such amazing rapidity as well as truth and thorough knowledge of the subject, and such consummate mastery of the principles of the art he professed, that the number of his productions and the magnitude of his plates almost seem to exceed belief. In the course of about forty years, the period of his professional life, he published nearly two thousand plates, each of inimitable excellence, in number and magnitude superior to what has been left us by any other artist.

The Bowley District Council recently submitted a scheme for the erection of libraries, together with plans of the three sites, to Mr. Carnegie. A reply has been received to the effect that he preferred to have three new buildings erected rather than complicate the matter by exchanging buildings, as proposed, at Blackheath. He further stated that when he received plans for the buildings, which should be wholly devoted to the public service of libraries, and he was able to approve them, arrangements would be made for payments on buildings as the work progressed.



The Public and Architecture.

SIR,—I have returned from my mountain trip rather tired from my walking exertions, and have only to-day read in *The Architect* (July 27) the complaints of my colleagues as to the little interest taken by the public in their art. They suggest all kinds of devices to force the public to take pleasure in the things they provide. This seems to me very silly, and reminds me of the old saying, "One man can take a horse to the fountain, but ten men cannot make him drink if he be not thirsty."

Thanks to railways, telegraphs, telephones and the innumerable material advantages science has obtained for us, the present generation is entirely wrapped up in scientific pursuits and does not care a straw for art of any kind. Science means the dry investigation of facts. In this investigation imagination is considered as a perfidious enemy to be driven away at any cost. The object of art is the excitement of our imaginative powers. It is, therefore, the very reverse of the aspirations of our age. Nevertheless arts are patronised. If we look into this phenomenon rather closely, we will find that what is patronised is not the artistic spirit, but the technical, scientific or sportive elements contained in the productions of several arts. Judging by the concerts I have heard I should say that what is now solely admired by amateurs is the capacity of overcoming material difficulties of playing the piano, for instance, with the pace of a motor car at a hundred miles an hour. In architecture the public is principally concerned with the cost of production. The merit of a building lies in its being the exponent of the length of the purse of the owner. To many it may be interesting from the engineering point of view.

If, as I believe, architecture as an art is the art of producing frames which by exciting the imagination give an ideal value to what they contain; if a palace raises in the estimation of men a simple individual to a kind of supernatural man called a king; if the temples on the Acropolis of Athens helped the good people of the place to feel they had living gods protecting their city, then the scientific spirit of our age will see in architecture an arch-fiend whose province it is to deceive the human mind.

This theory fits in with some historical facts. The religious Reformation of the sixteenth century was caused in great part by the scientific spirit of investigation being applied to religion. Hence the destruction of a great number of magnificent works of architecture. The Reformers had the intuition that the splendour of the Roman Catholic cathedrals was their greatest enemy; and they saw this rightly, for we see in our own days the influence of the stones of the cathedrals left standing bring back many Englishmen to the appreciation of the old faith.

In conclusion, let us remember the common aphorism "every dog has his day." When everything that science can give us will have been plentifully provided; when people will not only talk, but see one another across the earth; when they will be whisked across the Atlantic in a second and ride in the air like meteors, there will come a time when mankind will feel that all this does not fill the soul, that something is still wanting for happiness, and then the mind of man will turn again to poetry, to religion and to architecture which helps to foster both. Let architects in the meanwhile wait patiently and try to put a little poetry in their work, whether it be appreciated or not.

Having no more any reason for earning money, I have abandoned the practice of architecture and taken to sculpture. I do not think that the practice of architecture is less pleasant than the art of the sculptor, but architecture involves the practitioner in commercial transactions which are not always pleasant, and offer sometimes danger to one's purse. The sculptor's art, when limited to modelling in clay, is purely personal, needs no paid assistants, involves the practitioner in moderate expenses and offers no risks. That is why it is eminently an avocation for a retired architect. The sculptor's art is akin to the architect's. The produce is in both arts a material object, not a picture, which is only an appearance. In both arts the object produced has to be considered from every point of view. Lastly, sculpture and architecture often run into one another, as when some small monument is designed. Thus, an architect who adopts sculpture finds

much that he has learnt in his first calling will prove most useful in his last avocation, and I may recommend sculpture as a most pleasant occupation to those of my colleagues who retire from active practice.—Yours truly,

LAWRENCE HARVEY.

Geneva: September 21, 1906.

GENERAL.

His Majesty, through his equerry, in reply to a letter addressed to him by Mr. Learmont Drysdale, who arranged a concert in St. Andrew's Hall, Glasgow, for Thursday, in aid of the scheme for the preservation of the Auld Brig of Ayr, has written to say that he is interested in national or historical landmarks, and is always glad to hear of any steps taken for their preservation.

The Late Earl of Leven and Melville has bequeathed 4,000*l.* for the restoration of a chapel in Holyrood Abbey on condition that the plans of Mr. Thomas Ross are carried out under his direction.

Mr. Atkinson, the architect who has charge of Ely Cathedral, is engaged in conducting a search for the shrine of St. Etheldreda, which was concealed from the agents of Henry VIII.

A Committee has been formed in Brussels for the purpose of making arrangements for the erection of a memorial to the late Alfred Stevens, the painter, in that city.

M. Gondonnier, who obtained the first prize in the competition for the Palace of Peace, to be founded by Mr. Carnegie, has been informed that he is to be entrusted with the carrying out of his plan, subject to some slight modifications of detail on the score of economy.

Mr. Charles Long, of the firm of Messrs. Wylson & Long, died on the 13th inst. at his residence near Walmer. The firm designed several well-known theatres and music-halls in London and the provinces.

Mr. Edward Elvine Scrivener, of Newcastle-under-Lyme, a member of the firm of Messrs. R. Scrivener & Sons, architects, Shelton, who died in May last, left estate valued at 15,238*l.*

The Stirling Fine Art Association will organise an exhibition next year which will be opened on February 2. The last exhibition took place three years ago, and was a financial success.

Sir W. B. Richmond, R.A., has been awarded the first gold medal of the Institute of British Decorators in consideration in particular of his decorative work at St. Paul's Cathedral. The presentation will be made at Painters' Hall in November.

A Memorial Exhibition of the works of the late Mr. Gilbert Foster will be opened early in October in the Leeds Art Gallery, with the consent and sympathy of the chairman and committee of that Institution. A large and representative collection of the life work of this much-regretted painter is being gathered together from private collections and other sources, including the pictures and sketches left behind at his death.

The Local Government Board have intimated to the Bournemouth Town Council that they cannot accede to the application for permission to raise a loan to secure certain land in the borough reserved as an open space, on which it is proposed to erect municipal buildings.

The Institut de France has sent as delegates to celebrations at Aberdeen the following representatives of the different sections:—MM. Jules Claretie, of the Académie Française; Salomon Reinach, of the Académie des Inscriptions; Becquerel, of the Académie des Sciences; Bernier, of the Académie des Beaux-Arts; Boutroux and d'Eichthal, of the Académie des Sciences Morales et Politiques.

Mr. Pittendrigh Macgillivray, R.S.A., and Mr. Morham, architect to the city of Edinburgh, have submitted a plan to the sub-committee of the provisional committee which has under consideration the proposed new art school for Edinburgh. A further meeting of the municipal art school committee was held on Saturday, when Mr. Morham, the city architect, reported that the number of students set down as likely to take advantage of the school was between one and two thousand. The teaching will be of a very complete character, embracing art as applied to many industries, and it is expected, once it is set going, the number of students will be greatly increased. Before deciding on plans for the building the committee decided to obtain information from various quarters.

The Architect.

THE WEEK.

It does not augur well for the French that of late years they are losing that respect for old works which led to the establishment of the Department of Ancient Monuments. From recent acts it might be supposed that the Department was no longer recognised by the Government. One instance is now causing indignation among French archaeologists. Cahors is one of the most remarkable provincial cities, for its steep and narrow streets, with the curious buildings lining them, bring us back at a glance to Mediæval times. But Cahors is very much older, for it was a Roman settlement. It also possesses three ancient bridges over the river. The Municipal Council recently proposed to reconstruct one of them which dates from the thirteenth century. Protests were instantly raised, and a memorial was addressed to M. CLEMENCEAU, the Minister. He ordered that a despatch be sent to Cahors to suspend operations. But the engineer in charge of the work refused to obey it on the grounds that he only recognised the local maire. Now the Municipal Council, having entered into a contract which was approved in the usual way, have declared that the suspension of the works will involve them in heavy pecuniary responsibilities. They have accordingly protested against the action of the Minister of the Interior as being contrary to the usual rules and regulations. Meanwhile the demolition continues, and there is now a struggle between Paris and Cahors concerning the ancient Pont Neuf.

WHILE the British Government is labouring to make provision for the material and social needs of modern Egyptians, a great many people are found ready to aid in researches which will afford evidence of the ancient history of the country. On Monday last the Manchester Egyptian Association was formally constituted. Already, it appears, there is a class in the Manchester University for the study of hieroglyphics. The members of the new Association will co-operate with the Egyptian Students' Research Association, having headquarters in London, and which has about 200 members. Meetings will be held, at which the latest results of explorations in Egypt will be explained. The Manchester Museum already possesses an excellent collection of antique objects found in Egypt, and they will be utilised as aids to the studies of the members. Liverpool has for some time been an active worker in the field, and it was scarcely to be expected that Manchester would fail to compete with its rival city.

THE Carnegie Dunfermline Trustees have been departing from the usual course by appointing a sculptor as superintendent of art in that ancient city. Mr. REGINALD GOULDEN will act as supervisor of the teaching of drawing in the schools, and he will also organise evening classes where it is hoped that a higher taste for art in connection with local handicrafts will be developed. Artists who work in wood, iron, plaster and stone are expected to benefit in a special way by the new arrangement. Mr. GOULDEN will also have his own studio in which he can carry out any commissions he may receive. It is, however, announced that all interested in the project will be welcome in the studio, and by that means an improved taste will be fostered in the community. The appointment realises some official recommendations. Mr. PITTENDRIGH MACGILLIVRAY in his special report on Scottish schools of art came to the conclusion that there was not enough of the workshop about them, and that there was little use in a system which would only produce amateurs and superfluous artists. What was wanted was the attainment of the craftsman's power in using material and applying it to practical ends. The

new experiment is not the first made by the Trust, and the results will be watched with interest. In the industrial war which is now being waged painters of pretty pictures which cannot find a place even in second-class exhibitions are of no use as combatants. Yet vast sums of money have been spent by the country during the past half-century on their production. It is time there was a change.

THE Liverpool Town Council having declined to accept the proposals of their own water committee, that Birkenhead should have a share in the Vyrnwy supply by paying liberally for the privilege, the Birkenhead Town Council will now have to undertake the gravitation scheme which was adopted in May last. If carried out in its entirety it is estimated to cost 1,740,000/. But it is only proposed at first to proceed with as much of the scheme as would supply seven million gallons of water daily, with a reserve of a million gallons, for an outlay of 740,000/. It would mean an increase in the charges for water used for domestic purposes from 10½d. in the £ to 1s. 4½d. But whatever the expenditure a new water supply must be secured. Mr. DEACON is to be appointed engineer-in-chief, and it has been arranged that the Corporation are to pay him for commission, fees, and in full discharge of all claims for his services, 20,000/., in certain proportions, the first proportion of which, 8,000/., would become payable after the working plans and drawings had been prepared. If the outlay on works should exceed the estimated sum no additional commission is to be paid. It was also agreed that upon the deposit of Parliamentary plans in November the Corporation would pay to Mr. DEACON 630/., and upon the royal assent being given to the Bill 420/. in full discharge; but if the Bill was rejected, withdrawn, or prevented going on, the Corporation will pay to him 735/. instead of 420/. in full discharge. If the passage of the Bill should be stopped before its first reading Mr. DEACON would only be entitled to a portion of the 1,365/.

VERCINGETORIX may be said to have attained an official position in French art, for whenever a young sculptor wishes to show what he can do in the production of a draped figure on a colossal scale the brave representative of the Averni inevitably rises before his mind. CÆSAR in that way has helped to immortalise himself, for without his Seventh Book VERCINGETORIX would probably remain unknown. The fate of the majority of the statues can be imagined. But a few years ago one of the biggest was completed and set up at Alise. At the time we described the transport of the figure through Paris, where it caused amazement from its dimensions. CÆSAR says the Gauls were collected in the town of Alesia, which was in the territory of the people described as Lingones, after being defeated on the battlefield. They were besieged. VERCINGETORIX, who was in command, first drove out of the town the aged men and women and children to implore CÆSAR's pity and to receive them into his camp. But he declined. A large army of Gauls came up to rescue their friends, but they were either slain or driven away. Whereupon VERCINGETORIX surrendered. He was taken to Rome, and after six years' confinement was put to death. According to the Roman general, Alesia was built on the east side of a high mountain, at the foot of which were two rivers and a plain having a length of three-quarters of a league. The description applies to more than one place in the district, and there is much difficulty in identifying the position. M. BÉRARD has come to the conclusion that the site of the conflict was not Alise but Izenore, which is thirty-five miles distant. The French Institut still maintain it was at Alise. If M. BÉRARD's researches should be confirmed the enormous statue will have to make another journey, and it seems destined, like the hero it represents, to serve as a trophy in somebody's triumph.

THE CITY GUILDS INSTITUTE.

IT is evident from the latest report of the Council of the City and Guilds of London Institute that the executive committee must have had recently a period of unusual anxiety, and they cannot be sure that it is at an end. The centralising spirit which has so long ruled at South Kensington has lately become more ambitious than ever. The action of the departmental committee which recently inquired into the provision for technical education did not augur well for the Institute. Government officials, including professors of science, are not favourably disposed towards institutions which represent voluntary efforts. The fact that since the foundation of the City and Guilds of London Institute the large sum of 733,802*l.* 19*s.* 6*d.* has been obtained through donations and subscriptions is evidence that the system represented by the Institute has found favour in London at least. The success of the technological examinations throughout the country as well as in the colonies is further proof of its power.

The Institute has shown that it was not inspired by narrow motives. In 1903 a special course of instruction in electrical engineering was arranged for students of the Royal College of Science and School of Mines. The desire was expressed at the same time that when the new chemical and physical laboratories at the College of Science were completed the students of the Institute might have the use of them. By that arrangement the Central Technical College would be able to confine its courses more strictly to civil, mechanical and electrical engineering.

Another circumstance which could not be overlooked was that the students of the Institute were in demand by manufacturers, corporations, &c. It still continues. In the report a list is given of the forty-eight students by whom the diploma of Associate was earned last year. Some of them were able to continue their studies at the Central Technical College, but, with the exception of three, all have received appointments. Success of another kind was obtained in art. The South London Technical Art School has produced several Academicians and Associates, and apparently clever students continue to be attracted. The report states that for the sixth time the gold medal and travelling studentship of 200*l.* was carried off by one of the students. According to a late report of Mr. SPARKES one-fifth of the whole number of works in the Sculpture Hall of the Royal Academy came from students. He is justified in saying that in sculpture alone is there a sign of breaking new ground.

"The work on our public buildings," continues Mr. SPARKES, "is no longer of the conventional type to which we had grown accustomed through many dull years. The old idea that sculpture consisted in a statue in marble or bronze or a bust is departed; the sculptor now takes for his field every section of decorative plastic work, and whatever is undertaken is invested with a new spirit of intelligence, ingenuity and originality. If we contrast the position of sculpture to-day with that which it occupied twenty years ago, we shall find not merely advance, but a new art. And whereas twenty years ago the French sculptors were leading in Europe, I think we may now without any affectation say that the lead has passed to this country. I am afraid it is but repeating a well-worn observation, that the majority of the men who have carried sculpture to its present pitch have been reared in our school. It is certainly gratifying to remark that the position at which we arrived so brilliantly ten years ago has been left far behind by the productions of our students in the past two or three."

In painted decoration also the technical art school has prepared men for business. Another innovation which has been attended by success is the instruction in enamelling in the Finsbury College. When the classes were established the art did not exist in England, and enamelled watches had to be sent abroad for repairs. Only a rough imitation was attempted for cheap

jewellery. Mr. FISHER, who has studied in Paris, was appointed as teacher, and so many students took up the art there are classes for it in many parts of the country. There has been so much progress that specimens are to be seen at every exhibition of the Royal Academy.

The recommendations of the departmental committee would group all the teaching institutions at South Kensington around the University of London. That of course means a revolution, and as yet no definite explanation has been given about how it will be carried into effect. How far the City and Guilds of London Institute will be affected has not been divulged. Sir JOHN WOLFE BARRY, who is chairman of the executive committee, said there is a desire that the Institute's college should be distinctly associated with the new movement. But he adds:—"Sir FRANCIS MOWATT and Mr. HALDANE only so far wished to broach the matter to me as to ask whether I thought an idea of this sort would be acceptable to the supporters of the City and Guilds Institute, stating that I need not go any further than give my private ideas on the subject." Here we have an instance of diplomatic manœuvring. And Sir JOHN WOLFE BARRY was acting wisely in his reply. He tells us:—"I said very strongly that I thought the Council of the City and Guilds Institute would not like to lose their autonomy in the matter, that it should not be an absorption but a co-ordination, and I was assured by both gentlemen that that was distinctly the view of all those who had the matter in hand—that there was no idea at all of doing anything more than asking us to fall in with a general scheme for improved educational courses at South Kensington, in which the City and Guilds Institute would take a very leading part in the future as it has in the past." In the final report of the departmental committee one of the recommendations is that five representatives of the Council of the Institute should be among the forty members who will constitute the governing body.

Meanwhile the Council of the Institute continue to act on their own principles, which have been found so beneficial in working. The number of students is increasing and the standard of examinations has been raised. The fees have also been increased from 30*l.* to 36*l.* a session. University students find it an advantage to attend the college, and there were over 140 in the last session. About 14,456*l.* has been expended on a new wing at the Finsbury Technical College. It is stated that in the course of building tanks and channels were inserted, which, with the addition of necessary machinery, will form a piece of hydraulic apparatus suitable for the study of many engineering problems.

The technological examinations likewise exhibit signs of vigorous growth. Last year examinations were held in sixty-nine subjects and nearly 20,000 students entered themselves. The number of examinees in carpentry rose from 1,952 to 2,189, brickwork from 755 to 834, and masonry from 515 to 622. The examination in builders' quantities, which was held for the first time in 1900, appears to have met a distinct need; the number of students in attendance at registered classes last session was 1,396, of whom 799 presented themselves for examination, as compared with 1,264 students and 683 examinees in 1904. One interesting feature of the examinations is that several trade societies aid them by advice and encouragement to students.

It is hardly necessary to state that the Institute is not yet self-supporting, and probably will never attain that state. The income for 1905 amounted to 56,443*l.* including a gift of 10,000*l.* towards the cost of the extension of the Finsbury College. The total expenditure reached 54,674*l.* The fees at the Central Technical College amounted to 11,874*l.*, while the net expenditure was 17,495*l.* In the Finsbury College the fees were 3,557*l.*, and the expenditure, exclusive of building, 10,582*l.* In other words, Finsbury has cost the Council about 1,600*l.* more than the Central College.

PAUSANIAS IN ATHENS.

IN one of Cardinal NEWMAN'S essays he gives an imaginary report by the agent of a London company who was sent to Attica to consider its resources. It had to be entirely a matter-of-fact composition, and would exclude a great many of the characteristics which at one time made the land dear to pilgrim students from various parts of Europe. We cannot suppose that any true representative of Oxford would be irreverent towards an ancient Greek book. But the idea of a business man describing Attica or any other part of Greece might have been suggested to the Cardinal by a glance at what is known as the "Itinerary" of PAUSANIAS. As long as Greece exercises sway over the human intellect that book must be respected, and yet it is impossible to avoid feeling that its composition was inspired by purposes which differed from those of such a traveller as STRABO or the Englishmen of a later age.

PAUSANIAS says very little about the soil of Greece or its physical aspects. He was no landscape-painter. He is also silent concerning the inhabitants of the towns he visited. It might even be imagined from his pages that Athens and many memorable places were mere cities of tombs or other relics of antiquity, just as Pompeii is to-day. We learn no doubt a great deal about the people of a past age, for there is probably no book of the same size in existence which contains so many proper names. They are, however, so remote and ghost-like that an ordinary reader must welcome the passage in which PAUSANIAS speaks of his interpreter. He at least was a living man.

As he does not suggest that the Greek cities were inhabited by men and women, he avoids giving any description of residences. We may go through the ten books relating to the different districts he visited without being any wiser at the end concerning the subject of human habitations. We know that in Athens men who gained renown were afraid to possess anything that could be called a palace. But it is difficult to believe that sort of policy prevailed all over the country. Human nature is stronger than expediency and it is in favour of luxurious dwellings. A man like SOCRATES might live in a small house in a back lane, and might use the front room of the ground floor as a workshop and for displaying the draped Graces and other wooden figures he carved. But we cannot suppose that ALCIBIADES and PLATO, although they admired him as a mentor, would put up with similar discomforts, or that the philosophy of the wealthy sophists recognised similar self-denial. The Greek temples had a use which is unknown in modern Europe, for good people are not satisfied now with gazing on the outside of a church, and some other kinds of buildings were adapted only to the peculiar conditions of Greek life. But the house can never be superseded, and men must always be eager to know whether the Greeks, who in so many ways were superior to those who followed them, had exercised their good sense, their love of proportion and their admiration for beauty in their own rooms as well as in the public places. On that subject, as we have said, PAUSANIAS is no guide.

It is, therefore, always amusing to anyone who has made a study of PAUSANIAS when he finds it occasionally stated that the traveller described everything that was to be found in a Greek city. By some extraordinary delusion able and honest men are to be met with who seem to think that they can be more familiar with the ancient Greeks than with their own contemporaries. The late Sir DIGBY WYATT was a scholar, and when he was SLADE professor and lecturing in Cambridge he was addressing scholars. Yet he did not hesitate to say that we can trace the progress of Greek sculpture almost year by year. The least attention to the subject of the chronology of art or of biography would have prevented the utterance of so exaggerated a statement. So it is with regard to PAUSANIAS. It is imagined that he does justice to Greek buildings of all

kinds, when the fact is there is not a single adequate description of a temple in his ten books. We do not wish to imitate other critics and to pose as having a special knowledge of the traveller. We judge of him solely by his pages. But with them as evidence we have no hesitation in saying he was incompetent to describe a great building. We may suppose, for instance, that, like the cheap excursionists of to-day, he was limited as to time, and that every Greek city offered so many objects for admiration it was difficult to fix the attention on a single one of them through becoming distracted by the others. It happened with PAUSANIAS, and it is a misfortune for us, that he was certain to become most distracted when his attention should have been most concentrated. One example will suffice.

Before he entered Athens he could not help being reminded, if he did not know already, that he was coming under the influence of MINERVA or ATHENÉ. She appeared, as it were, in several characters. In one place a statue of the goddess was set up as if in rivalry against one of the daughters of ÆSCULAPIUS. There ATHENÉ was called HYGEIA, or the health-giver. Another statue showed her chastising MARSYAS for daring to play on a flute which the goddess had cast aside. Elsewhere she was seen rising from the head of ZEUS, and in another place appeared as the patroness and protectress of craftsmen. PAUSANIAS seems to have excused himself for his delay, amidst so many memorials, in describing the Parthenon, the great temple of the goddess. On one pediment, he says, was sculptured the birth of the goddess, and on the other the contest with NEPTUNE. It will seem incredible to those who have not read the description that nothing more was said concerning the temple itself. The mention of the goddess compels him to turn away to note the statue of gold and ivory, which he describes at length. He was always glad to introduce something in praise of HADRIAN, and he records that the only statue of a man to be seen within the temple was one of that emperor. Even APOLLO was kept outside. A scholar of our time would find that the Parthenon, although in ruins, could provide materials for a volume. And yet with all his supposed admiration of architecture the whole of what PAUSANIAS says about it and its treasures could be printed on a small page.

It may be said in explanation of the brevity in which architecture was treated by him that the temples were countless, and PAUSANIAS could have said in the Johnsonian manner, "When you have seen one Greek temple you have seen all." It was likely to have been a relief to him to mention one built of copper at Delphi, and one of wax which the bees erected with their wings at Tempe. But it might be supposed that when there was any deviation from the familiar Doric form PAUSANIAS would be careful to point it out. One extraordinary instance is deserving of remark. As we have stated, he was always disposed to express praise of HADRIAN, who undoubtedly proved himself to be more an Athenian than the Athenians themselves by his desire to elevate Athens. He expended vast sums on statues and buildings. He erected one temple to JUNO, another to ZEUS as protector of all the Greeks, and a third to all the gods, or an Athenian Pantheon. The last was long supposed to have been a palace. Other investigators considered the remains to have belonged to a temple. WILKINS, who designed our National Gallery, and in consequence lost the reputation he merited as a student of Greek architecture, was the first to suggest that the ruins formed part of HADRIAN'S Pantheon. PAUSANIAS says there were 120 columns of Phrygian marble in or outside the temple, that the porticoes and walls were of the same material, that the niches were ornamented with paintings and statues, and that the ceilings were brilliant in gold and alabaster. Near the temple was a library and a gymnasium, or place of exercise, which was named after HADRIAN, and where the visitor could see 100 columns of beautiful marble derived from Libyan quarries. As

our readers are aware, the Athenian Pantheon is remarkable from being a specimen of Roman Corinthian, and must in the second century have appeared as a conspicuous contrast to the other temples of Athens. But PAUSANIAS is silent about the style of the building. We do not suppose that he was not aware of the difference. When describing the temple at Tegea he points out that its principal beauty consists in the use of the three orders; the Doric and Corinthian being found inside and the Ionic order on the exterior. The architect was, he believed, SCOPAS the sculptor. This instance by itself is enough to show that all columns were not alike in his eyes, although he might neglect to discriminate between them. In several places he mentions the three orders.

A more noteworthy instance is afforded by his account of the compound and unique temple called the Erechtheum. It is a very valuable example of the Ionic order and the porch is especially remarkable for its caryatides. It is surprising that the figures of the women did not engage the attention of a man who appeared to be more a lover of sculpture than of architecture or painting. Nor does he mention the style of the columns. We hear about the three altars, about the well of salt water which did not appear to PAUSANIAS to be miraculous, about the stone covering the well which NEPTUNE marked with his trident, and other marvels. But much controversy would have been spared if he had been more definite in describing the different parts of this puzzling temple. It is taken for granted that the golden lamp always kept lighted before the statue of ATHENÉ, which had fallen from heaven, was in the Erechtheum. But the words of PAUSANIAS do not support that theory, although he does not say precisely where it was to be seen, nor does he indicate the position in which the neighbouring Temple of Athené Polias was found.

It is a peculiarity of PAUSANIAS that he appears to promise much to the superficial reader. But when any of the statements are analysed, they are found to be remarkable for their vagueness. We have just referred to the lamp, which, on account of the nature of the wick, required to be filled with oil only once a year. CALLIMACHUS, the sculptor, according to PAUSANIAS, made a great bronze palm, which was as high as the roof, and which was placed over the lamp in order to diffuse the smoke. That appears to be a very definite statement. The only plan, however, which the late Dr. MURRAY could imagine for such an appliance was "that the palm tree was inverted so that its spreading leaves would form a reflector, while the hollow stem would conduct away the fumes." People who are acquainted with modern gas "sunlights" might approve of such an arrangement, but it is doubtful whether Greek logic would approve of such an inversion of a natural form.

The most important instance of PAUSANIAS's failure to describe a work of art arose out of POLYGNOTUS's painting in the Lesche of Delphi. No other work was made the subject of so much detail by the traveller. Yet when theorists attempt to arrange the figures they find themselves incompetent to produce a satisfactory result. GOETHE was so fascinated by the problem, he investigated it with his usual thoroughness and made, as he thought, type diagrams of the two series. BÖTTIGER a few years afterwards, in his work on the "Archæology of Painting," went still further in the attempt to group the figures. FUSELI in one of his lectures said that the accounts of the pictures are mines of information, an inestimable legacy to the arts. Yet on further consideration FUSELI came to the conclusion that the paintings must have been totally wanting in what is now called composition, that there was no perspective, that many of the figures had to be designated by letters, although he says we should be cautious to impute to ignorance or imbecility peculiarities which may have been based on principle.

With all its shortcomings, the description of PAUSANIAS is impressive, and it may help us to under-

stand the true character of his book. About the writer himself hardly any information is forthcoming. He might be considered as a Romanised Lydian. It is believed that he visited Greece in the time of ANTONINUS PIUS. From the eulogies he bestows on HADRIAN and the reigning emperor we might infer that he was an official. The two rulers endeavoured as philosophers to atone for many acts which were allowed to be perpetrated during preceding reigns. Greece was repeatedly pillaged, and works of art were carried away to adorn the houses and gardens of Roman officers or to be sold as spoil. It would not be unreasonable to suppose that under HADRIAN or ANTONINUS PIUS an effort should be made to put an end to a traffic which was without any advantage to Rome as a State, but which embittered the Greeks and prevented them from becoming loyal subjects. If we can imagine a Government department proposed for the preservation of works of ancient art in Greece, then such a compilation as that bearing the name of PAUSANIAS became a necessity. An official inspector would bestow as little attention as PAUSANIAS on the temples, knowing that the smallest of shrines could not be easily transported. He would be careful, on the contrary, to catalogue every painting, statue or work of art, like the palm tree which conveyed the smoke of the lamp, in order that measures should be taken for their preservation. The inspector could not imagine that a soldier would have the enterprise of Lord ELGIN, and therefore no regard was given to the Pan-Athenaic frieze and the metopes which have found a home in Bloomsbury. It may seem extraordinary that any intelligent observer should pass over such noble works. But while they formed parts of the temple they could not be carried off by stealth or without the knowledge of the Roman representative. The works of art within the temple, such as the statue of gold and ivory, were more exposed to danger. To Roman connoisseurs the painting by POLYGNOTUS at Delphi was likely to appear the most valuable work remaining in Greece, and therefore PAUSANIAS mentioned every one of the figures represented. Some may say that the intention of PAUSANIAS was to provide a guide for those who wished to take measures for the removal of paintings, statues and other works. That belief would be an offence against the memory of a man who, by revealing the wealth of Greece in works of art, has afforded delight for nearly four centuries. *i.e.* since 1516, when an edition of the "Itinerary" was printed by ALDUS in Venice.

DURHAM AND NORTHUMBERLAND ARCHÆOLOGICAL SOCIETY.

AT the last meeting of the above Society for the year 1906 a large number of members and friends assembled at Bishop Auckland station, and took carriages to Escomb old church. After a survey of the exterior of the building the president (Rev. Canon Greenwell), who was, says the *Durham Advertiser*, heartily received by the members after an absence of nearly two years, addressed the gathering. He said that the ancient name of the place was Ediscum, and it belonged to the church at Durham. Bishop Aldhun transferred it to the three earls, and Northman retransferred it to St. Cuthbert. Escomb was one of the six prebendal stalls at St. Andrew's, Auckland. It is one of the very few pre-Conquest churches complete from one end to the other, and all of one building. It consists of merely a nave and chancel without aisles or transepts, and the nave is 45 feet long by 14 feet wide inside, the chancel measuring 10 feet square. The date is difficult to fix, but it is probably about the eighth century, and the sepulchral memorial crosses, with work on them, are of undoubtedly the eighth century. The church is narrow and lofty, and possesses many original doors and windows. The chancel arch is original and built of stones brought from the neighbouring Roman camp of Binchester; in fact, it appears to be a Roman arch removed. Although the upper courses of the walls are of smaller stones, there is no reason to doubt that all was built at the same time. Canon Greenwell suggested that these were from the centre

of the walls of the camp after all the available facing stones there had been exhausted. The latest additions to the church are beautiful lancet windows and a chancel window replaced early in the eighteenth century. The porch and bell-gable and west window, and a large window in the south wall, are also later, and with these exceptions the whole building is of the eighth century. It had been proposed in Bishop Baring's time to add to the church, and make the old church a chancel of the extended building, but Bishop Baring caused an entirely new church to be built on a different and more central site, and thus the old church was preserved intact. Some years ago a member of this Society told Canon Greenwell at a meeting of the Society at Binchester that there was a very old church at Escomb, and accordingly about a dozen of the members at once walked across. As soon as he saw it he knew that it was a Saxon church. The vicar (Rev. T. Lord) took the matter up, and had it repaired and the roof restored, &c. That was how it was discovered. On the exterior of the church was found the letters L E G V I in Roman broaching, and on the south wall is a sundial of the date of the church. Remains were found at the west end of an addition, no doubt the residence of the priest. He recommended that excavations should be made to discover its area. There is a piscina in the south wall of the chancel of very simple character, and may be of the original church. There are also memorial crosses of the characteristic work of the eighth century, and a few Mediaeval grave covers of the thirteenth century.

The party then drove on to Witton Castle, where they were met by the present occupier, Mr. W. F. Pease, and by Rev. J. F. Hodgson, of Witton-le-Wear, who took them round and described the building. It is situated in a beautiful and commanding position overlooking the valley of the Wear and surrounded by very extensive gardens and plantations. Mr. Hodgson stated that in the time of Henry II. Witton was royal property, and was bought by Bishop Pudsey from the king for 2,000 marks for his son Henry Pudsey. The castle was built by Ralph de Eure, to whom a license was granted to build by Bishop Langley, and at the same time he was fined for building without permission. No vestige of any earlier building remains, but the present keep tower, with its barrel-vaulted basement, and the walls surrounding the courtyard, are remains of his castle. After the Eures it was owned by the Darcys, who also did much building, and the late owner, Sir W. Chaytor, also executed more work. Across the courtyard is a large detached tower, probably built early in the sixteenth century. After a walk through the beautifully-kept and spacious gardens, and on the top of the courtyard walls, from which a fine view was obtained, the party proceeded to Witton-le-Wear. The church here was described by the vicar. It has been recently almost entirely rebuilt, as it was in a dilapidated and ruinous condition and contained few features of antiquarian interest. These, however, have been retained in the present edifice, including much of the nave arcade, the south doorway and porch.

From Witton the members drove to Hamsterley, where the church stands high on a hill overlooking the valleys of Wear, Bedburn and Linburn. It is about a mile from the village, and consists of nave, chancel, north and south transepts, the nave and chancel dating from 1190, the south transept 1210 and the north transept from 1280. The transepts were originally built as chantry chapels. There are two stone tombs built partly under the wall of the south transept and projecting about 3 feet beyond the church. One is of a lady, and the other is beautifully carved. They are probably of about the year 1320. The church also contains several fine grave covers built into the walls. The visitors also discovered three or four early grave covers in the churchyard walls, which the vicar promised to have taken out and removed into the church. A vote of 5*l.* was made to the vicar towards the proposed repair of the building. A short walk from the church brought them to the "Common Fields," where Canon Greenwell gave an interesting account of the old manner of cultivation and the relationship between lord and villein in ancient times. These common lands consisted of strips of arable land divided by balks or cams, several of which still exist at Hamsterley. These plots were allotted to the peasantry, each occupier changing his plot every year.

Mr. J. Forsyth, sculptor, has presented to Dudley the original model for the fountain erected in the market-place from his design.

TREASURE TROVE IN SHEFFIELD.

LAST week workmen excavating for the foundations of a house at Pittsmoor came upon a number of ancient Roman silver coins. How many they found is not known. They apparently shovelled a good many into carts that were removing the soil. Numbers were recovered at the brick-works to which some of the soil was carted. Others were disposed of for beer.

When the discovery became known there were two claimants for the coins. The chief constable (Commander Scott) claimed them on behalf of the Crown, Mr. T. Winder for the Duke of Norfolk, on whose land they were found. Each secured a share. Consequently at the Mortuary the Chief Constable, sitting on one side of the table, asked Mr. Winder, sitting on the other, how many he had. Mr. Winder said twenty-one and the Chief Constable fourteen.

For the present, says the *Sheffield Telegraph*, the coins remain with the representatives of the Crown and the Duke. The find will be reported to the Home Office, and the Home Secretary may demand the lot for the British Museum. The Duke of Norfolk, with his usual generosity towards the city, is quite willing that the lion's share, which his representatives have secured, shall be deposited in one of the Sheffield museums. They are such notable evidence of the Roman occupation of Sheffield that their home certainly ought to be here.

The conclusion to be arrived at from what was said at the inquiry is that the coins were buried where they were found something like 1,720 years ago. Through all those seventeen centuries they have been undisturbed within 2 or 3 feet of the surface of the ground. The coins run consecutively as to the date from A.D. 69 to A.D. 180. It is the Coroner's theory that they were buried when the Romans withdrew from England. Presumably they were placed in an earthenware jar, for Mr. Winder found fragments of a pot which might well have held them. Now that the dirt has been cleaned off, the figures and inscriptions on the coins are all astonishingly clear. They never had much of the wear and tear of circulation.

Following is a list of the coins in the hands of the police as prepared by Mr. E. Howarth, curator at the Weston Park Museum. No list of the coins held by Mr. Winder has yet been prepared:—

- 2 coins of the Emperor Domitian, A.D. 69 to 96.
- 3 " " " Trajan, A.D. 98 to 117.
- 3 " " " Hadrian, A.D. 117 to 138.
- 1 coin of Sabina, wife of Hadrian.
- 1 " the Emperor Antoninus Pius, A.D. 138 to 161.
- 1 " his wife Faustina.
- 2 coins of the Emperor Marcus Aurelius, A.D. 161 to 180.
- 1 coin not yet deciphered.

Mr. Kenyon Parker, deputy coroner, who conducted the proceedings, said according to an old Act of Edward I. it was the duty of a coroner to hold an inquest into cases of treasure trove. As far as he could ascertain, the coroner had no discretion in the matter. The only duty of the coroner and his jury was to inquire whether the articles were treasure trove and who were the finders; it was not within their jurisdiction to decide whether the Crown or anyone else was legally entitled to them. Therefore, from a modern practical point of view the inquiry was perhaps not of great importance, although he understood that historically considerable interest attached to it. There were, however, two practical points about the inquiry. First, it formally acquainted the Crown with the circumstances, and, secondly, if the jury found that the coins were treasure trove, it warned any persons who were in possession of any of them that if they detained them they were liable to fine and imprisonment, and might be prosecuted for stealing. No similar inquest had been held in the Sheffield district at least during the time of the present Coroner and his predecessor, although it was stated that in 1860 a vase containing about 100 silver Roman coins was dug up at Wincobank, about a mile from where this was found. According to the English law any silver coins found hidden in the earth or in any other private place, and the owner of which could not be found or was unknown, was treasure trove.

Mr. E. Howarth, curator at the Weston Park Museum, then described the results of his examination of the coins. He roughly estimated the value at from 5*s.* to 7*s.* 6*d.* per coin.

The Chief Constable said he was not very well satisfied with the attitude of Arthur Godson, who found most of the coins, and asked the coroner to press the man, as he had not given them the slightest information. Godson was

excavating for the cellars of new houses at Scott Road when the coins were found. Most of the soil, he said, was carted to a brickyard, although some of it on the top was taken to gardens. He said he sold a good many of the coins, but could not remember all of them.

What did you get for those you sold?—A pint of beer, a quart of beer, and sixpence.

How many did you sell?—Half a dozen or a dozen. About ten or twelve altogether. I didn't know the value of them.

You were glad to get a pint of beer for them, I suppose?—Yes.

And you swear you don't know the names of the persons you sold them to?—I can't remember them.

Charles Bates, foreman at Whitaker's brickyard, had had sixteen of the coins. Three he found in a clay pan at the works, and the others he obtained from Mr. Marsh. He was asked to give them up to the police, but declined, as his employer had instructed him to hand them to Mr. Winder.

Mr. Thomas Winder produced a plan showing where the coins were found. He also produced fragments of pottery.

The Chief Constable: We don't claim them.

Mr. Winder: That's a relief.

Replying to the Coroner, Mr. Winder said he had given the Chief Constable an undertaking not to part with any of the coins.

Formal evidence was also given by Detective Yates.

The jury found that the coins were treasure trove.

Mr. Younge (representing the Norfolk Estate Office) claimed all the coins on behalf of the Duke of Norfolk.

The Coroner: I have nothing to do with that.

NORWICH CASTLE MOUND.

AT the meeting last week of the Norfolk and Norwich Naturalists Society, Mr. J. T. Hotblack showed photographs and drawings of the excavations of the Castle Mound, and said:—The history of the Castle Mound at Norwich has for a long time been very much discussed. There has been considerable difference of opinion as to when it was raised. Is it a pre-Roman work, or did the Saxons raise it and place one of the wooden stockades on the top of it? Or is it no older than the Norman Keep which even now crowns it? I do not think that its age has been at all satisfactorily disposed of, and I am very loth to agree with some recent opinions which would make it no older than the Normans. One argument used against the Norman theory has been that it could not have consolidated sufficiently, if they raised it, to carry the weight of their very heavy stone castle. But then the question arises, To what extent is it an artificially raised mound? I think the general opinion has been that it was entirely artificial, and this view seems to be confirmed by the report made as to the sinking of a borehole inside the Keep at the time of its conversion into a Museum Gallery, which was said to have been taken down to the level of the present bottom of the moat, through made soil all the way, undisturbed black alluvial being found, if I remember rightly, at the bottom of all. Now by the ever to be lamented work of the county in preparing for their new monstrosity, we know that, at all events on the side next the Shire Hall, the whole of the mound is not artificial, but that those raising it, whoever they were, took advantage of a natural hill or cliff, which they found ready to their hand, and only added to it to make their mound. I have had photographs taken, and myself have sketched during the progress of the recent cutting away of the hill, and these plainly show that for some feet above the present ground level there is sand and gravel inside which has never been disturbed since it was deposited in some comparatively remote geological period. The height of this undisturbed ground will be seen, by comparing the sketches taken at different times, to rise as the mound is entered, and it may be reasonably expected that further into the mound the natural ground would be found higher still. The builders have not been content with cutting away the face of the mound, but they have gone down some 10 feet deeper than the ground level, and this cutting shows the undisturbed chalk, with many large flints inside in places, but just below the ground level; and, again, I should not be surprised if the undisturbed chalk itself rises higher further into the mound. On the other hand, trial holes sunk only a few feet from the base of the mound show 20 feet of black under soil, and even at 20 feet have not reached the bottom of it. One word more as to the unwisdom of these operations.

Norwich Castle on its prehistoric mound is one of the irreplaceable treasures of county and city alike. The Castle was, I believe, used by the county (as well as by the city) as an heraldic device until recently replaced by the present ridiculous combination which makes up a shield, the meaning of which I have found no one to understand. Nothing should have been done either by cutting away the mound to endanger the buildings on its summit—(there are already ugly cracks in the castellated wall near the present Shire-hall)—or by erecting fresh buildings to either hinder the view of the Castle from below or that of the city and the country round from the top of the mound. I venture to predict that the present county authorities will in the future be as generally condemned for the erection of these buildings as are now their predecessors for the money they worse than threw away on the refacing of the Keep.

PUBLIC MONUMENTS IN EDINBURGH.

THE condition of some of the public monuments in Edinburgh has been attracting the attention of members of the Town Council, and a report on the best method of improving the appearance of the monuments and preserving them from the ravages of the climate has been prepared by Mr. Pittendrigh Macgillivray, R.S.A. The report deals with the Sir Walter Scott and Allan Ramsay monuments as instances of marble and stone erections, and with those to the memory of George IV. and Pitt as samples of the bronze. At a meeting of a sub-committee of the Lord Provost's committee the report was considered. The examination, it seems, has shown that some of the monuments are in an exceedingly bad condition, practically nothing having been done either in the way of restoration, preservation or cleaning. In regard to the Allan Ramsay monument, an attempt had been made, it appears, at some time to clean the marble, but in doing so some acid had been used which, while cleaning the statue, made the last state worse than the first, as the acid got into the block and ate away the surface. In both the marble statues the condition is such that the only remedy is to recut and rechisel the whole. In that way a new surface will be got, and what will be required in future will be to subject the statues to periodical cleanings without, of course, using anything of an acid. Several other monuments, notably the Burns statue, is said to be in a very bad condition. It was agreed by the sub-committee to have the report printed for circulation among the members of committee, along with the recommendation that what is proposed should be carried into effect.

BEVERLEY MINSTER.

THE annual meeting of the East Riding Antiquarian Society was held last week at Beverley. Mr. John Bilson, F.S.A., gave some details as to the architectural history of the church, commencing from the period when the Minster was a missionary settlement, and the parish divided into districts attached to the various altars. St. Mary's was a chapel for which the canon of St. Martin's altar was responsible, and served even at that date the residential portion of the town. The first building of the chapel was attributed to Thurstan, Archbishop of York, in the second quarter of the century, and the earliest remains could certainly be very well dated in Thurstan's time. In one respect the building was in strong contrast to the Minster, which was commenced according to a consistent design, the harmony of which was maintained by successive architects. But St. Mary's had been enlarged and altered until there was very little indeed of the first building left, although that first building had had a very marked influence in everything that followed it. The first church appeared to have had a nave of the same width as now existing—of the length he could say nothing—and a square-ended chancel over 50 feet in length, with a tower between the two. Of that church there remained some fragments on the south aisle of the choir, including portions of the plinth of the original south wall and remains of buttresses. Towards the end of the twelfth century transepts appeared to have been added on either side of the tower, and as they were not square with the axis of the remainder of the church it was probably not cruciform. Mr. Bilson traced the growth of the church through the centuries, and said there was distinct evidence in the character of the masonry that the walls were formerly lower than at present. The north chapel was perhaps the most beautiful piece of work in the church. It was the design of a single man, whilst

all the other work had been hampered by the fact that it had been in the nature of a series of alterations rather than reconstruction. There was a legend that this was a Flemish chapel, but the story seemed to be entirely modern and erroneous. He saw photographs of "the Flemish room" over the north aisle of the chancel for sale, so he supposed the idea would stick. The flowing tracery from Flanders actually came to the Flemish people from France, which country was itself later than England in this form of decoration. A gap was caused by the Black Death, when all work was suspended, and when a restart was made towards the end of the fourteenth century another set of works was undertaken which had no connection with those which had gone before—the addition of a clerestory and the reconstruction of the west end. This was about the end of the fourteenth or the beginning of the fifteenth century, and the west front belonged to that date, with the exception of the two windows at the end of the aisles. Next came the addition of a similar clerestory to the chancel, with the tracery a little less severe, whilst it was even freer in the transepts, which were later still. This alteration involved the construction of the great east window. By 1460 the building was practically complete as now seen, but about 1520 the central tower fell over the nave, killing a good many people, and it was reconstructed during the next few years, Cardinal Wolsey giving 200*l.* towards this reconstruction.

At the conclusion of Mr. Bilson's historical summary the party made a tour of the church and discussed some of the chief features in more detail. The thanks of the Society were given to Mr. Bilson for the lucid way in which he had put before them the chief points of interest in the building.

GLASGOW INSTITUTE OF MEASURERS.

THE twenty-sixth annual meeting of the Institute was held on Monday in the Building Trades' Exchange. Mr. John Baxter, president, was chairman. The annual report of the Council stated that the membership now stood at seventy-four, besides one honorary member. Suitable reference was made to the loss sustained through the deaths of Mr. Robert Scott and Mr. John Dansken, both of whom were original members, and had from the inception of the Institute taken an active part in its affairs, and had rendered most valuable service in the offices which they had held. Each of them had discharged the duties of president for two years. Mr. Scott had also acted as secretary and treasurer for five years. It was reported that the examinations qualifying for membership were held in March last. Four candidates received the certificate in the preliminary examination, and five had received the certificate in the final and their names placed on the register of associates. It was also reported that the authorities of the Technical College had so far met the views of the Council in respect of the course of study in building construction by providing a much more extended course in that subject this session, and which the Council hoped to see still further improved. A grant of 2*l.* 2*s.* was again made for prizes in these classes. The treasurer's statement showed the funds to amount to 623*l.* 7*s.* 7*d.* The office-bearers for the ensuing year are as follow:—President, Mr. John Baxter; vice-president, Mr. George B. Walker; secretary and treasurer, Mr. Thomas N. Hill, F.S.I.; auditors of professional accounts, Messrs. Anthony Purdie and John S. Stewart; other members of Council, Messrs. Colin Young, John Currie, Alexander Davie, James Smellie, James D. Herbertson, John H. Allan and John Fyfe.

TESSERÆ.

Ancient and Modern Decoration.

IN England we colour the walls and leave the ceilings white; the Greeks, on the contrary, seem to have coloured the ceiling and left the walls white; and still in their houses we may see whitewashed plaster walls and painted wooden ceilings. Whether painted or carved there is a marked difference between the ornamental style of the Greeks and Romans. The former made their ornaments much smaller in proportion to the building than the latter, and there is a degree of simplicity and elegance of design and a neatness and delicacy of execution in Greek buildings which you would seek for in vain in Italy; while, on the other hand, in the Roman edifices there is a full and rich magnificence which is not to be found in those of Greece. The beauty of both is that the same feeling is observed throughout, and that in each building all the parts are in perfect harmony,

while in modern structures it frequently happens that one beauty is copied from one ancient building and another from another, and their union only produces disgust. This difference of character was preserved, though perhaps in a less degree, even to the latest times of Grecian art; and at Rome there are one or two buildings which exhibit indications of Greek taste, and have been supposed on that account to be the production of Greek artists.

The Castle of Tangier.

The castle externally appears almost as ruinous as the fortification, but is, nevertheless, used as the residence of the Governor when at Tangier. On entering the visitor is astonished to find the apartments in such good repair, belying their outward promise. One is astounded, after scrambling over broken walls and through heaps of lime and rubbish, to be conducted into elegant and tasteful apartments, adorned with all the beautiful and fantastic ornaments peculiar to Moorish architecture. In the centre of the building there is, as usual, a large open quadrangle, surrounded by an elegant colonnade of white marble. The pillars are of the slender and graceful proportions so much admired in Moorish buildings and their capitals fantastic and varied, but all bearing a resemblance to the Corinthian. The apartments on both storeys are small, but a great portion of their gaudy and glittering but most tasteful decorations is entire. The vaulted roofs, richly ornamented and embossed, and painted in various brilliant colours, are in perfect preservation. Much of the ancient parti-coloured glazed tiling also remains and the delicate tracery of the lacework on the walls is uninjured, except by whitewash. In fact, the castle of Tangier, in the style of its decorations, is the counterpart of the Alcazar of Seville, perhaps more perfect in respect of the ornamental part, but possessing no such elegantly proportioned apartments, and especially nothing at all comparable to the noble Hall of the Ambassadors.

The Two Goldstones.

Thomas Goldstone, the prior, who died in 1468, built a Dean's Chapel, Canterbury Cathedral. He also built the south-west tower and porch, and the Virgin Chapel now called the Dean's Chapel, which, though small, is one of the most beautiful examples of the unparalleled elegance of what the Pointed style of architecture is susceptible of in the kingdom. It was built before 1449. In 1468 Goldstone was buried in his own chapel, though the immediate spot of his interment is not known. The vaulting of the roof is highly decorated by tracery and fanwork, most excellently wrought and in very fine taste. The east window is also peculiarly elegant, and has among the mouldings a line of oak and vine-leaves terminating in canopied niches of rich pattern. All the other parts of the interior are very beautiful, though parts are destroyed and obscured by tombs. Thomas Goldstone, the second of that name, also prior of Canterbury Cathedral, who died in 1517, in conjunction with Prior Selling between 1472 and 1517, and aided by Bishop Merton, raised the centre or Bell Harry Tower (formerly the Angel Steeple) about 1515. Agreeable to the taste of that age rebuses or hieroglyphics of Goldstone and Merton still appear in this work: the former, three gilded stones, and the latter, mer and a tun. He also built the south-west gate, denominated Christ's Church gate, which Sumner calls "a goodly, strong and beautiful structure, and of excellent artifice." It was built in 1517, as an inscription on it formerly showed. This inscription was on a string-course or cornice on the south front, and extended the whole width of the building; it was, "Hoc opus constructum est an. Dom. millesimo quingentesimo decimo septimo." The whole southern exterior of this building is covered with tracery, panels, niches, canopies, shields of arms, among which are the arms of the see and those of Archbishop Juxon, with various sculptures.

The Parks and Galleries Committee of the Glasgow Corporation have resolved to purchase *The Light of Afternoon* by Sir Francis Powell, at present being exhibited in the Institute Galleries, Sauchiehall Street. Sir F. Powell is president of the Royal Scottish Society of Painters in Water-Colours.

Mr. George Marples, Associate of the Royal College of Art, London, and head-master of the Huddersfield School of Art, has been appointed head-master of the Hull Municipal School of Art. Mr. Marples was originally a student at the Derby Municipal School of Art.

NOTES AND COMMENTS.

A FEW months ago we mentioned that Prince ALBERT OF MONACO had proposed to open an Oceanographic Institute near the Sorbonne in Paris, and that the offer had been accepted by the French Government. *L'Art* gives a description and illustrations of the museum which Prince ALBERT has had erected in Monaco. If there is any country in the world where studies relating to the ocean should be in favour it is in Great Britain, and it is to be hoped that some of our millionaires will one day have the courage to follow the example of Prince ALBERT, and to erect a building like the Institut which will soon be seen in Paris. M. PAUL LEROI, the editor, contributes the first part of an article on his late contributor, or as he calls him, "notre doyen," PHILIBERT AUDEBRAND, to whose death we recently referred. There is also a biographical notice of the late ALFRED STEVENS, the Belgian painter, which is written with ample knowledge, and calls attention to the absence of the Under-Secretary of State for Fine Arts at STEVENS'S funeral. Readers of *L'Art* will be glad to realise that M. PAUL LEROI, after his long and dangerous illness, has resumed his trenchant criticism on the last Salon. He does not spare the jury for failing to recognise the merits of Mr. W. GOSCOMBE JOHN, who had contributed a copy of his statue of the late Duke of DEVONSHIRE.

An exhibition which is now open in the Birmingham Art Gallery is likely to create an interest in DAVID LUCAS, a mezzotint engraver who is now almost unknown. He was a pupil of W. S. REYNOLDS, under whom he served for seven years. When he was about twenty-six he became acquainted with CONSTABLE, and there can be no doubt he was an admirable interpreter of the landscapist. This is evident from the opinion which CONSTABLE expressed when he wrote:—"His great urbanity and integrity are only equalled by his skill as an engraver, and the scenes now transmitted by his hand are such as I have ever preferred. For the most part they are those with which I have the strongest associations, those of my earliest years, when 'in the cheerful morn of life I looked to nature with unceasing joy.'" In 1830 he commenced the publication of the English Landscape series, and twenty-two plates were offered for five guineas. It could not be considered a financial success, but he began a second series to which the public were indifferent. The original impressions are now sought after and are costly. But those taken from plates after they had been neglected are of little value. CONSTABLE was thinking of TURNER'S collection of plates when he proposed to bring out the copies of his works by LUCAS, in order "to increase the interest in rural England; its professional purpose, to mark the influence of light and shade upon landscape, and to give one brief moment, caught from fleeting Time, to lasting and sober existence." How plates of such value could be slighted will be hereafter considered one of the puzzles of amateurism. LUCAS made various efforts to win patronage. But they were all alike unsuccessful, and it is believed that he died in the Fulham workhouse. As has happened in other cases, his name may still become renowned. Mr. G. P. ROBINSON says he was handicapped through working on steel plates, which were introduced in 1823. Ink does not adhere to steel in the same way as to copper, and owing to its hardness the rocking-tool raises less burr.

GEORGE WASHINGTON was a modest man, as became an excellent land surveyor, and he could never, in his wildest dreams, have anticipated that a statue of him would one day be erected in Buda-Pesth. He may not have even heard of the city, for Prague in the eighteenth century was assumed to be of greater importance. It is also curious that on the pedestal the inscription should be on one side in English and on the other in

Magyar speech. It runs, "To the memory of WASHINGTON. The Hungarians of America, 1906." The sculptor is Herr JULIUS BEZEREDI. He has studied the biography of WASHINGTON, and has endeavoured to express the character of the general and statesman. For clothing and the manner of dressing the hair the sculptor has followed contemporary portraits. The figure rests the right hand on a strong walking-stick; in his left he holds a backwoodsman's hat, and on the arm is a cloak. In other words, the simplicity of the organiser of the United States is expressed. Beneath is introduced the symbol of the turul with outstretched wings, the fabulous bird which is supposed to have guided the ancient Magyars in the emigration from Asia, and in its claws it holds a sword.

THE theory of heredity finds support in the history of the BEGAS family. KARL BEGAS, who was the favourite painter of FREDERICK WILLIAM III. of Prussia, was born in 1794. After a training in Germany he studied under Baron GROS in Paris, and gained a reputation among his countrymen by his paintings of scenes from the Scriptures, some of which were of colossal dimensions. Herr REINHOLD BEGAS, the sculptor, is one of the sons of the painter, and was born in 1831. An exhibition of models of his works and studies is now open in Berlin. He has been fortunate in obtaining the most important of the public commissions during the last thirty years, the climax being reached in the memorial of the Emperor WILLIAM in Berlin. Four sons in all of KARL BEGAS became artists; two are painters and two sculptors. His grandson has also shown a tendency towards art, and it may therefore be assumed that for some time to come the family will uphold the reputation of the painter, and prove he was wise when he abandoned law for art.

THE Board of Governors of the Manchester Royal Infirmary resolved on Tuesday that a third storey be added to the surgical and medical block of the new hospital buildings in Stanley Grove. This extension will cost 22,000*l.*, exclusive of surveyor's and architect's commission and furnishing, and it will provide 108 more beds at a cost of about 200*l.* per bed. A return was prepared for the meeting, from which it appears that the number of beds in general hospitals of various towns is as follows:—Leeds, 436; Liverpool, 841; Birmingham, 478; Glasgow, 1,218; Belfast, 300; Manchester and Salford, 841 (on the basis of 598 beds in the new infirmary). The original plans showed accommodation for 598 beds.

THE sessional meetings of the Liverpool Architectural Society will begin on Monday next, the 8th inst., when the opening address by the president, Mr. EDMUND KIRBY, will be given. At the succeeding fortnightly meetings the following papers will be read:—"Old English Customs and Folk Lore," by Mr. PETER COWELL (city librarian); "Fenestration; or, the Treatment of the Window Openings in relation to the Structure," by Mr. WALTER CAVE; "Some Thoughts and Hints for Young Quantity Surveyors," by Mr. H. L. BECKWITH; "The Art of Drawing," by Mr. T. RAFFLES DAVIDSON; "Style in Architectural Draughtsmanship," by Mr. STANLEY D. ADSHEAD; "Inexpensive Cottages," by Mr. GEOFFREY LUCAS; "Architecture and Craftsmanship," by Mr. REGINALD BLOMFIELD. Mr. JOHN BELCHER will also read a paper.

ILLUSTRATIONS.

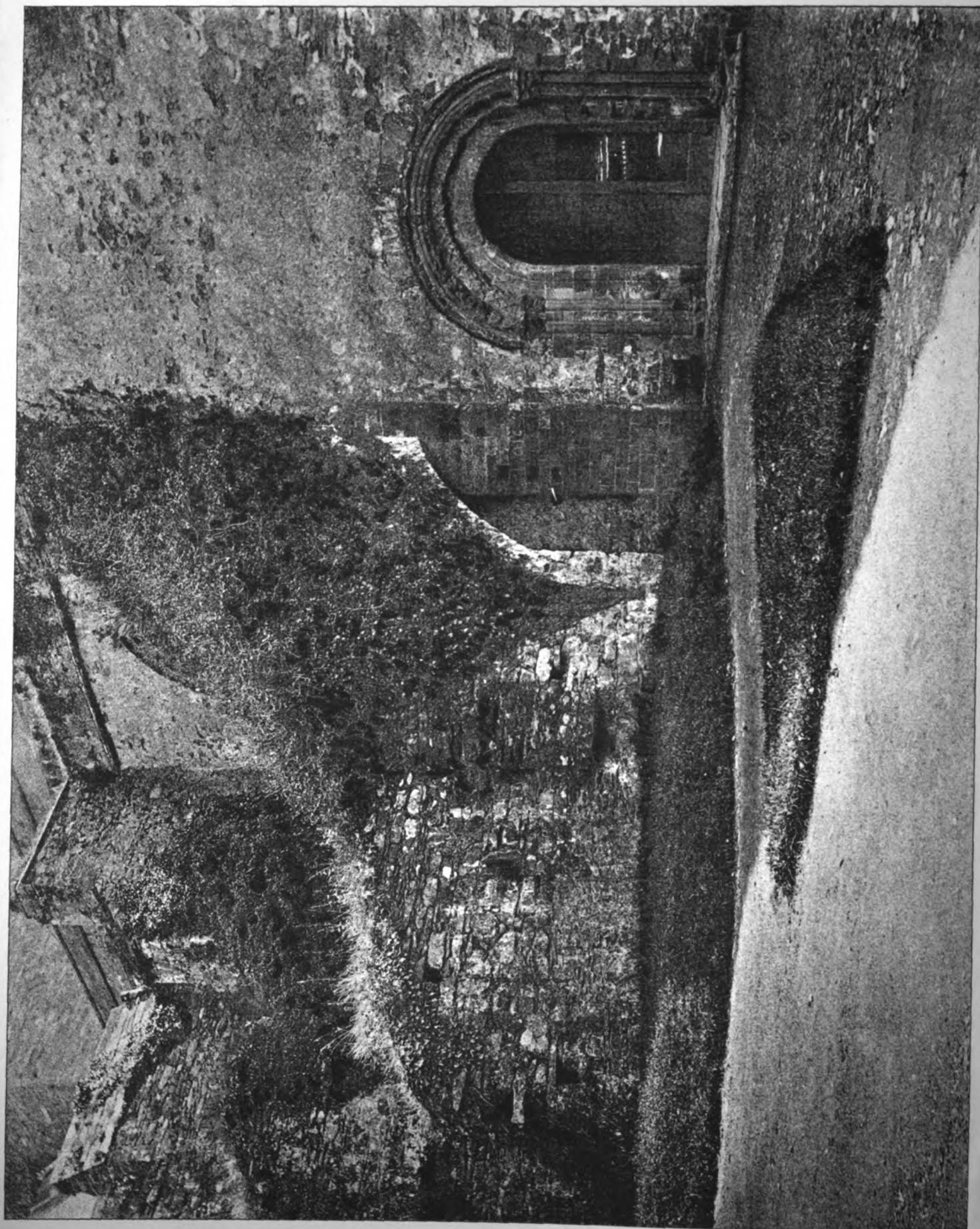
MARISCHAL COLLEGE, ABERDEEN.—FROM UPPER PARKGATE—THE COURT-ROOM.

NEW OFFICES FOR THE HEARTS OF OAK BENEFIT SOCIETY, EUSTON ROAD, N.W.—DELEGATES' HALL, LOOKING TO DAB FROM GALLERY—COUNCIL CHAMBER.

CATHEDRAL SERIES.—ST. DAVIDS: SHOWING NORTH DOOR—THE CHOIR, WESTWARDS.

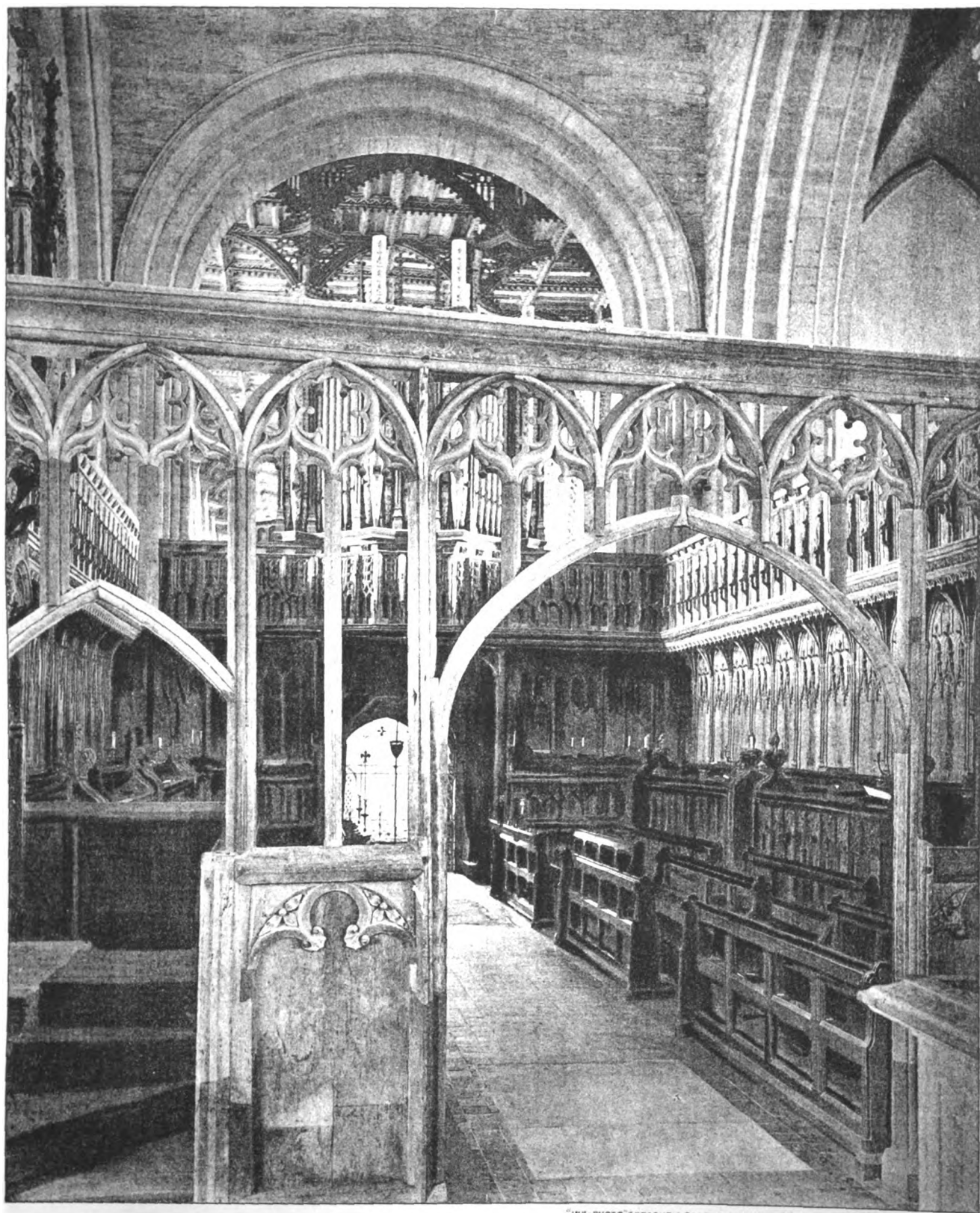
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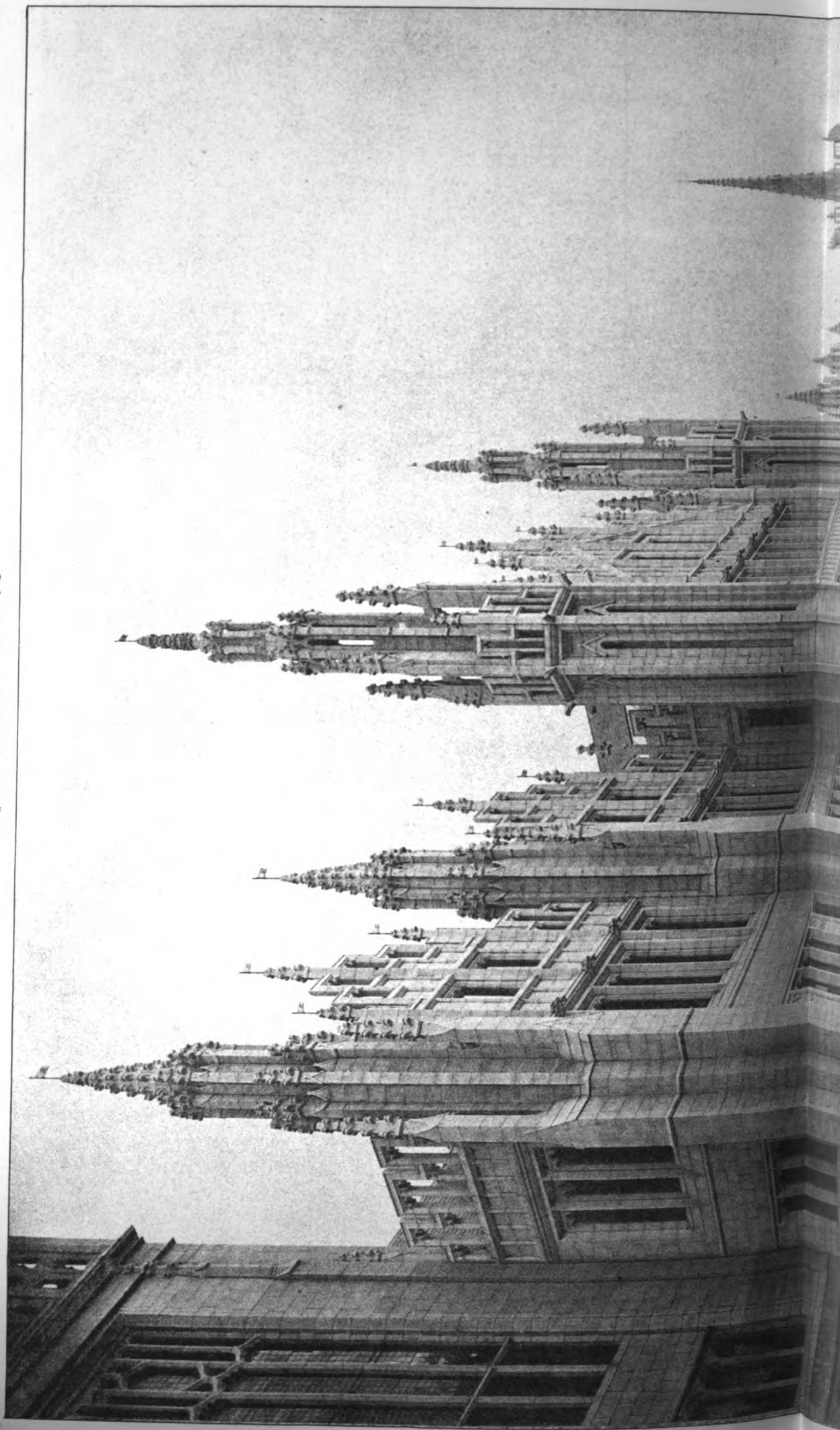
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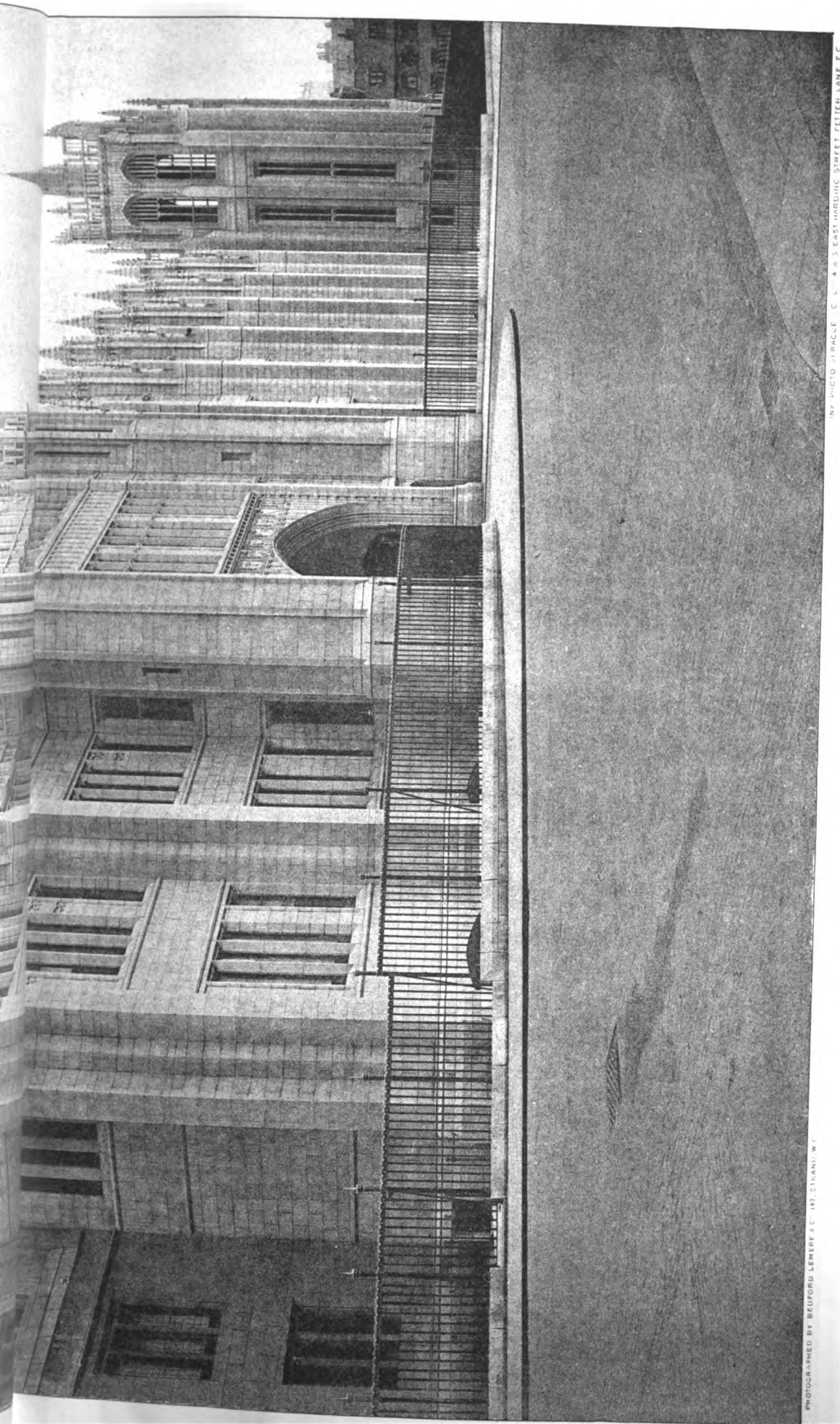


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The Architect, Oct r 5th 1906





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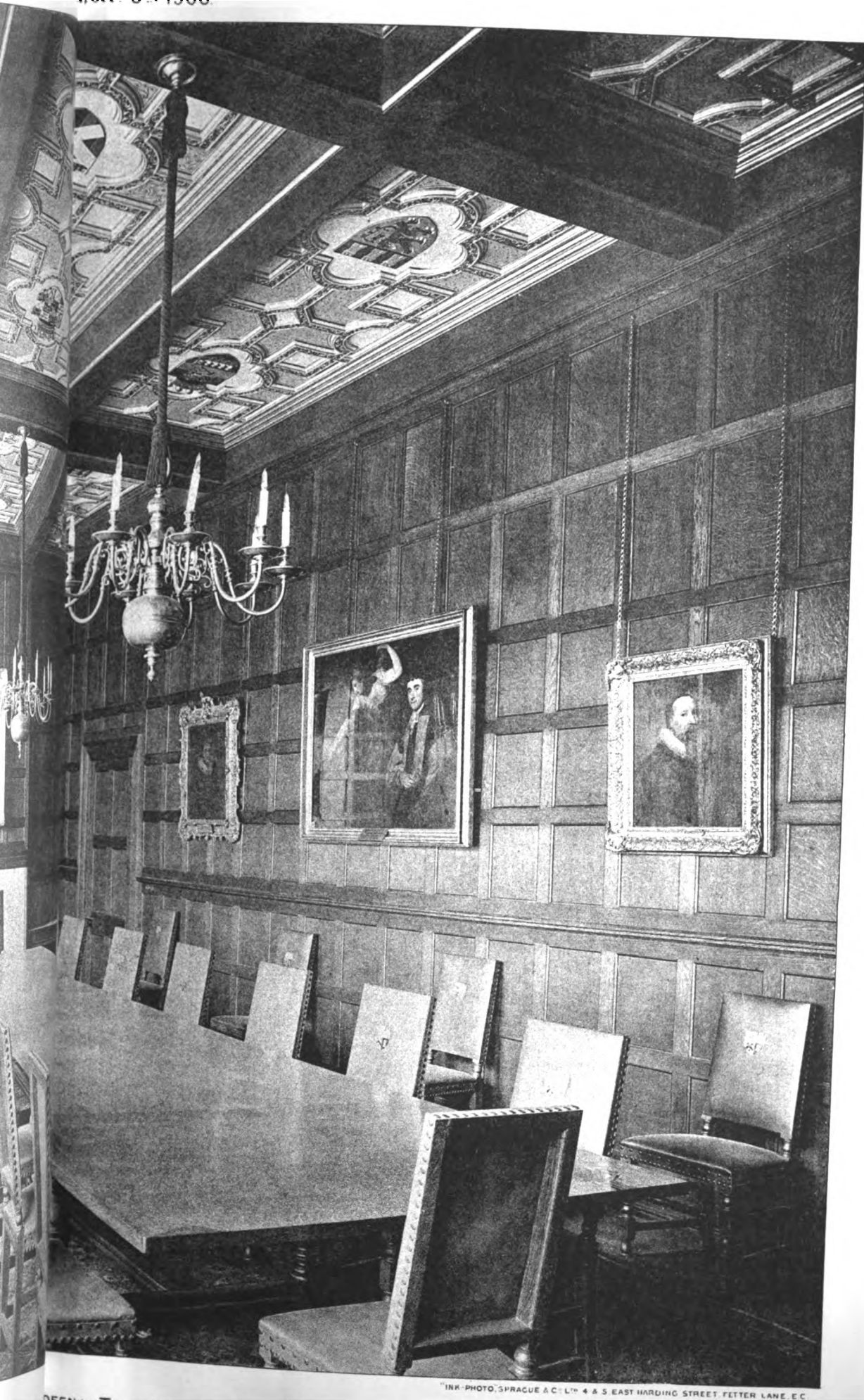
MARISCHAL COLLEGE, ABERDEEN: FROM UPPER PARKGATE.
Messrs. A. MARSHALL MACKENZIE, A.R.S.A., & SON, Architects.



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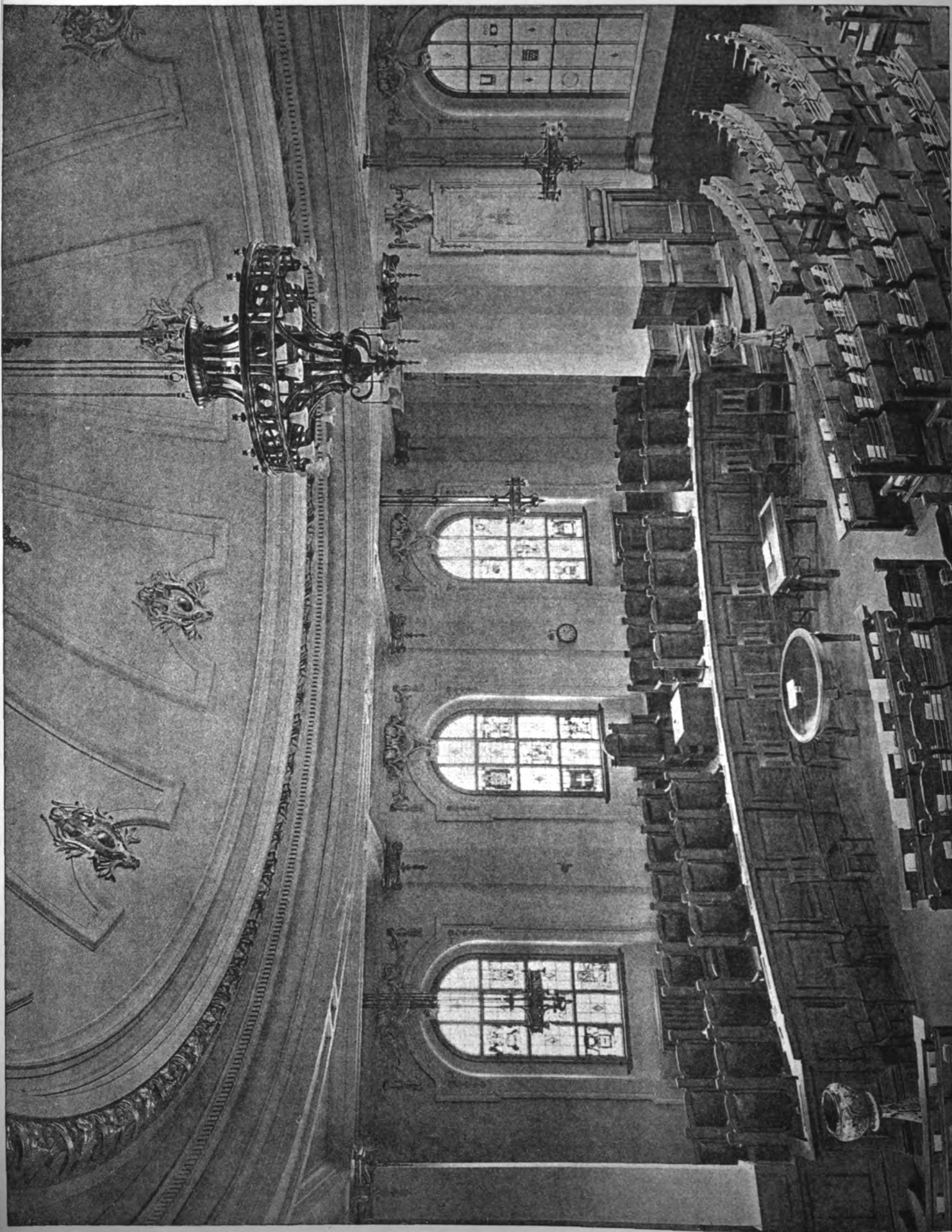
MARISCHAL COLLEGE, ABERDEEN: THE COURT
Messrs. A. MARSHALL MACKENZIE, ARS, & SON, ABERDEEN

Oct. 5th 1906



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DEEN: THE COURT ROOM.
RISCHAL CO., A.R.S.A., & SON, Architects.
MAY 1906



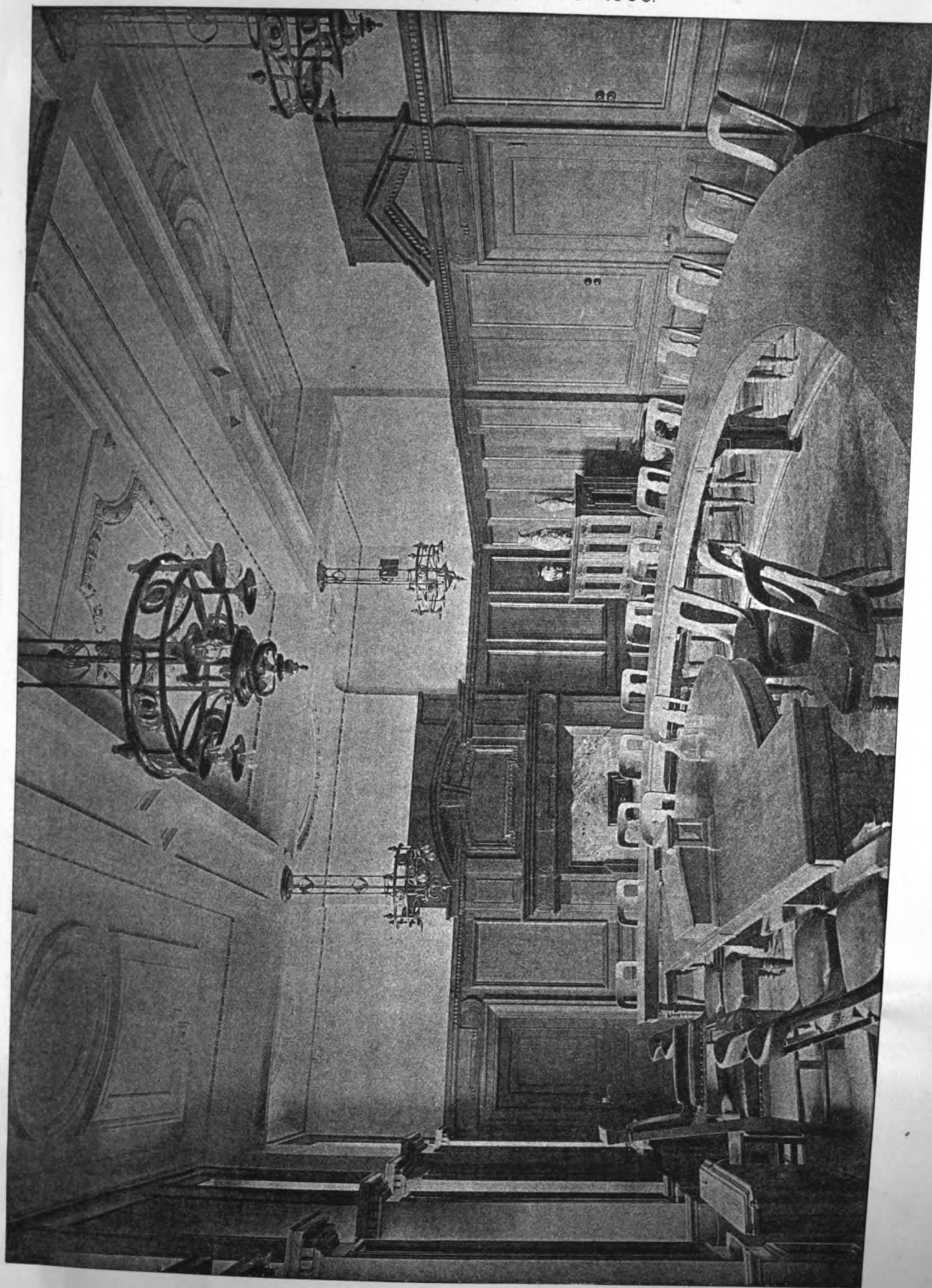
NEW OFFICES FOR THE HEARTS OF OAK BENEFIT SOCIETY, EUSTON ROAD, N.W.: DELEGATES' HALL, LOOKING TO DAIS FROM GALLERY.

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Messrs. ESSEX, NICOL & GOODMAN, Architects.

The Architect, Oct 5th 1906.



RICHMOND AND KEW.

TWO of the most interesting parts of suburban London were selected by the Surrey Archæological Society for an excursion on September 22. The arrangements were carried out under the direction of the honorary secretary, Mr. Montague S. Giuseppi, F.S.A., and no hitch occurred. The first building visited was the parish church of Richmond, a building which is unknown to many people who profess to be acquainted with the town.

Richmond Church.

Mr. Albert A. Barkas, the borough librarian, read a paper in the course of which he said that reference was made to the "Chapel of Shene" as early as 1339, but no records existed to show where it was located. The earliest notice of the present parish church was in a MS. account of some of the private expenses of Henry VII. (1485-1509), where was to be found an entry recording a gift of 5*l.* towards the building of the church. Of that structure, however, all that remained was the tower, and that had been so modernised by its flint covering and other alterations that little or no trace of its antiquity could be seen. Up to 1904 the Tudor chancel was in existence, but that interesting portion of the old church and the fine monuments located there were removed in that year, and the present erection substituted. The ancient building, which reached from the chancel to the tower, certainly did not exceed the width of the present chancel. As the increasing population of the village required it, additional accommodation had to be found, and the north and south aisles and the west gallery were added. Taking the church as a whole, there was nothing about it to render it a striking object of admiration, either to the architect or the antiquarian, but there were a goodly number of interesting monuments. There was a fine peal of eight bells in the old tower, which were placed there about 1680. The registers commenced February 26, 1583, and were, he believed, perfect from 1682, except the records of marriages from 1751-4. The most interesting entry, he thought, was that of March 20, 1681, which recorded the baptism of Hester, daughter of Edward Johnson, the "Stella" of Swift. The organ was erected in 1770, at the expense of George III. and Queen Charlotte, and was built by one Knight, who was recommended by the king himself. Amongst those who had sittings in the church might be mentioned the Duke of York, afterwards James II., Sir William Temple, the eminent statesman, the Prince and Princess of Wales, parents of George III., and Dr. Nicholas Brady, the eminent divine. The earliest monument in the church was unfortunately without a date, but Mr. Challenor Smith had been able to fix the date as 1591. It was to the memory of Robert Cotton, gentleman groom of the Privy Chamber to Queen Mary, and afterwards Yeoman of "the Removing Wardoppe of Bedds" to Queen Elizabeth. His eight children were represented on the brass tablet, with their parents kneeling. There was a mural monument to Walter Hickman (1617), one of the original vestrymen of Richmond. There were also monuments to Lady Margaret Chudleigh, daughter of Sir William Courtney, of Powderham, near Exeter (1628), Lady Dorothy Wright (1631), Margaret Jay (1646), and John Bentley, his wife Ellenor, and their only daughter Ellenor (1656-60), the Hon. Barbara Lowther, "sister of the Earl of Lonsdale, the Countess of Darlington, and (Katherine) the late Duchess of Bolton" (1805). On the south wall was a bust and tablet to the memory of "Robert Lewis, Esq., a Cambro-Briton and a barrister-at-law," who died in 1649, not "from length of days, but from being such a studious lover of peace, that when a contention sprang up between life and death, he immediately yielded up his spirit to end the dispute." There was a mural tablet to Lord Viscount Brouncker (1687-8) of Castle Lyons, in Ireland, cofferer to Charles II. In 1678 Evelyn wrote that he dined at Mr. Henry Brouncker's "at ye Abbey of Sheene." His house was on part of the site of the old priory in what was called now the Old Deer Park. The burial-place of the poet Thomson was indicated by a small brass plate on the wall below the gallery at the west end of the north aisle. Sir Francis Chantrey, the sculptor, on seeing the bust to the memory of William Rowan (1767) spoke of it in terms of admiration, and stated that it was a very highly-finished piece of work. Up to the time of the removal of the old chancel a tablet might have been seen near the communion rails recording the burial of Mary Ann Yates (1787), the celebrated actress, and her husband, Richard Yates (1796), a comedian of great talent. It was said that Mr. Yates "died (very rich) of passion in consequence of dis-

appointment of his dinner." The first monument to their memory was considered of too theatrical a character, and was not allowed to be placed on the walls. On the north wall was a cenotaph erected by his grateful pupils to the memory of the Rev. Robert Mark Delfosse, LL.B. (1819), a minister of Petersham (who kept an academy of much repute on Richmond Green). A tablet of white marble was erected to the memory of Edmund Kean (1833), who died at his residence adjoining the old Richmond Theatre. Amongst the burials in the churchyard might be mentioned Mrs. Barbara Hofland, authoress of many instructive tales, and the wife of T. C. Hofland, the painter and author of "The British Angler's Manual" (1844); Richard, Viscount Fitzwilliam, who lived on Richmond Green (1816); Dr. John Moore, the father of the brave General Sir John Moore (1802); Joseph Taylor, who, when a young man, was instructed by Shakespeare to play some of his most celebrated characters, and who in 1614 was manager of a company of comedians at Richmond (1652). Heidegger was a person of much note who was Master of the Revels to George I. He lived at 4 Maid of Honour Row, and had the reputation of being the ugliest man of his day; James Fearon, an actor, who after performing at Covent Garden, often walked home to his residence at Richmond (1789); Jacques Mallet du Pan, a citizen of Geneva (1800); Right Hon. Lady Diana Beauclerk, wife of the Hon. Topham Beauclerk, the friend of Dr. Johnson (1808); and last, but not least, the tomb in the south churchyard of John Lewis, who died in 1792, aged seventy-nine years. John Lewis was our village Hampden, who sturdily championed the people's rights and privileges respecting the right of way across Richmond Park. Mr. Tibballs, their present-day parish clerk, was believed to be a descendant of Lewis.

Afterwards the gateway of the old palace on the Green and Asgill House, which was built on a part of the site of the palace, were seen.

Richmond Palace.

Mr. J. B. Hilditch read a paper. In the course of it he said that no palace in the world has been associated with more important historical events and personages than Richmond, and the spot is hallowed by the memories of the sorrows as well as the ambitions of the royal personages who have passed away, leaving no more trace behind them than there is of the buildings which once stood here. A royal residence existed on that site about the year 1125, when Henry I. occupied the manor house. Subsequently Edward II. frequently resided there and founded a convent of Carmelite Friars, from which the adjacent Friars Lane derived its name. Edward II., his grandson, Richard II. and Henry VII., all occupied the palace for longer or shorter periods, the last-named changing the name of the manor from Sheen to that of Richmond. In consequence of the palace having been partially destroyed by fire about 1497, he rebuilt it with still greater splendour. He died there in 1509, and then the palace became the residence of his son, Henry VIII., during the early part of his reign. About the year 1524 Cardinal Wolsey was bringing to completion his beautiful palace of Hampton Court, which on account of its exceeding in architectural appearance the royal one at Richmond, excited the envy of the king. Wolsey was afterwards permitted to reside at his pleasure in his manor of Richmond, and in the winter of 1525, as the plague was raging in London, Wolsey kept Christmas here in great state. It was Richmond Lodge, in the Old Deer Park, and not the palace, that was afterwards awarded to Wolsey for a residence in his disgrace. Edward VI. spent much of his time at Richmond, and the Princess Mary frequently visited her brother, and was staying at the palace when the Wyatt rebellion broke out. During the reign of Queen Mary her illustrious sister Elizabeth was for some time imprisoned in Richmond Palace, which she afterwards used as a royal residence, and finally ended her days within its walls. According to tradition she died in a room over the gateway. In 1587 the death warrant of Mary, Queen of Scots, was signed by her at Richmond. After the death of Elizabeth the palace lost its attractions as a royal residence, and Windsor came into favour. Prince Henry, eldest son of James I., however, resided here, and died in 1612, mourned by the whole nation, and more particularly by the inhabitants of Richmond. Three years later the palace became the abode of Prince Charles, who made himself unpopular by forming the great park for hunting.

After the death of the king in 1649 Parliament passed an Act that all the royal palaces should be sold, the blow

falling with much severity on the people of Richmond. "A fair yew tree," which the Commissioners valued at 10*l.*, was interesting, as it was to be seen standing in the garden of Wardrobe Court until about twelve years ago, when it was cut down. The whole property, with the Wardrobe buildings (the only portion of the palace still remaining), was sold for 10,000*l.* to Thomas Rookesby, William Goodwin and Adam Baynes, from whom it passed to Sir Gregory Norton, and was reclaimed at the Restoration. Many years after the palace had fallen into decay Richmond again became a resort of royalty in the person of the Prince of Wales (afterwards George II.), who took up his abode at Richmond Lodge in the Old Deer Park, the site being close to where the Observatory now stands.

The paper was illustrated by means of copies of drawings in the Bodleian Library and several old engravings.

The next building visited was the Trumpeting House, which derives its name from two figures of boys in the garden. Wardrobe Court and the old Palace House were also seen.

On reaching Kew Green the members went to the Dutch House, or Kew Palace, near the entrance to the Gardens.

Kew Palaces.

Mr. W. L. Rutton, F.S.A., read a paper on "The Palaces of Kew," viz. Richmond Lodge, Kew House, the Castellated Palace and the Dutch House. The last covered the site of a mansion called the Dairy House, which in 1553 belonged to Sir Henry Gate, and afterwards to Robert Dudley, Earl of Leicester, Queen Elizabeth's favourite, who died in 1588. The Dairy House was sold to a Dutch merchant, Samuel Fortrey, who pulled down the old mansion and built on the site of it the house that yet exists. It was transferred to royal hands about 1730, when Queen Caroline acquired a long lease of this and another house not now existing. The first royal occupant of the Dutch House was Anne, Princess Royal, who in 1734 married the Prince of Orange. Afterwards two other daughters of George II. had it, viz. the Princesses Amelia and Caroline, the former probably vacating the house in 1751, when she was made Ranger of Richmond Park, where she had her lodge. In 1754 George, Prince of Wales, occupied it, and it was there that he received the announcement of his accession to the throne as George III. In 1773 it was apportioned to the two eldest boys, the Prince of Wales and Duke of York, and here they were educated. The king was removed here in the spring of 1801, when the return of his mental disorder necessitated temporary separation from his family residing at Kew House.

The house may be said to have become a palace on September 23, 1802, when for the first time the king and queen, with their daughters, took up their abode in it. The last family visit to the house was made in October 1805, when they stayed a full month, and the king's last visit occurred in January 1806 as he passed from Windsor to London. Again in July 1815 it was recorded that Queen Charlotte passed a fortnight at Kew Palace, whither she came to die in 1818. Suffering much, but resolved to witness the marriages of her two sons, the Dukes of Clarence and Kent, which took place in the drawing-room on July 11, the queen lingered for five months and died in November.

The old palace was doubtless visited from time to time by her children, who were attached to it, and none more than King William IV. In the next reign the contents of the residence were gradually removed, and in 1883, when the low range of buildings adjoining the mansion on the west side were taken down, the apartments were entirely denuded. Finally, the late Queen Victoria in 1897, the year of her Diamond Jubilee, yielded the old palace to the natural curiosity of her subjects. It was then cleaned up and put in order, and the few articles of furniture they now saw, with the pictures and sundry old-fashioned memorials, were arranged in it. The mansion presents a fair specimen of the Jacobean type. The elevation is perhaps somewhat formal and monotonous, but there is the relief of deep moulded string-courses dividing the storeys, and of delicate pilasters with capitals flanking the door. The three gables with attic lights and the groups of chimney-shafts, though plain, are characteristic. Internally the sparse ornamentation and the panelling is also Jacobean, but there is an exception in one small room which has Tudor—linen pattern—wainscoting, and this is extremely interesting as being in all probability a relic of the Dairy House. A small fireplace on the second floor seems also to be a Tudor relic, but the most important

remnant is the groined and ribbed crypt which underlies part of the mansion, and which is believed to witness to the house of the Earl of Leicester and perhaps of yet earlier occupants.

After the palace and crypt had been inspected the excursion came to an end.

MODERN ANTIQUITY.*

IN perusing our volumes of Transactions it is fairly evident that, at any rate, so far as the published matter is concerned, the East Riding Antiquarian Society devotes most of its attention to the study of ecclesiastical and architectural antiquities, to family history and to matters which are perhaps as well described by the word *archæology* as anything. Under the last head I refer to the papers dealing with excavations on British and Roman sites, and to finds dating back to very early times. The paper which I had the honour of reading to this Society two or three years ago endeavoured to deal fairly exhaustively with all the various archæological discoveries which have been made in the east of Yorkshire. Since then one or two finds of importance have come to light, which I propose to briefly refer to, and thus supplement my previous notes; but it occurred to me that there was one branch of antiquities which has been sadly neglected by this Association. On being asked, therefore, by our secretary to send some notes to you this evening, I thought I could not do better than make a few remarks upon some objects which, though having no very great age, still claim our attention from the fact that they are relics of the past, and have as much bearing on the domestic and general history of the district as have a Roman pavement or a British tumulus.

In connection with our museum at Hull, I have for many years endeavoured to gather together a series of objects illustrating what might fitly be called our grandfathers' days. Some of these I propose to bring under your notice, and to many of the members present it is quite possible that most of the objects may be familiar. But speaking as one who has not had the advantage of as yet residing on this planet for thirty years, I must say that until recently most of the objects I am describing were to me very unfamiliar, and difficult as it has been for me to gather these odds and ends together, it is obvious that future generations will find it still more difficult to obtain them. In accumulating, therefore, what some of my older friends may at times refer to as "rubbish," I do so in the firm belief that in the future, at any rate, the collections will be properly appreciated. I can only say that if this kind of rubbish had only been accumulated in the museum at Hull during the past sixty or seventy years, we should have a much more valuable collection than we possess.

Strangely enough, as already hinted, it is the common objects of one generation which seem so difficult to obtain by the succeeding generation. Take, for example, the well-known farm implement the flail, which consisted of two pieces of wood, a long and a short one, fastened together by a thong, and was used for thrashing corn by hand in days preceding the thrashing-machine. We were a considerable time before we could obtain a single specimen. Dozens of people told us that they knew where there were several, but on inquiry being made it was found that flails had been used as broom-handles, had been chopped up for firewood or had been destroyed in other ways. So soon as machinery made the hand flail useless it was thrown aside and rarely cared for. As it happens, we have now obtained quite an interesting series of these implements illustrating the various methods adopted for securing the shorter to the longer piece of wood, the joint at the elbow being made of iron, wood or thong. A search round an old farm building may easily result in some suitable objects being secured.

Of wood particularly quite a large number of utensils and weapons were made. Large spoons and basins, tinder-boxes, nut-crackers, cheese moulds, &c., all of wood, may now and then be secured. I have not yet been successful in securing a wooden platter, yet there were many of these in every house in the Riding. Some of them were merely turned in the form and shape of an ordinary dinner plate. A more interesting form, however, consisted of a squared piece of wood, with a large depression in the centre for the food and a smaller depression in one corner for salt. The

* A paper read by Mr. T. Sheppard, F.G.S., Curator of the Hull Museum, at the annual meeting of the East Riding Antiquarian Society.

introduction of cheap pots has apparently resulted in these wooden platters being practically completely destroyed, though I have frequently met with people who remembered them being used. Another common household article was the hand mangle, generally in oak or other hard wood, which consisted of a roller around which the linen was wrapped and a battledore used for pressing the roller in moving it forward on the table. In a farmyard outhouse one may occasionally meet with many curious agricultural implements, such as dibbling-irons, for making holes for setting beans; fothering irons, resembling a grate with a handle, used for detaching the horns from barley. There may yet exist a hand winnower, used for separating the chaff from the corn after it has been thrashed. I have not yet succeeded in obtaining one, but they consisted of pieces of canvas and other material tightly drawn across a roller, somewhat after the manner of the paddles on the wheel of a paddle boat. The roller was held in position on two supports, and by means of the handle was quickly revolved. Another object consisted of a squared piece of wood with a handle, which was smeared with grease and sprinkled with sand, and used for sharpening scythes, &c., before the present familiar hone was in use. The old-fashioned form of sickle and shepherd's crook are rarely met with. Other objects going out of use and worth preserving are the Dutch hoes, hand churns, cheese moulds (sometimes curiously carved), cheese presses, horn lanterns, "bag markers," primitive forms of scarecrows made of wood or wood and tin, &c. We have a very fine cheese press with a wooden screw, the weight being formed from a squared stone from Thornton Abbey.

"Beware of spring guns and mantraps" was a not unfamiliar sign in orchards, &c., half a century ago. Whilst we have managed to secure one or two interesting, and anything but humane, mantraps and spring guns, I still have to obtain one of the painted signboards which, I am afraid, have been painted over, and now read "Trespassers will be Prosecuted," or "Private Road," notices which are becoming far too familiar.

With our present luxuries of gas, electric light and safety matches we can hardly appreciate the trouble our grandfathers had in lighting a fire, and the miserable light there must have been in old times. Tinder-boxes, with their accompanying flint, steel and tinder, early forms in wood and later in iron or tin, were on every mantelshelf, whilst in the houses of the more wealthy elaborate tinder-boxes which had the piece of flint firmly fitted into jaws, were fired off after the manner of a pistol. Rushlight holders of varying patterns and types were inserted in huge wooden blocks, or stuck into the beams of the houses of the poorer people, while the better class had stinking tallow dips which necessitated the frequent application of the snuffer. Candle snuffers and snuffer trays were then even more common in a household than card trays or ash trays are to-day. True, one may occasionally yet see a silver or plated pair of snuffers on a similarly elaborate tray, but they are now ornaments in the drawing-rooms where candles are unknown, and as often as not are modern imitations made to sell. The evolution of the modern safety match is very interesting when one can get a series from the sulphur tipped chip of wood to the present time. Then there were the various forms of congraves to the brimstone matches, and so on to the varieties we are now familiar with. Various fancy appliances for lighting cigars, &c., were in vogue at different times.

In the old days each farmer carried in his pocket scales for weighting guineas and other coin, as a safeguard against counterfeits, and in many other ways was equipped with odds and ends such as would be exceedingly strange to people of to-day. The keys in his pocket were of a very different type from those now used, and his old turnip watch and fob, which are now being revived by "fashionable" people, was quite in keeping with his time. Other objects which ought to be secured before it is too late might be mentioned to great length, but if one just mentions one or two which have recently been obtained it must suffice. Amongst these are moulds for making gingerbread; sand boxes, somewhat resembling pepper pots, used for drying ink before blotting paper was known; old forms of door knockers and other door furniture; in fact one might go on *ad infinitum*.

It is as well when possible to get a series of objects illustrating the various advances which have been made from the earliest to more recent times. To some extent this has been done with our matches, and we have also been similarly successful in illustrating the evolution of the

spinning-wheel and the bicycle. Our earliest specimen of the latter is the dandy-horse, consisting of a crosspiece and pair of wheels which took the weight of the body, whilst the means of propelling was by the toes on the ground pushing the dandy-horse forward. The next specimen is the wooden boneshaker, most properly so named; then the iron boneshaker; and later the high 52-inch wheeled bicycle. Following this was of course the solid-tyred safety bicycle; the cushion-tyred; then the pneumatic-tyred; and finally the motor bicycle, which most of us probably wish to see as defunct as is the boneshaker.

In bringing these items before your notice I do so with the dual object of showing that there is much interest in comparatively modern things, and also as a hint to our Beverley friends, who are thinking about having a museum, of a probable way of getting together an interesting and useful collection of objects without very much expense.

OLD BASING AND BRAMLEY.

THE last excursion of the season of the members of the Hampshire Field Club and Archaeological Society was to Old Basing, Sherfield and Bramley. The first halt was made, says the *Hampshire Advertiser*, at the site of the Old Basing House, the famous Cavalier fortress which played so prominent a part in the Cromwellian war and so gallantly withstood the attacks of Waller, though later on it had to yield to the forces of Cromwell, who afterwards razed to the ground what must have been a truly palatial building. Lord Bolton, the owner of the estate, who granted special facilities for the visit, has been carrying out considerable excavations on the site, the results of which are as interesting as they are surprising. The whole of the ground plan of the "Castle" has been laid bare, including the spacious courtyard, paved with flints, and an excellent idea may now be formed of the size and arrangement of the large circular building, the ramparts round which are still almost as perfect as when they were used to repel the fierce assaults of the Parliamentarians. Entering the site across the moat, where the remains of the curtain wall with two flanking towers are still visible, the visitors proceeded to examine the results of the excavations. The party spent about an hour and a half on the site, one feature of special interest being the crypt of the chapel, which was used as a dungeon for prisoners, and whose artistic efforts in drawing galleons are still visible on the ruined walls. They next visited the little museum just outside the ramparts, in which are displayed many relics of the siege found in the excavations, including a large number of cannon balls, bullets and a few skulls, and other evidences of the severity of the attacks on the fortress. Mr. Dale, the secretary, called attention to a bottle which was used for sack, and said that during the clearances of the Simnel Street area at Southampton some sixty or seventy of such bottles were found, but were all smashed, with the exception of about half a dozen. One bottle showed that the Marquess of Winchester had his own wine bottles made, as it bore his initials and his coat of arms. The visitors then proceeded to the columbarium or pigeon-house, and then went on to the adjacent barn or so-called riding school. Mr. Dale called attention to the fine Tudor brickwork of the entrance piers. Not only were the bricks smaller than those now in use, but they were most carefully laid and the work was very durable. There was a very good specimen of similar work in Cuckoo Lane, at Southampton, at the former entrance to Bugle Hall. The fine timber roof of the barn was a puzzle to him, and if they saw it on a stone building of the fifteenth or sixteenth century they would probably say it was as old as the building itself. But the barn was of brick, and that knocked away the idea of so early a date, unless it had formerly covered another building of stone, which, however, did not appear likely. It was not older than the Commonwealth period, or the early part of the seventeenth century. Sometimes people in churches told them these fine roofs were made of sweet chestnut, because spiders then would not build in them. He had no faith in that idea. He did not know why spiders should not build in sweet chestnut; at all events, the roofs were too high up for anyone to examine.

A move was then made to Old Basing Church, a building which has been previously visited by the Club, but is always interesting, especially by its connection with the Paulet family and the uses that were made of it during the military operations in the district during the Civil War. In

the Paulet chapel a brass has recently been erected on the east wall in memory of the members of the family who are interred there, the names being copied from those found on the coffin plates. These begin with Margaret, Countess of Wiltshire, who died in February 1682, and finish with Maria, Countess of Bolton, who died in November 1863, there being thirty-three names in all. There is also here a Flaxman monument to the "most noble Prince Henry, Sixth Duke of Bolton, premier Marquis of England." He died on Christmas Day 1794. Canon Hessey, the vicar, was from home, but his wife courteously met the party and explained some of the leading architectural features of the church. She said it would be noticed that some of the arms and initials on the Bolton shields, as well as the inscriptions, were unfinished. This was because the Italian artists engaged in the work fled during the siege of Basing House and did not return. Mr. Dale said the members of the Club often had churches explained to them by vicars and rectors, but this was the first time in his experience of twenty-one years that a vicar's lady had performed that agreeable duty, and he was sure they all heartily thanked Mrs. Hessey for her kindness.

The party then went on to Sherfield-on-Loddon to pay a hurried visit to the Decorated church of St. Leonard, which was restored in 1872, and then drove to Bramley Church, which is highly interesting, especially for its wall-paintings, the most noteworthy of which is a thirteenth-century representation of the murder of Thomas-a-Becket. There is a fine tomb to the memory of Bernard Brocas (who died in November, 1747) in the Brocas Chapel, with recumbent figures by Banks. Brocas, the inscription tells us, was a "Lieutenant-Colonel of the North Hampshire Militia, who was descended from a long race of ancestors as remarkable for their loyalty and attachment to their king and country as for their many other virtues." There are also some interesting brasses. Mr. Dale read a paper, prepared, we understand, by Mr. Eddy, from which we make the following extracts:—

Bramley Church in its older parts belongs to the Norman Transition style of architecture. It dates from 1220 A.D. at latest, but its original features have only been brought to light since 1870. The old exterior walls are best seen on the east and north sides. They are very thick and are built of flints and tiles brought from Silchester. The transept, known as the Brocas or Beaurepaire aisle, belonged to the Brocas family, who owned Beaurepaire from the fourteenth century down to 1870. It was built in 1801. The heraldic vanes represent a Moor's head crowned, the crest granted to a redoubtable Brocas, who cut off the head of a king of Morocco. His monument is in Westminster Abbey. The tower was built in 1636-40. The present doorway within the porch occupies the position of one of the original windows, a piece of which is to be seen in the wall to the right of the door. The oldest interior stonework may be recognised by its fine quality and by its crosswise tooling. It came, he believed, from the Isle of Wight. The font is of Purbeck marble; the corner pillars are a restoration made in 1891, when a shapeless mass of brickwork was taken down and the curious base was discovered, with the marks where the corner pillars had stood. On the west side of the basin is the Norman dog-tooth. On the east side seem to be the remains of a lamb and a flag. The gallery was erected in 1728 "for the servants and young people of the parish." . . . There were originally four Norman windows in the north wall (Norman Transition). In 1870 no traces of these were visible. The westernmost had been blocked up before the gallery was built, and is now half-hidden by it. The next window eastward had been enlarged in the fifteenth century into a three-light Decorated window. It contains some painted glass of the same date—the Sun of York and the Brocas arms. The third window, now restored, and showing a figure of Faith in stained glass, given by Miss Brocas, had had its splay cut straight back on both sides, and a square wooden frame inserted under a low brick arch. (When the upper arch was discovered the head was found plastered over and painted red.) The fourth and easternmost window, now restored and enriched with a figure of St. Hubert, the patron saint of huntsmen, given by Mr. Alfred Thornton, had been walled up before 1604, for the monument to Reg. Hannington of that date, now over the priest's door, was affixed to one of the jambs; in front of the other was a marble slab, now in the chancel floor. Beneath is the aumbry or cupboard, where the Communion plate was kept. It was stolen in 1712, and the flagon now in use was given by Mr. Brocas in 1714. The

east window is of a much later date, and belongs to the Perpendicular style of architecture. . . . The priest's door, dating perhaps from the fourteenth century, had been blocked up in 1848 and was reopened in 1878. In repairing it some ancient floor tiles were found built into the wall. These have been imitated for the chancel floor. The rood was a figure of our Saviour on the Cross, with St. Mary and St. John standing beneath. After the Reformation the roods were destroyed as idolatrous, and the rood-lofts, and even the screens, went down with them. In 1673, according to the Bramley churchwardens' book of accounts, the "Roode-lofte is taken down, and a poticon (partition) made up where it stode." Just to the westward of the Brocas aisle was discovered in 1874 the south doorway, formerly the principal entrance to the church. I claim the credit of having discovered all the paintings in the church. It was once covered with them. The earliest were perhaps painted in fresco, *i.e.* on the plaster when wet; the rest in distemper, *i.e.* on coats of whitewash. After the Reformation texts took their place, and were renewed from time to time. In some places, *e.g.* the Brocas aisle, the successive coats of plaster and paint may be seen like the layers in a sandwich, showing how, as one picture faded, another was painted over it. The painting of St. Christopher between two of the windows on the north wall is the most elaborate in the church. . . . The picture of St. Christopher was always painted opposite the church door, that the eye might rest on it first, which was thought to bring good luck. . . . Above the now blocked-up south doorway is the most interesting picture in the church, the murder of Thomas-a-Becket. He was murdered on December 29, 1170 A.D., and the picture may have been painted within fifty years of the event. The four knights have each triangular shields and chain armour. The foremost of them (William de Tracy) strikes with a level sword at Edward Grimm the sacristan, whose figure has unfortunately perished, only his surplised arm holding the archbishop's crozier being now visible. The second (Reginald Brito) thrusts his sword downwards into the Saint's head (Becket is on his knees). Out of this sword grow two roses. The third knight is also striking across the head. This knight must be intended for Reginald Fitzurse, for on his shield is a bear's head with a halter (it looks more like a horse); "urse" means "bear." The fourth (De Morville), too far back to strike, holds his sword erect. This picture formed one of a series under a chequer or dog-tooth edging; next to the left was another, of which all has perished except two figures with ugly faces walking in a procession. The new reredos is in the form of a triptych; it was painted by Mr. Victor Milner in 1885, and given by myself. The well carved altar rails came from Hexham. There were originally two altars of stone, a high altar and a lady's altar. They were "ridded" in 1541, and a table made, but they must have been re-erected under Queen Mary, for they were taken down again in 1561. One of the altar stones was sold to John White in 1589, "to laye upon his father," who was buried in the church. . . . The wooden panelling of the roof is a feature common to many Hampshire churches. There are two sets of it, one at the east end of the chancel and one at the east end of the nave. They seem to date from the Tudor period. East of the screen is a monument to Dr. Shaw, the Eastern traveller, in the shape of the Egyptian pyramids which he visited. His epitaph relates that his fame will outlive even these. This monument stood on the east wall, and its removal disclosed the painting of the Virgin and Child. The Beaurepaire aisle is modern, but the archway leading into it must be ancient, for the pillars had round capitals now broken off, and the stone arch was bordered with painting. It contains a brass to Richard and Ales Carter, who died at Bramley in 1529 and bequeathed to the church two cows. There is also a brass to Gwen More, wife to John Shelford and "modyr to the Abbess of Shaftesbury." She died in 1504. The handsome Brocas monument was sculptured by Banks, who also carved the beautiful figure of Chaloner Chute in the chapel of the Vyne. The inscription is legendary; there are no traces of the Brocas family in England before the time of Edward II. The window contains some very valuable glass, much of it belonging to the best period of glass painting, 1480-1520, the work of the Liège school. The window was restored in memory of Mr. Henry Welch Thornton. . . . Mr. Henry Welch Thornton restored the tower, Mr. Alfred Welch Thornton the floor of the nave, Mrs. Welch Thornton the Beaurepaire window. The east window was put up, the organ provided and the bells rehung by subscription. The

chancel, the seats and the font were restored by myself during my incumbency of Bramley, 1860-92.

The party then returned to Basingstoke.

THE COLONNADE.

ALTHOUGH the beauty, the grace, the picturesque effect of Grecian and Roman architecture are universally admitted, it is contended by many, to whose opinion some deference appears to be due, that the colonnade is but ill adapted to our climate. Colonnades and porticoes are delightful beneath the sunny skies of Greece and Italy, but in this country, at best, they are declared to be beautiful and costly absurdities, in which propriety and comfort are sacrificed to display. It is also urged that however tasteful they are considered as mere decorations, that the application of them in modern architecture is at variance with one of the first principles of correct taste, namely, that nothing can be essentially beautiful that is misplaced and misapplied. How far a license in this respect is admissible, when we consider that architecture is an ornamental as well as a useful art—that it not only provides for our necessities, but, like the other fine arts, addresses itself to the imagination and enlarges the sphere of our more refined gratifications—it is not our purpose to inquire: it will be sufficient to suggest that they can in England also possess the recommendation of utility and convenience.

Provided it were well founded the above objection would prove, if not utterly fatal, at least disagreeable, inasmuch as it gives considerable vantage ground to those who seek to depreciate the efforts of modern architects, maintaining that their system itself is erroneous, and that the style of the ancients can never be rendered subservient to our purposes. If our climate be indeed so ungenial as to render sheltered but open ambulatories perfectly useless; if our atmosphere be so inclement as altogether to destroy the effect of those ornamental sculptured details which confer such a charm on the edifices of antiquity, it will perhaps be unavailable to offer to the critics we have to contend with any plea derived from intrinsic beauty. We must confine such embellishments, they will say, to the interior of our dwellings. We must not erect loggias exposed to bleak winds and pelting storms, nor, merely to gratify the eye, form colonnades to exclude the sun and catch not grateful breezes but chilling draughts of air. Such are the cavillings that have again and again been made, probably under the influence of an ague or an asthma, for on listening to them one might be induced to ask why, since sunshine is such a rarity and luxury to us, we contrive blinds and Venetian shutters to exclude it, and what can induce English ladies to adopt fans and parasols which, although they may be exceedingly useful in India, are merely incumbrances to them in our northern clime, for which they were not originally intended? That the colonnade was admirably adapted to the latitude of Greece and Italy no one will dispute; but surely it does not thence follow, as objectors would have us infer, that it is worse than useless in our island. As well might it be said that an umbrella is excellently contrived to serve as a screen against the rays of a tropical sun, its very name indicates its destination, consequently it is highly absurd to employ it otherwise. Those who inveigh against the application of the colonnade as a mere architectural luxury, at once expensive and inconvenient, appear not only to forget that the sun does sometimes actually unveil his face to us, as appeared during several months of the present year, and that shade is often desirable during some portion of the year, even in this formidable climate of ours. They also forget that what in a hot climate is adopted for the sake of shade may here with equal propriety be employed for the purpose of shelter. Neither do they consider that we can derive both advantages from it—shade in summer when the sun is high, and shelter in winter when that luminary is too low in the horizon for the colonnade to cast a shadow of such depth as to darken the rooms before whose windows the columns project.

If, however, it be still urged that such sheltered walks are quite exotic, let us look for an example and authority in our indigenous architecture—in that style in which our ancestors excelled, and which we are assured is expressly formed with reference to our climate. Now in the Gothic style, which has been emphatically designated English architecture, we meet with frequent examples of the cloister or covered walk, so well adapted both for shelter in winter and shade during summer. We must, therefore, either admit that the colonnade—and the cloister is to all

essential purposes nothing else than one—is compatible with our climate, or confess that we have lauded our own architecture too highly; since, although native, it offers us examples of that very same arrangement which is alleged as a formidable objection against both the Grecian and Italian styles. Should we, however, not be allowed to avail ourselves even of such a precedent we must still contend that there must be something of utility in the colonnade or its substitute, whatever be the form it assumes; else wherefore have we borrowed from India its verandah and applied it indiscriminately to houses both in the country and in town, and that, too, in every aspect? It can hardly be alleged in its favour that it possesses any particular beauty to recommend it; that it is better adapted to a moist climate than a construction of stone, or that it harmonises better with the style of our buildings. That it is more economic will not be denied, but when we speak of architectural beauty we must not examine our object with the eyes of a surveyor, nor must we forget that we are now estimating architecture merely as a fine art. We are not endeavouring to prove that its refinements and the pleasure derived from it are indispensable any more than those of the other arts; it is because they are elegancies that they are also superfluities. Yet it really seems unfair to demand from architecture, and from architecture alone, that regard to economy which we hardly deem any recommendation to our other enjoyments.

Undoubtedly it is possible to display beauty of form and proportion even in the plainest structure, so as thereby to captivate the eye; and greatly is it to be regretted that this is a point so little attended to, and that we so rarely meet with this recommendation to atone for the absence of embellishment. If, however, we would enjoy the luxuries of architecture, we must not grudge their cost. The passion for them may be censured as folly, but it is assuredly not the most contemptible or injurious of our follies. To expend some thousands on the exterior of a residence may be deemed extravagance, by those very persons, too, who would not scruple to lay out the same sum on a diamond ring or a cabinet picture. Yet setting aside every consideration as to the enjoyment derived by the possessor of the mansion from the contemplation of its beauties, and the occupation which he thus affords to numerous artisans, it may be doubted whether, if vanity has at all influenced him, he will not obtain full as good interest for his money as the owner of the ring or the picture. Until, therefore, paste be preferred to diamonds (and the former glares on the eye nearly as well as the latter); until a print by Strangé be preferred to the original by Titian, let us not eternally be reminded of economy. Admitting, then, at once that architectural display is a luxury—an exquisite, a refined, yet a costly luxury—it is assuredly not so prevalent or so offensive as to require to be restricted either by a sumptuary law on the part of the legislator or by the more severe penal law of public opinion, a passion for architecture being nearly as intellectual as that for dogs and horses. One thing, too, is indisputable, namely, that whether he builds to gratify his vanity or his taste, or both, he who erects a splendid mansion or villa contributes to the enjoyment of others, as it will rarely happen that the structure is altogether secluded from public gaze. There are no restrictions upon admiration, and in matters of taste to admire is also to enjoy.

We have mentioned the verandah as a proof of the inconsistency of exclaiming against the unfitness of Grecian architecture to this climate, while at the same time no scruple is made of employing what is equally objectionable and still more exotic; and it must be allowed to form a very strong point in favour of that side of the argument which we are here advocating, for if we not merely tolerate, but admire these kind of constructions and obstructions before our dwellings, frequently allowing creeping plants to climb up the trelliswork, so as not only to form a dense shade, but also serve as a lodgment to rain and moisture; we may surely without any imputation on our judgment employ the colonnade as a more pleasing object, more durable and capable of being rendered more decidedly useful and applied to a greater variety of purposes. The colonnade—which term we here make use of by way of distinguishing it from loggias or from porticoes surmounted by a pediment—has seldom been employed by our architects, except for the purpose of uniting the wings to the centre of a building, owing to which it mostly serves merely as a corridor to the offices, and being likewise seldom higher than the basement (where there is one), has been of too inconsiderable proportions to form an important feature

in the design. Rarely, indeed, more correctly speaking we might perhaps say never, have the columns of the central portico been continued along the rest of the front; yet, although it is by no means desirable that such a method should be generally adopted, it might occasionally be had recourse to very advantageously, so as to impart a varied yet regular and consistent degree of richness to the whole composition. Great diversity of effect might be produced according to the depth of the colonnade and the manner in which its elevation was treated; that is, by sometimes carrying the order of the portico in one uninterrupted line on each side the centre; by terminating with a wing or pavilion at the extremity; by detaching it from the portico itself; or, again, by varying the order in these parts from that in the centre. This, it must be admitted, would open a very extensive field to the architect compared with the present monotonous system, while the result would be not only infinitely more graceful and picturesque, but under many circumstances highly convenient.

With regard to mere convenience, it may not be improper to anticipate here an objection that will probably be made. We admit then that when attached to the front of a private residence in a town, except it be merely as a shelter to the entrance, a colonnade can hardly claim the merit of any great utility to the occupier, however convenient it might be rendered to passengers in the street as a shelter from rain. If placed on a basement, however, it will at least afford all the advantage to be derived from a verandah, and will not only produce a more imposing and nobler effect, but in fact possess the advantage of the latter appendage without its inconvenience, inasmuch as, being loftier, it would not obstruct the sun so much from the windows to the rooms on the first floor. We ought not therefore to censure architecture as inapplicable to our domestic structures, unless we are ready to acknowledge also that we have attempted to naturalise what, without any intrinsic beauty to recommend it, is still less suitable in itself. In country residences, on the contrary, the covered walk, whatever be its name, or whatever form it may assume, may be rendered not only a classical embellishment, but a positive advantage—not, indeed, an indispensable convenience, but a luxurious accessory. Whether it be a portico of columns or an arcade, or, supposing the Pointed style to be selected, an open cloister, an ambulatory of this description will be found conducive to recreation and will afford an agreeable and salubrious promenade even at those times when the adjacent lawn and walks may be too damp to admit of the exercise of walking, especially to the delicate or invalid. Besides, its contiguity to the principal sitting-rooms—and care should always be taken to arrange the plan so that it is immediately connected with them, even where they do not open upon it—is an additional recommendation that ought not to be overlooked.

Not a little depends upon the aspect under which we consider things. We are told that open loggias and galleries, however beautiful in themselves as ornamental and picturesque objects, are absolutely unfit for a moist climate—for one where sunshine rather than shade is desirable. And undoubtedly if we choose to view them as rooms exposed to the air, they would be censurable; but they are not to be so considered, for they do not leave exposed what would otherwise be enclosed, but, on the contrary, they shelter what, without them, would be undefended either from wind or rain. When we listen to the cavilling of some of our chilly critics we might almost doubt whether it were possible for the human frame to endure exposure to our inclement atmosphere, even in the months of July and August; for whenever anyone speaks of the beauty of Grecian architecture, and of the richness of its pillared scenery, they are sure to remind him of our northern latitude. There are times, we admit, when even the shelter of the colonnade does not afford so agreeable a place for promenading or lounging as the gallery or conservatory. Yet if we condemn the former on this account, we ought in mere justice to confess also that the flower garden is equally unfitted for this climate, because we cannot enjoy it in the depth of winter when it is buried in snow; or with equal reason might we exclaim against the conservatory, as being not the coolest retreat in the dog-days. There is surely no reason why, of all our luxuries, from those alone which are furnished by architecture we should so pertinaciously demand that they should be uniformly well adapted to every season—that we should reject them altogether because it happens that they are occasionally unavailable.

So far from the colonnade being any encroachment on

the dwelling itself, any drawback on its interior comforts, it ought rather to be regarded as an additional convenience, serving as a link between our indoor and out-of-door amusements—permitting us, as it were, to combine them both—and affording a kind of substitute for the garden or pleasure grounds, when other circumstances prevent us from resorting to the latter. The sunbeams may be cheering, the air genial, but the grass of the lawn may be damp; at such a time the colonnade invites us to pace its terrace. Nor is it less delightful to pass from the gaily-lit drawing-room to such an *al fresco* gallery, when the moonbeams play upon its columns, now silvered by their touch, and thence to gaze on the surrounding landscape. Were we epicures in architecture, we should not grudge to bestow more attention on picturesque effects, even were our climate far more unpropitious to the enjoyment of them than it actually is; yet although a man may, without any disparagement to his judgment, cross the Channel from France, for no other purpose than that of dining on turtle in perfection on a particular day, he would doubtless be stigmatised as a fool were he to erect a rich architectural façade that he might have the pleasure of contemplating it. As long as our follies are like those of our neighbours we may indulge in them with impunity; it is only when the objects of them differ from theirs that they discover we are not altogether so wise as we ought to be. Apropos to this observation, we must be permitted to add another more pertinent in support of this point of our argument, which is this—the gratification arising from the amenities and graces of architecture is attended with a permanent satisfaction that continues after the positive delight they afford has subsided, and outlives the consciousness of actual admiration. The sturdy utilitarian, who affects to despise whatever does not directly minister to corporeal indulgence, and whose doctrines, if followed up, would banish all but the substantial pleasures of eating and drinking, ought in consistency to admit that, except as far as it is necessary to vegetation and temperature, sunshine might very well be dispensed with altogether as a superfluity in the scheme of the physical world.

UNIVERSITY COLLEGE, LONDON.

THE large volume of the Calendar of University College, London, indicates the extent to which ancient and modern studies are combined. By the Act of last year the status of the college has been altered, for it is now part of the University of London, and is in a better position for carrying out advanced education. The architectural department has also a completeness which was wanting in the days when Hoskins, Donaldson and Hayter Lewis had to perform all the duties almost single-handed. The following questions set in the class examinations are enough to suggest the range of the teaching:—

BUILDING MATERIALS AND CONSTRUCTION.

I.—First Year.

1. Draw to inch scale the plans of heading and stretching courses of a brick gate-pier three bricks square, with a 14-inch wall bonding into it on one side and a projection 9-inches wide and 4½-inches deep on the opposite side. The whole to be in English bond, and the joints may be shown with single lines.
2. How would you recognise (a) Portland stone, (b) Ketton stone? State what you know about the durability of Portland stone in London, and name three buildings in London where it has been used.
3. Sketch to about inch scale sections through the foundations of a 14-inch wall in ordinary soil. A wood-block floor on concrete is to be on the inside and the ground-level on the outside, and show (a) the floor above the ground-level, (b) the ground 18 inches above the floor-level.
4. Describe the ingredients and preparation of concrete, and state where it is used.
5. Draw to ½-inch scale a cross-section and rafter-plan of the hipped end of a roof of 20-feet span. There is to be a king-post roof-truss under the apex of the hips. Show the means adopted for tying in the angles of the building.
6. Draw to ½-inch scale the plan and cross-section of a lead flat 10 feet long and 3 feet wide, surrounded on all sides by walls. The outlet is to be at one corner.
7. What kind of asphalt would you use for flat roofs? What are the advantages of asphalt, and how should it be laid on flat roofs?
8. Sketch to about one-eighth full-size details of a

chimney breaking through a roof, showing a section through the roof and soakers with an elevation of the side-flashing at its junction with the chimney gutter. The slating is to be done with Countess slates.

9. Draw to $\frac{1}{2}$ -inch scale an iron roof-truss suitable for a span of 20 feet, and sketch the details of the various joints.

10. What precautions have to be taken in building on (a) rock, (b) made ground, (c) sand?

11. Draw full-size details of a skirting suitable for (a) plaster, (b) panelling, and carefully show all grounds and fixings.

12. Describe wood-block flooring and parquet flooring, and state how each is laid, and illustrate with sketches.

13. Draw to inch scale a four-panelled door 6 feet 9 inches by 3 feet wide. Name the different parts, and fully describe with sketches the various joints.

14. Sketch the linings of the jambs of internal doors suitable for a brick wall 18 inches thick. Show all grounds and fixings.

15. Which woods are generally painted and which not? State other methods than painting for finishing woodwork.

II.—Second Year.

1. For what purposes are the following woods used in joinery:—(a) Oak, (b) mahogany, (c) pitch-pine, (d) American white deal?

2. Draw full-size sections of floor-boards which can be secret-nailed.

3. Draw full-size sections of mouldings suitable for a panelled door 7 feet high and 3 feet wide, showing thickness of rail and panel in (a) oak, (b) deal; and state the number of panels in the doors.

4. Draw $\frac{1}{2}$ full size the head, frame, sill meeting rails and bars of a double-hung sash-window for an opening 6 feet by 3 feet; draw section of stone sill to same scale, and figure all sizes.

5. Draw $\frac{1}{2}$ full-size the jamb, head, sill, mullion, transom and casement style of a wood-casement window, casements to open outwards, and figure all sizes. Window opening, say, 6 feet square.

6. State all you know about the different kinds of plate-glass.

7. Specify the repainting of woodwork already painted, (a) in fair condition, (b) badly blistered.

8. Draw to inch scale the section through the bottom flight of a wood staircase 6 feet long from front nosing to nosing of landing, height from floor to landing 4 feet 6 inches. Show construction, newels, balusters, &c.

9. Describe ordinary three-coat plasterwork on brick walls and mention any substitutes.

10. A wall is in a dangerous condition owing to defective foundations; describe the procedure necessary to make it safe.

11. Draw the drainage scheme on the plan submitted, figure the size of each drain and state the fall. The rain-water is to be carried into the drain. There is a slight fall on the ground towards the manhole shown on plan.

12. Describe fully the different traps necessary for the above.

13. Describe the different tests for drains and soil-pipes.

14. What causes syphonage of traps, and how can it be prevented?

15. From what sources is water obtained, how can it be stored, and what precautions should be taken to prevent its freezing or becoming contaminated inside and outside a house?

III.—Third Year Diploma.

1. Draw to $\frac{1}{2}$ -inch scale the plans of two courses of a brick wall 18 inches thick, in English bond, 6 feet long from angle to door-opening, with a return-wall at the angle 14 inches thick and 3 feet long from angle to sash-window opening.

2. Discriminate between the following stones, and state for what purposes each is most suitable:—(a) Bath, (b) Portland, (c) York, (d) Hopton Wood.

3. What causes damp in buildings? Describe the precautions necessary to prevent it.

4. A room 30 feet long by 18 feet wide is to have a floor of steel girders and wood joists. Draw the plan of the floor to $\frac{1}{2}$ -inch scale, figure the scantlings of the joists and girders and give sketches of the construction. Chimney-breast 6 feet wide and 18 inches projection on one side. No restrictions as to thickness of walls, positions of windows, &c.

5. Specify a suitable fire-resisting floor for a room of the same size, and state the different ways it can be finished on top.

6. The above is to be covered by a lead-flat with a gutter on one long side only. Draw the plan of the flat to a scale of a quarter-inch to the foot, state falls and sketch details of plumbingwork.

7. A brick wall is 30 feet long by 18 inches thick, and the ground falls 3 feet from left to right. Draw to a scale of a quarter inch to the foot the elevation of the wall, damp-course, and stepped footings, &c., from the ground-floor downwards. Also one cross-section $\frac{1}{2}$ -inch scale showing ground-floor joists, &c. The damp-course is to be 3 inches above ground at highest point. There is no basement. For the purposes of determining depth of footings wall above ground-floor may be taken to be 25 feet high and the soil to be gravel.

8. Draw to $\frac{1}{2}$ -inch scale the skeleton forms of steel roofs suitable for spans of 30 feet and 50 feet, and sketch joints and connections to fair size. Angle of roof 30 degs.

9. Describe the construction of (a) stone stairs, (b) concrete stairs, and illustrate by sketches.

10. Illustrate by sketches the construction of a wood staircase, either newel or geometrical.

11. Draw to $\frac{1}{2}$ -inch scale the elevation of a stone mullioned and transomed window 6 feet 6 inches high by 6 feet wide in the clear, sketch the details for the same and figure their sizes.

12. Describe the precautions to be taken to prevent sewer-gas passing from a sewer or cesspool into a room where there is a sink or lavatory basin.

13. Specify the possible materials and sizes of pipes for (a) rising main (constant supply); (b) branch services; (c) waste from lavatory and from bath; (d) branch soil from water-closet; (e) soil-pipe; (f) branch and main drains; (g) ventilating pipe.

14. A wall is in a dangerous condition owing to defective foundations. Describe the procedure necessary to make it safe.

15. Draw to $\frac{1}{2}$ -inch scale the cross section through a billiard-room lantern, and sketch details of its different parts and figure sizes of each.

HISTORY OF ARCHITECTURAL DEVELOPMENT.

Third Year Diploma.

1. Trace the development of church planning in Italy from the fourth century to the end of the tenth.

2. Analyse the principal differences in plan and proportion between English and French cathedrals of the thirteenth and following centuries.

3. Illustrate by sketches the development of piers and arches in England from the eleventh to the fifteenth century, both inclusive.

4. Describe and illustrate by sketches the differences in form and construction of the domes of the following buildings:—(1) Pantheon, Rome; (2) Sta Sophia, Constantinople; (3) St. Vitale, Ravenna; (4) Florence Cathedral; (5) St. Peter's, Rome; (6) St. Paul's, London; (7) Les Invalides or the Panthéon, Paris.

5. Compare Roman, Romanesque and Gothic vaults, and state in what respects English and French vaults differ after the twelfth century.

6. Explain how the thrusts of ribbed vaults are concentrated and counteracted.

7. Compare and contrast Sta Sophia, Constantinople, and St. Mark's, Venice, especially as regards the plan.

8. To what extent did the buildings of ancient Rome influence the planning of Renaissance churches? and state in what respects the plans of the latter differ from the plans of Mediæval churches.

9. Write a brief account of Renaissance work in England between 1520 and 1760.

The Marylebone Borough Council last week by a small majority decided to refer back a proposal to engage an architect at a cost of 100 guineas for the purpose of drawing up a report and making a preliminary sketch plan as to the suitability of suggested sites for a new town hall. An effort was made to defer further consideration for six months and until the ratepayers have been consulted. At the same meeting the Council adopted a report of the works committee setting out that they had inspected the site of St. Paul's Church, Great Portland Street, in connection with an application for consent to the erection of a concert hall thereon, and had informed the superintendent architect of the London County Council that they objected to the application as it interferes with the rights of the public. The proposed concert hall is estimated to cost 200,000l.

GENERAL.

His Majesty has lent to the exhibition of the Collected Works of Mr. Holman Hunt, which opens on Saturday next at the Leicester Galleries, Leicester Square, the picture entitled *The Beloved*, which was painted for Queen Victoria.

H.R.H. the Prince of Wales has sent Sir William Treloar 5*l.* as a donation to his Crippled Children's Hamper Fund. The fund has for special reasons been opened much earlier than usual this year, and His Majesty the King, as has already been stated, has sent his annual subscription of 10 guineas. The object of the fund is to send a hamper of Christmas fare direct to every crippled child in London who cannot attend the annual Children's Banquet at the Guildhall. On an average 7,000 hampers are thus despatched every Christmas, each containing enough to enable the child to act as host to its family for the day. Subscriptions should be sent to Alderman Sir William Treloar, 69 Ludgate Hill, E.C., who has now kept the scheme going for thirteen years.

The "Public Health Engineer" has been amalgamated with the "Local Government Officer," and now appears as "L.G.O.," as the official organ of the National Association of Local Government Officers. It contains much special information. The publishing offices are 50-52 Ludgate Hill.

In the London University buildings, Imperial Institute Road, South Kensington, Mr. Banister Fletcher began on Monday a course on "The History of Architecture. On Tuesdays, at three and eight, Mr. Percival Gaskell, R.B.A., will begin a course on "Italian Painters." The architecture course will deal with Egyptian, Greek, Roman and Byzantine architecture, and it is proposed that it should be followed by later courses bringing the history down to modern times.

The New Buildings at the Royal College of Science, South Kensington, were occupied for the first time on the 4th inst.

Mr. Herbert Johnson, for many years on the art staff of the *Graphic* and *Daily Graphic*, died suddenly in a railway carriage between Brockenhurst and Southampton West. Mr. Johnson represented the *Graphic* at many important ceremonies at home and abroad, and accompanied the King when, as Prince of Wales, he visited India.

The Annual Meeting of the Society of Architects will be held at Staple Inn Buildings on the 18th inst. at 8 P.M., when the officers and council for 1906-7 will be elected.

Archaeological Lectures on the church of St. Bartholomew-the-Great, Smithfield, on Saturday afternoons, have this autumn, owing to the lamented death of the late rector, been postponed until Saturdays, October 27 and November 3, at 2.30 P.M.

The Late Mr. Thomas Barnes-Williams, who died at the age of fifty-eight, of 98 Piccadilly, W., architect, has left property of the estimated value of 60,141*l.*

At a Meeting of the Liverpool Cathedral committee on Monday it was announced that progress was being made with the lady chapel, the foundation-stone of which was laid by the Duke of Connaught on July 17, and that the erection of the cathedral itself would be started this month. Two windows in the choir were allotted for memorial purposes, one being a stained-glass memorial to Mr. Gladstone, the cost being borne by the Liverpool Gladstone Memorial committee, by whom a statue of the deceased statesman has already been placed in St. John's Gardens. The other memorial window will be to Sir Thomas and Lady Earle.

The Longforgan Parish Church, near Dundee, contains an old tombstone in perfect preservation, dated 1400 A.D., to the memory of one Dame Margaret Golightly, of that parish. A full-length portrait of Dame Golightly is carved on the stone, and also that of her husband, while a small male figure appears at their feet. The stone has been placed on a pedestal and fitted into the inside wall of the church, for its better preservation.

The Art Gallery Committee of Manchester are considering the practicability of using the buildings in their parks as picture galleries to afford accommodation for the works crowded out of the Mosley Street Galleries. An experiment has already been made at Heaton Park Hall.

There have recently been found at the works of Josiah Wedgwood & Sons, Etruria, letters and documents relating to Josiah Wedgwood, and containing interesting biographical information which none of the biographers have yet touched. They will be printed in book form. Numerous fine specimens of early Wedgwood ware have also been discovered.

The Earl of Leven (in addition to bequeathing 40,000*l.* for the restoration of the Chapel Royal at Holyrood, on the stipulation that the work should be carried out by Mr. Thomas Ross, of Messrs. McGibbon & Ross) left a sum of 20,000*l.* to his widow and his eldest son, upon trust to expend the sum in the formation of a family burying-place at Glenferness, requesting them to act in the matter under the direction of Sir John Stirling-Maxwell and Mr. Ross, architect.

Lori Burton, who is patron of St. Paul's Church, Burton-on-Trent, has instructed Mr. G. F. Bodley, R.A., to prepare plans for a new screen of wrought-iron, and richly ornamented, to occupy the arch in the north transept near the pulpit.

Over Ninety Designs had been sent in for the Convalescent and Nurses' Home, Glossop, which is to be erected at a cost of 30,000*l.*, and which is to be presented to the town. These designs will be examined by the assessor, Mr. Paul Ogden, of Manchester, and the author of the design placed first will be appointed the architect to carry out the work. A site has been secured for the home between North Road and Glossop Park.

The Bournemouth Town Council have abandoned the municipal buildings scheme, estimated to cost over 100,000*l.*, and it is probable a new scheme will shortly be prepared.

The Brighton General Purposes Committee have had before them a letter from the secretary of the Royal Commission on Coast Erosion, stating that the Royal Commission wish to take evidence from well-known engineers, and inquiring whether Brighton would be willing to furnish evidence. The borough surveyor, Mr. Weller, is authorised to give evidence before the Commission.

A Copy of the "Great He" Bible, so called from the fact that the word "he" is used instead of "she" in Ruth iii. 15, has just been restored to Ambleside Church, having been purchased by a few residents at Colonel Rhodes's sale. The book, which was taken away from the church under circumstances which have never become known, was in use in the old chapel at Ambleside from 1612 until early in the eighteenth century.

The Council of the Institution of Civil Engineers has made the following awards in respect of papers dealt with in 1905-6: Telford gold medal to Mr. G. A. Denny (London); George Stephenson gold medal to Professor W. E. Dalby, M.A., B.Sc. (London); Telford premiums to Messrs. W. R. Baldwin-Wiseman, M.Sc. (Southampton), G. N. Abernethy (London), H. R. C. Blagden (Alexandria), M. R. Collins (Jersey), and James Kelly (Preston); a Crampton prize to Mr. P. T. Gask (Peru). For students' papers the awards are: Miller prizes to Messrs. Ralph Freeman (London), A. F. Harrison, B.Sc. (Manchester), A. J. Grinling (Derby), T. R. Grigson (London), J. W. D. Ball (London), and A. Morris (Manchester). Mr. A. F. Harrison also gained the James Prescott Joule medal.

The Works Committee of the Westminster City Council will report at the next meeting of that body:—"That they have had before them a plan submitted by Mr. Belcher, on behalf of the fund for the memorial to the late Duke of Cambridge, which shows the position and design of the base of the statue proposed to be erected in Whitehall. The City Council on July 27, 1905, approved a site for the statue on the refuge opposite the Horse Guards, but the plan now submitted shows a site opposite the portico in the centre of the new War Office. This change would necessitate a slight rearrangement in the arc-lamps at this point." The works committee will recommend:—"That no objection be offered to the plan now submitted, subject to Mr. Belcher's paying a deposit to cover all expenses the City Council may be put to in connection with the matter."

The Statue of John Knox to be erected in St. Giles's Cathedral, Edinburgh, has been placed in position in the Albany chapel. It was designed by Mr. Pittendrigh Macgillivray, R.S.A., and is of bronze set on an ornamented stone pedestal and surmounted with a canopy, which is supported on pillars of dark marble. The inscription on the pedestal reads:—"Erected by Scotsmen at home, in Australia, in Canada and the United States." The memorial will be unveiled in about three weeks' time.

Workmen are engaged, under the auspices of the Crown, in the repair of the Donjon Tower of Arbroath Abbey. A staircase communicating between the vault and the dungeon, which has for many years been closed up, has been reopened. The original access to the dungeon will now therefore be available. Other improvements have been effected. Some portions of the abbey have yet to be pointed with cement.

The Architect.

THE WEEK.

THE Merchant Venturers' College at Bristol, which was destroyed by fire in a couple of hours on Tuesday morning, would have been interesting as an early experiment in the planning of technical colleges. It was erected some twenty years ago, and several experts gave advice on the planning. At the time of its construction Gothic had not passed out of favour, and the style is paramount in the building, although treated with unusual freedom. In the seventeenth century COLSTON, a Bristol merchant, left property to trustees to found an almshouse and a free school where the pupils were to be boarded as well as taught. About thirty years ago the Charity Commissioners proposed to erect a girls' school and a trades' school out of the income. But it was found that sufficient money was not available. By the generosity of the Merchant Venturers' Society the financial difficulties were overcome, and the building which succumbed this week was erected at a cost of about 55,000*l*. It became one of the most important technical schools in the country, although in the new building the old arrangements are not likely to be followed. During the last twenty years much more is known about the purposes which such a building should serve, and we may assume care will be taken to introduce the results of experience in this country and elsewhere.

In a late number we noticed some allegations about the cleaning and restoring of some paintings belonging to the Corporation of York. The education committee have made a further investigation, and have obtained a report from an expert. They have come to the conclusion that the work of renovation has been carried out in a thoroughly efficient manner, and without causing damage to the pictures as alleged, although no doubt the picture by ANSDALL and FRITH has at some time been damaged, but not by the restorer. They also consider that the treatment of certain pictures by washing and varnishing, and by the use of a "medium," injured those so dealt with, and particularly in the case of the picture, *The Mother*, by Joy, and that irreparable damage may be done to pictures if so handled. They also wish to state that such treatment of the pictures referred to was unauthorised. One member, after hearing the report of the committee, said that one of the sheep by ANSDALL was endowed with motor goggles, and he wished to know by whose order the addition was introduced. An alderman who is a member of the education committee said his suspicions were increased. There was an angry discussion, but finally the report was adopted. Those who have pictures to give away will do well to remember that "renovation" is practised in York "in a thoroughly efficient manner."

In the Journal of the Royal Victorian Institute of Architects is a portrait and memoir of the late DAVID CHRISTOPHER ASKEW, who was one of the vice-presidents. He was an Englishman and was born at Workington in 1854, and was in his fifty-second year when he died. After leaving school he was for a year engaged on cabinet-making and joinery, and then left for Australia, arriving in Melbourne in 1869. He worked with his brother-in-law, Mr. EDWARD TWENTYMAN, for some years. He attended the civil engineering course at the University from 1878 to 1881 (his coach being Mr. A. WATSON), taking his C.E. degree in May 1882. With Mr. TWENTYMAN as partner, in that year he commenced to practise as an architect, and was not long in being recognised as an able practitioner, especially in works of an engineering nature. His

early drawings prove him to have been an efficient draughtsman, although during the last few years he used his pencil but little. The only competition in which he engaged was for the design of the Cairns Memorial Church, East Melbourne, which he succeeded in winning early in the eighties. His practice in shops, warehouses, offices, &c., was large. He was of a retiring disposition, and when writing specifications for his large buildings preferred to remain at home. As an arbitrator he had great experience, his services were frequently in demand, and his awards were always accepted as from a mind never tinged with bias. He was esteemed by the profession, and, it can be added, was held by his contractors and workmen to be an ideal architect. He always maintained that when an architect saw a workman doing a bit of especially good or difficult work a word of encouragement would go a long way, and make the worker a happier man.

ALL visitors to Edinburgh will remember the columns on Calton Hill, which are the survivals of an effort to reproduce the Parthenon as a memorial of the Scotsmen who fought in the French war against NAPOLEON. The attempt was more expensive than had been anticipated, and the work was abandoned. Since that time many suggestions have appeared about resuming operations and using the completed building for some purpose. In connection with the late inquiry into the necessity for a new Scottish National Gallery the structure on the Calton Hill has been often mentioned. Mr. WILLIAM MITCHELL, Writer to the Signet, has prepared a pamphlet on the subject, and the proposal has found so much favour that the Lord Provost's committee have recommended that 100 guineas be voted by the Town Council towards the expense of circulating it. Mr. MITCHELL considers "that the disgrace attaching to Scotland in connection with our national monument might now be wiped out by completing it for our National Gallery; and that, for this purpose, there is in the hands of the Board of Manufactures about 40,000*l*. of purely Scottish money, which it rests with the Scottish people, if they see fit, to have so applied, leaving the institutions for the promotion of science and art in the Scottish capital, and the buildings in which they are housed, to be duly supported by subsidies from the British Treasury, like those voted towards similar institutions in London and Dublin." The savings are hardly sufficient to pay for resuming the reproduction of the Parthenon. It is doubtful whether a Greek temple if faithfully copied would serve for the exhibition of paintings, and if the memorial must be completed it should be used for the preservation of trophies of Scottish valour. The Calton Hill is not considered by all architects as an eligible site for a picture gallery. But if one is to be erected it should be of a kind which would allow the pictures to be displayed with advantage to the artists.

It could not be denied at the meeting of the London County Council on Tuesday that the trees on the Thames Embankment were damaged in connection with the laying of the tramways. The Chairman of the Parks and Open Spaces committee insisted that the extent of the damage was far larger than was necessary. The roots of ten trees had been severely cut. Further lopping would be necessary if ordinary cars were employed. When the trees were planted it was not anticipated that a double line of tramway would be laid down, and more or less injury was therefore inevitable. To have special cars constructed would affect the traffic and would not be approved by travellers. So much is sacrificed in London to what is supposed to be a necessity, the outcry about the trees must appear extraordinary. If old buildings had to be partially or entirely removed to make way for a tramway the majority of people in London would remain indifferent.

MR. HOLMAN HUNT'S PAINTINGS.

MOST of the pictures by Mr. W. HOLMAN HUNT which are now on view in the Leicester Galleries have been already exhibited. Visitors who from time to time have seen them elsewhere will be glad to perceive how kindly the years have treated them. There are few modern English pictures which after half a century have not lost much of any brilliancy they originally possessed, and in consequence there is generally a discord which was not contemplated in the artist's arrangement. Mr. HOLMAN HUNT had always a preference for strong colours, and their use gave rise to some of the objections raised against his work. Some pictures which once appeared rather harsh are now mellowed, and if they are less striking than when they were first displayed they are more satisfactory. The creator's ability as a painter can be tested by them without any of the allowances on account of fading which are put forth as excuses when dealing with the works of many artists. In this case, at least, time cannot be made responsible for shortcomings.

To the majority of visitors the pictures will probably be strangers, unless by repute. Amateurs of our day may be puzzled to discover why such works should have been at one time abused as if they were acts of treason against the supremacy of English art. "My name," says the artist, "was treated as a proverb of ignorance and wrong-headedness little short of criminality." When most enthusiastic Mr. HOLMAN HUNT could not sell a picture or get a commission for a portrait, and he tells us he was glad to accept a job in cleaning and restoring paintings at the Trinity House. Drudgery of that kind was enough to make any man disheartened, and Mr. HOLMAN HUNT had almost resolved to abandon painting. If critics and the public have become more tolerant, the change must be ascribed mainly to the numerous exhibitions in London of the works of individual artists. Through them the importance of independence in thought and vision has been recognised, and experiments have been approved which were far more extravagant than any of those by the pre-Raphaelites. Anyone who is accustomed to such exhibitions is not likely to be startled by the collection of Mr. HOLMAN HUNT's works.

The artist's methods have been discussed so often, it is not to be supposed that any new qualities can be discovered in the works he has produced. There is no doubt the painter was one of the precursors of modern realism. The word is now taken to express a treatment of details, especially in literature, which is not warranted by any conventional laws of decency. *The Awakened Conscience*, by Mr. HOLMAN HUNT (which is not in the exhibition, although a small reproduction of it appears in the catalogue), suggests the temptations which are before an artist whenever he proposes to present life as it is. But in an age when the insipid plates in "Books of Beauty" were supposed to represent not only English art but English virtue, there was some excuse for those who had the courage to challenge the self-satisfaction of artists and their patrons.

The *Claudio and Isabella*, which was painted in 1850, both in subject and treatment could be taken as a rejection of prescribed rules. The scene represented is not one for reading in the domestic circle. The play from which it was taken was long unknown to theatre-goers. To represent a scamp standing on one leg, as if shrinking from worms approaching him in the grave, was contrary to any rule of composition then known. An earlier drawing suggests that although only two figures were employed it was necessary to make changes in posing them. It was a disturbing picture for spectators, and the *Hireling Shepherd*, which was painted in 1851, was of the same category, for it was suspected to be symbolic, and as such could not be approved, especially by ecclesiastics. It was painted at Ewell, where MILLAIS also was experimenting. If it made many country idylls appear absurd, the amount of

detail crowded in the small canvas could not fail to startle the fashionable painters of the time. Neither in the *Ophelia* nor the *Huguenot*, which MILLAIS was then painting, is there such a variety. Not only sheep, but birds and butterflies, were introduced, and we can see the shadow of the hairs of the hireling's eyelash on his cheek. Then came *The Light of the World*, and its impressive mysticism did not give satisfaction to all who saw it, although it is now a popular subject with photographers. It was considered that the days for scriptural paintings had vanished. CARLYLE, who might be supposed to be in favour of mysticism, did not hesitate to condemn the picture when he saw it in the artist's studio, because it was not an exact presentment of CHRIST's life on earth.

Mr. HOLMAN HUNT must have quickly perceived that such realism as is seen in *The Light of the World* depended in a great measure on imagination. The profuse vegetation was English in its origin. It was possible to have a model made for the lamp and to imitate real examples of jewellery and robes. But the Bible is an Eastern record, and only amidst scenes similar to those described in its pages could any approach to actuality be obtained. Incidents from life in the Holy Land and Egypt had been produced by English painters during flying visits, but Mr. HOLMAN HUNT was the first who resolved to settle down in the land of the Bible and to make a study not merely of forms but of manners and customs. To that resolution his most remarkable works are owing. The pathetic *Scapegoat* was painted in 1854 at Oosdoom on the shores of the Dead Sea, and should be considered as a revelation of the coming of a true school of Biblical illustration. *The Finding of the Saviour in the Temple* exemplified in the fullest degree the significance of the change. "All the figures were painted from members of the Hebrew race. The architecture was designed in accordance with the fact that the Hebrew courts of the Temple were constructed after the manner of a vineyard by members of the Levitical family, educated as architects, hence the wealthy but barbaric character of the East." But to obtain representatives of the Hebrew race to serve for models was a difficult task. If one of them went to Mr. HUNT's house, so MILLAIS was informed, "he looks about like a scared bird, and if he sees any piece of carpentry—a window-sash or a border of a panel—that looks in his suspicious eyes like a cross, away he flies, never to come back any more. . . . The Rabbis keep up the bitterness by excommunicating all who come to my house, for they suspect me to be a missionary in disguise." In spite of such difficulties the picture, which now belongs to the Corporation of Birmingham, was completed, and surprised the Town when exhibited in GAMBART's show-room in 1860. There are certain heads among the world's pictures which, when once seen, cannot be forgotten. In *The Finding of the Saviour in the Temple* Mr. HUNT has added three—the blind Rabbi who tightly clutches the scroll of the law as if it were to be in death as in life his consolation, the venerable brother near him whose faith is disturbed, and the noble student beside them who appears to look into the future as if he were a prophet. The SAVIOUR is an intellectual athlete with the head of a ruler, and recalls the Infant in the *Sistine Madonna*. The picture was purchased for 5,500*l.*, and many speculators would offer four times that amount for it at the present time.

An artist who occupies himself with such efforts cannot be expected to engage in ordinary works. The *Lantern-maker's Courtship*, a humorous experiment which shows a young man endeavouring to remove the veil from an Eastern girl, was painted in 1854. The *King of Hearts*, a little boy in fancy dress posing as a miniature HENRY VIII., is dated 1862. A small but interesting painting of a girl kneeling on her bed—*Morning Prayer*—belongs to 1866. *Bianca*, which was painted in Florence in 1869, represents a young woman holding a mandoline and who wears a large amount of lace. That Mr. HUNT's reputation was then established

is suggested by the portrait of the artist, which was painted in 1868 at the request of the Council of the Uffizi Gallery. He represented himself in the Syrian dress which he wore when painting.

Italy, with all its examples of art, could not overcome the love of the East with Mr. HUNT. In a letter to MILLAIS he said that nearly all the old art was almost puerile as regards dramatic force, and he advised his friend to develop this particular power, by which he would be enabled to attain a higher position than that hitherto occupied in art. In other words, he recommended seriousness of subject as a necessity. With this conviction of a mission we find Mr. HUNT commencing *The Shadow of Death* in 1869 and *The Triumph of the Innocents* in 1870. In both we have a proof of an intense imagination. The former work now belongs to the Corporation of Manchester, and it has been exhibited several times. There are two versions of *The Triumph of the Innocents*, both of which are in the Leicester Galleries. In one there is a diffused moonlight over the whole picture. In the second the more subtle plan was adopted of having a mysterious light by which the figures are seen in all their detail. The Innocents are numerous, and although small in size, they have a development of a kind which does not characterise infancy, and which has not been adopted by painters in any age. When the picture was first exhibited we endeavoured to explain the muscular vigour and the absence of delicacy of contour by supposing that the painter wished to suggest that for the Innocents there was to be no further growth, and that they had lost the charm of immaturity. The reason for the peculiarity has not been stated, and may hereafter give rise to some speculation.

Another Eastern subject which must have cost Mr. HUNT much labour is the *Distribution of Holy Fire in the Church of the Sepulchre, Jerusalem*. The scene is no doubt exciting, but it is doubtful whether it can be considered reverential, and it is perhaps better adapted for photography than for careful painting. Apparently disorder prevails, and in such a case it is impossible to determine what is the principal feature. The *Christ among the Doctors* is a large water-colour showing a synagogue school "with a number of the celebrated Rabbis of the time." His love of truth has in some cases caused Mr. HUNT to introduce portraits, although better effect could be gained if he created the faces and figures. An example of this is seen in *May Morning on Magdalen Tower*, concerning which we are told "the artist thought it would add to the historic interest of the picture in future times to introduce some of the college dignitaries and choristers into the group." There are precedents in the works of the great masters for a similar treatment. But we may doubt whether they would have adopted such an arrangement if photography existed, for whatever may be its advantages it has not increased the importance of painted portraits.

The most remarkable of Mr. HOLMAN HUNT's later works is *The Lady of Shalott*. The first drawing was reproduced as a woodcut with other examples of the pre-Raphaelites in an edition of TENNYSON's poems which appeared in 1857. The poet did not consider that it expressed his idea. But Mr. HUNT has painted two versions in oils, which slightly vary from the original design. The last, which was exhibited in 1905, can be accepted as evidence of the painter's powers at their fullest development. The painting, like some others, requires a long description to be fully understood. But if judged in the ordinary way, as that of a girl bewildered by a rebellion among the threads of the tapestry she is working, and who is seen in a beautiful room adorned with reliefs and with a river and picturesque scenery outside, it must be regarded as a success not only for the painting of details, but for the unusual breadth and the unique disposition of colours. The best proof of its success is that it asserts itself amidst a collection of so many earnest paintings.

TRAJAN'S COLUMN.

THE announcement that Professor GIACOMO BONI has been able to complete his restoration of TRAJAN'S Column in Rome must give satisfaction to archæologists. He was allowed to explore beneath the column partly in the hope that some relics of ancient art might have survived. It was recorded that the ashes of the emperor were placed in a golden vase and deposited in the earth on which the memorial was raised, while according to other accounts the globe in the hand of the statue contained them. Many centuries back efforts were made to obtain the vase, and the excavations then carried out did not add to the safety of the column. By means of the careful underpinning which Professor BONI has been able to perform the great work is now almost as secure as when it was originally completed in A.D. 114. Fifteen fragments of the large swags above the pedestal were recovered and refixed approximately.

TRAJAN must appear to moderns as an ideal emperor of a military state. He possessed no hereditary claim to the throne. He probably was descended from a Roman family, but he was a native of the province of Spain, and he owed his selection as successor to NERVA mainly to his fitness as a commander. He realised that the existence of the empire depended on war, and during the greater part of his reign he was engaged in the field against foreign enemies. But during his absence the administration of the city was conducted with unusual ability and honesty. Large sums were expended on the improvement of Rome. Like his predecessor, TRAJAN constructed a Forum, and it must have been a magnificent work. According to one authority it had a roof of bronze. On two sides there was a double row of columns. The triumphal arch was at one end and the memorial column stood in the opposite extremity in an open space between two great libraries. Within the enclosure was a basilica. Professor BONI has revealed the foundations of the libraries, one of which it is believed mainly contained Latin manuscripts and the other Greek. The character of the shops and other buildings connected with the Forum has to be left to imagination. There was an abundance of gilded figures and an equestrian statue which was supposed to be inimitable by other emperors. TRAJAN'S Forum must have been impressive, for, according to a legend, GREGORY THE GREAT obtained the deliverance of the emperor's soul from Purgatory through admiration for the place.

The column, which fortunately has survived, is well-known from engravings, and there is a cast of it at South Kensington. It is believed that the architect employed to design all the buildings in the Forum was APOLLODORUS, who, if reports are true, was murdered out of envy in the next reign by HADRIAN. But although upheld by the authority of DION CASSIUS, modern historians are doubtful of the truth of the latter allegation. We may therefore suppose that the column was designed by APOLLODORUS.

A column which fails to support something is illogical. In this case there was a bronze statue of the emperor over 20 feet in height. It was overthrown, and it is believed that some of the pieces of marble which Professor BONI recovered were broken from the pedestal while the figure was falling, or clumsily taken down. It was also resolved that in addition to serving the purposes of a column, it should become an historical memorial by sculpturing the shafts with scenes from TRAJAN'S contest with the Dacians. The people occupied districts near the Danube; and in Transylvania a plain where one of the battles was fought is still known as the Field of Trajan. It is believed they were Thracians, and they certainly were among the most troublesome enemies of the empire. TRAJAN had to undertake two expeditions against them before he could be assured that they were conquered.

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It has been calculated that about 2,500 figures are

represented in the spiral, exclusive of the boats, horses, military engines, trophies and other objects. Like the frieze and metopes of the Parthenon a great many sculptors were likely to have been employed on the work. But there can be no question the design came from one artist, who was likely to be APOLLODORUS. Care was taken to avoid degrading the figures of the Dacians, and if they corresponded with the representations they were well worthy to struggle for independence against Rome. With such evidence BYRON was justified in assuming that the statue commonly called *The Dying Gladiator* represented a Dacian warrior. The figures gradually increase in size in proportion to the height. While they are 2 feet at the lower part of the shaft they are nearly 4 feet at the capital. The Romans of the second century must have had better eyes than the majority of present-day visitors if they were able to make out details which were so closely packed. The whole of the figures have fortunately been engraved in De Rossi's book on the column.

We can see all the operations of war as then conducted on a grand scale. It was necessary to cross the Danube by a bridge of boats. On landing the emperor deliberated. Sacrifice was offered, after which TRAJAN harangued his army. The soldiers are next seen erecting defences. Scouts are sent out while TRAJAN examines the improvised fortifications. A couple of Dacians are brought back by the spies. Final preparations for battle are made, and the attack commences. As Jove arrives from high Olympus to aid the Romans, the enemy is quickly defeated and their fortresses are burned. The Dacians then send men to sue for peace, but as the terms are not acceptable the contest is renewed. By order of TRAJAN the women and children are placed out of danger. The Dacians retreat until, meeting with friendly cavalry, they again attack the Romans in one of the new fortresses. The siege is raised by the arrival of additional troops, and TRAJAN is able to surprise the enemy. In another place we see him listening to his scouts. There is a fresh battle, with similar results. Then Victory appears and inscribes a shield with a record of the successes, and in that way the first war comes to an end.

The second invasion in the preliminary stages resembled the first. But this time the triumph is more complete. The Romans are represented in an early scene as showing the head of DECEBALUS, the leader, to the Dacians. The enemy must have lost both courage and hope, for it seems to be easy to make them prisoners. Their settlements are set on fire, and the women and children are seen along with the cattle journeying to more remote regions. In all the scenes the Romans are shown as an irresistible power. But all through we can realise the influence of discipline. The horses of the enemy are so well protected, it may seem to be difficult for any other than Roman infantry to resist them.

Although the pillar relates to the Dacian war, TRAJAN was also engaged in Syria and the neighbouring countries. Indeed, the Senate is said to have offered him as many triumphs as he cared to claim, and it is related that the celebration of his victories occupied four consecutive months.

The column is of Roman Doric. The height has been variously estimated. It is generally supposed to be 97 feet without the pedestal and 115 feet with it. It is therefore about 20 feet higher than the York Column, but nearly corresponds in height with the column in the Place Vendôme in Paris. The shaft is said to consist of twenty-three blocks of white marble. JOSEPH WOODS, who appears to have scrutinised the construction of the column, says that "in this case it appears that the Romans, instead of making a flat and horizontal joint, formed a variously and irregularly undulating surface on the one piece and cut the other to correspond with it, a laborious and difficult process, of which the object seems to be merely to hide the joint, for the strength of the column would not be increased by it." The diameter of the column at the base is

12 feet and at the summit 10 feet. The pedestal is adorned with representations of Dacian arms and other trophies.

When the Ulpian basilica existed in front and the library buildings at the sides it must have been difficult to obtain a glimpse of the column, unless from a position from whence it could not appear to be very impressive. From an inscription on the pedestal we must suppose that one of the purposes of the column, if not the principal one, was to indicate the depth of the excavation of the Quirinal Hill which had to be undertaken in order to obtain the level ground necessary for TRAJAN'S Forum:—"Senatvs . Popvlvsqve . Romanvs . Imp. . Caesari . Divi . Nervae . F. Nervae Traiano . Avg. Germ. Dacico . Pontif. Maximo . Trib. Pot. xvii. Imp. vi. Cos. vi. P. P. AD . declarandvm . quantae . altitudinis mons . et . locvs . tantis . operibvs . sit egestvs." A modern railway contractor would smile at seeing so much trouble to record so small a quantity of earthwork, but it may have been a difficult task to perform within so circumscribed an area. Inside the column is a winding staircase of 185 steps. There is some uncertainty as to whether the statue of TRAJAN remained perfect or only a fragment of it when Pope SIXTUS V. ordered TOMMASO DELLA PORTA to model the statue of St. PETER which now stands upon the column. It is an anomalous crowning for the memorial, and it fails of its effect, for as long as Rome endures the column will be known as TRAJAN'S, unless in some fanatical outbreak it is reduced to dust.

THE ARCHITECTURAL ASSOCIATION.

THE opening meeting for session 1906-7 of the Association was held on Friday evening last at Tufton Street, Westminster, Mr. R. S. Balfour, president, in the chair.

Seventy-nine nominations for membership were read.

On the motion of the President a vote of thanks was passed to Dr. Pritchard for a donation of several hundred lantern slides and negatives, including sets illustrating Indian, Italian, Dalmatian, German and English architecture.

Prizes and Awards, Session 1905-6.

A.A. Travelling Studentship, value 25*l.*, and Silver Medal, A. Winter Rose. Second Prize, value 5*l.*, E. Brantwood Muff. A.A. Medal, value 10*l.* 10*s.*, T. W. Watkins. A.A. Essay Prize, value 10*l.* 10*s.*, and Silver Medal, G. Sanderson. Banister Fletcher Bursary, value 25 Guineas and Medal, Cecil Pinsent. Saxon Snell Scholarship, value 50*l.*, Vincent Hooper. Architectural Union Company's Prize, 10*l.*, R. C. Foster.

SCHOOL OF ARCHITECTURE.

Elementary Class of Design.—Prize value 3*l.* 3*s.* and Bronze Medal, Percy May. Certificate, H. P. L. Cart.

Advanced Class of Design.—Prize value 5*l.* 5*s.* and Bronze Medal, J. L. S. Dahl. Certificate, A. H. Brownrigg.

DAY SCHOOL.

First Year.—Book Prize for first place in History and Construction tests, G. F. Clarkson. A.A. Sketch Book for first place in Freehand Drawing tests, G. D. Gordon Hake. Book Prize for best work in Studio during whole session, L. Keir Hett.

Second Year.—Extra Studentship, free pass to Third Year's Course, G. Sanderson. Travelling Studentship, 15*l.*, P. A. Tilden. End of Session Test, special Prize offered by Master, P. A. Tilden.

EVENING SCHOOL.

Third Year.—First Prize, F. C. W. Dakers. Second Prize, A. N. Peckham. Third Prize, T. F. W. Grant.

Fourth Year.—First Prize, A. Welford and J. K. Ground, equal. Second Prize, B. H. Colclutt. Andrew Oliver Prize, value 5*l.* 5*s.*, J. K. Ground. A.A. Scholarship, value 5*l.* 5*s.*, H. A. Ross.

STUDIO.

Travelling Studentship, value 15*l.*, T. Braddock.

Division I.—Drawings of Old Work, volume of A.A. Sketch Book, F. D. Danvers. Construction, volume of A.A. Sketch Book, F. D. Danvers. Study of Ornament, volume of A.A. Sketch Book, N. W. Hadwen. Design, volume of A.A. Sketch Book, J. Filtness.

Division II.—Design, volume of A.A. Sketch Book, T. Braddock. Study of Ornament and Old Work, volume of A.A. Sketch Book, T. Braddock. Measured Work, volume of A.A. Sketch Book, Digby L. Solomon. Time Sketches, volume of A.A. Sketch Book, C. R. Davy.

LECTURES.

Greek and Roman Architecture (book prize), G. G. Leith. Elementary Construction (book prize), H. D. Ward. English Architecture (book prize), J. Newton. Mediaeval and Renaissance Architecture (book prize), G. Sanderson. Elementary Physics (book prize), W. Craven Rhodes. Geometry (book prize), R. Pierce. Materials (book prize), J. F. Schneider. Construction (book prize), Sir Rupert Ford, Bart. Iron Construction (book prize), Sir Rupert Ford, Bart. Drainage and Water Supply (book prize), Sir Rupert Ford, Bart. Ventilation, Lighting and Heating (book prize), Sir Rupert Ford, Bart. Professional Practice (book prize), C. E. Hanscombe. Land Surveying (book prize), R. J. Tyndall.

The President's Address.

An address was delivered by Mr. BALFOUR. In the course of it he said:—

The approach of autumn, and with it the first general meeting of a new session, awakens in your President for the time being a full sense of the obligations and responsibilities which his acceptance of that office entails.

The Association has hitherto been singularly fortunate in the choice it has made of men to guide its destinies, and having such a tale of names to ponder over, each new President must naturally feel some considerable diffidence and anxiety as to how he may acquit himself in a post which becomes year by year more exacting in its claims and onerous in its responsibilities.

The success or otherwise of a President's term of office depends not merely on his personal attributes and qualifications, but of necessity it is very largely influenced indeed by those who share with him the burden of the day, and on the loyal co-operation and support which they afford him.

If the Association has been fortunate in its choice of Presidents in the past, it has been equally lucky in securing the services of a good committee. From what I have seen of the present Council, I believe that they are, one and all, actuated by the traditions inherited from their forerunners. We are this year all as determined as ever to be of one mind, animated by one single purpose and ambition, namely, the continued and increasing welfare of this Association. If this good fortune always obtains, then I for one see no limit to its era of prosperity and expansion. It possesses within itself all the needful potentialities. Its vitality has been unimpaired, nay even fostered, by the lapse of six decades since its strenuous inauguration of the forties.

The current session completes the sixtieth year of the formation of our Society, and I suppose this fact at any rate entitles me to draw your attention very briefly to its progress, specially during the last decade. When we celebrated our jubilee in 1897 we had a membership of 1,111, and our subscription receipts for that year amounted to 8417. In the nine years which have elapsed since then our membership has gone up by one-third, and last session we had 1,681 members, and the subscriptions that year were 1,4067. We commence the present session with a roll of members numbering more than 1,700, and we may, I hope, be well over 1,800 before the session terminates. That is a very satisfactory position of affairs for us to contemplate, and is surely a very remarkable testimony to the vitality and utility of the Architectural Association.

My remarks have been, so far, more or less a review of our past and present position. I will say something now about one or two matters of importance to us all as members of a large Society.

I want to vacate this chair and hand it over to my successor, feeling that we have set our "house in order," that our roof trees are our own, that the floors on which we tread are honestly paid for, and that the walls which encompass us are secure from the depredations of unsatisfied creditors, and that with a grateful contentment we may contemplate our habitation in this historic region for a thousand years to come. I wonder how many of you are aware that if each member of the Architectural Association who has not already done so contributed only 15s., this 7677. debt of ours would to-morrow morning be an incident in our bygone history. It seems to me incredible that in a Society like this, composed of units all desirous of a common purpose, a Society free from all cliques and

schisms, a Society individually and collectively entirely loyal to their foundation, we should have to deplore the apathy of those 1,032 members who have hitherto forgotten or overlooked the appeals of our late President and Council, and whose lethargic consciences have permitted them to disregard their imperative obligations. I would the more urgently invite you all to help in the riddance of this millstone, because such a comparatively trifling amount is now alone required. I would particularly ask the younger members to subscribe even small amounts, because the senior members of the Association who have but little time to make use of the advantages it affords have in many instances already contributed so handsomely.

It was suggested to me, in one of our publications, I think, that when I took up the reins of office I must see to it that the welfare of the younger members, who use these premises more or less as a club, should have greater attention, and that things should be made more agreeable and comfortable than they are. I do not think any of you have been more fully alive to the need of improvement in this respect than I have been. The Council have recently appointed a house committee to deal with all these crying evils; you will hold with me that it is a step in the right direction.

But we cannot do much until we are absolved from our financial liabilities, and when I again remind you that, roughly, only 37 per cent. of our members have subscribed, you will agree with me that we should all strive to induce the remaining 63 per cent. to contribute to the abolition of this debt without delay. Funds will then be available for making our abode here more inviting, but I would personally go further and say that I look forward to the time when our premises may comprise a complete and regular clubhouse for our members. It rests with you, gentlemen, to inaugurate that happy day.

Besides this, there is another motive to be considered in our endeavours to annul our indebtedness; a matter of some urgency. It appears to me that in the future, and I believe that date is not far distant, we shall be compelled to seek means by which we can make our education and social facilities occupy a larger area than at present.

The A.A. day school, that young but vastly vigorous seedling in which the Association feels the proud proprietorship of parentage, is already bearing good fruit, and it has, moreover, assumed a prominent position in our daily life here. What food for consideration the following figures suggest:—In session 1903-4 there were thirty-two students; in session 1904-5 there were forty-two students; in session 1905-6 there were sixty-three students, and we have started the current session with sixty-five students, with the immediate prospect of several more joining, so that we anticipate having an increase of at least ten this term. Now I want you to understand that these figures by no means represent the grand total of students whom we might have on our books if we accepted all the applications we receive. In the first place, our accommodation is limited and we are by no means desirous of crowding our students. We are not a money-making concern, and therefore our sole wish is to give the best instruction we can under conditions as favourable as the exigencies of the case permit.

Our evening school under its new conditions will, we fully believe, establish itself firmly upon an even more permanent basis than hitherto, now that it has been brought into a line more fully approximating with the requirements of our general scheme. In the past it has been a complete success, and it is difficult to see how it can in any way be impaired by the rearrangement of its curriculum. The Council had every confidence that Mr. T. Frank Green would achieve this goal, and the fifty who have already joined distinctly indicates that they have not been mistaken. One is glad to think that so many of our students attend our evening school and lectures, and they are more worthy of commendation than those who attend the day school, for it is no light effort to summon up courage, after a hard day's office work, to attend the instruction given here, at hours when others are seeking relaxation and amusement. Such enthusiasm brings in the end its own reward, and even at the time it tends to gratify that primitive instinct of satisfaction within one of, as it were, stealing a march on others.

Anyone who has taken the trouble to examine in detail the recently published curriculum of our school of architecture must have noticed a very extensive revision in the courses of instruction. The experience we have gained by past years, those wider and ever-increasing needs of the profession, and the demands made upon us by those who

come to us to be taught, have caused your executive, after careful inquiry and a very full and complete investigation into the numerous suggestions and proposals laid before us, to adopt without any drastic modifications the new scheme prepared with so much care, and after an expenditure of a vast amount of arduous labour by the education committee, who, I can assure you, gentlemen, have, during this last summer, proved themselves veritable gluttons for work. To us it is a gratification to know that a practically unanimous chorus of approval from our instructors has sped our new propaganda to the hands of those for whom it has been drawn up, and so far I have heard nothing but the most favourable expressions from those architects and others who have in the past shown so much solicitude in our educational work.

The undoubted success of our schools will very likely bring us face to face with competition from other quarters, but I do not think we should regard this contingency with resentment or alarm. Indeed, I venture to think we should rather welcome it. It should stimulate our students to endeavour to distinguish themselves and their Alma Mater more highly. It will goad the education committee to continue and persevere in their intention to see to it that the Association schools shall always occupy the premier position amid any other institutions of like character. Moreover, even if competition does injure us, we shall, at all events, have the satisfaction of knowing that it all tends to the general advancement of that art which, in reality, fills so large a place in the daily life of mankind, and yet is so strangely neglected by them.

In drafting our new education scheme, the Council feel that they have by no means come to the end of their tether; they have still many directions in which they would like to enlarge the scope of their enterprise. It is not for me to go into matters of detail of this kind on the present occasion, nor have I any mandate from the Council to do so. There is one branch of study, however, which I think personally might well form part of a post-graduate course, which we hope shortly to institute, and I believe that several, if not many, of my colleagues on the Council would welcome the addition of a life class to our curriculum. It is true that the proposal strikes one as being a great innovation, and we should very likely, I think, have to combat some opposition. I believe, however, that such opposition, if it did come, would emanate from those whose misfortune it has been not to have experienced the advantages of such a course of study.

In the last few years, and curiously coincident with the inauguration of our day school, it has been brought to one's notice—indeed, it is patent to us all—that our profession, through the medium more especially of this Association, is being recruited from a section of the community of a better social status. That is a feature which we all welcome gladly. We hear a good deal about the proper recognition of our calling by the Press and public. It is far too trite a subject for discussion here, so I will merely say this, that if our profession does not meet with its proper deserts, we and not the public are to blame, and it lies with us to see that we only admit to our schools men who will be well calculated to uphold the dignity of the art of architecture. Our day school students come for the most part from the great public schools, and are often graduates from our universities. But that alone, of course, is not necessarily any guarantee of their suitability.

Considerable activity has been shown during the last few months among the junior ranks of the Architectural Association, resulting in the establishment of various societies under the ægis of the parent tree. The Council welcome the formation of these societies for many reasons, but chiefly because they tend so effectually to increase and cement the comradeship which has always been, to some extent, a feature in the career of this Society, and a characteristic which is surely capable of even greater prominence. The recently founded athletic club and the musical society are both notable examples of what I mean, and we have every reason to anticipate their permanent success if we may regard their present flourishing condition as a criterion.

And now I have only one other subject directly connected with the Architectural Association on which I should like, with your permission, to say a few words. It is a somewhat delicate matter, and one which should be handled, if it ever comes before you again, as I believe it will, with more tact, and, if I may say so, with a greater degree of urbanity than it met with some years ago. From time to time your Council receives requests from ladies desirous of

becoming members or of attending classes. These applications we are obliged to decline, because you, gentlemen, voted resolutely in opposition to the proposal for their admission as members. Your decision at that time was of such a determined character that we have hesitated to raise the question again. I, for one, have never been convinced of the cogency of the arguments brought forward, and it has always seemed to me on that one occasion in its career the Association fell away from its vocation, betrayed its traditions and adopted a policy distinctly reactionary in character. Since 1893, however, times have changed; the female sex has with its charming insistence ingratiated itself into many spheres which have hitherto been regarded within the sole prerogative of man. Even the R.I.B.A. has admitted ladies within its jealously-guarded portals of membership, they have invaded the offices of many architects, and from what I can gather all the prophecies of disaster have remained unfulfilled. We welcome ladies to our meetings; our conversazione without their presence would be an entertainment of intolerable gloom; at times they have been known to grace our spring and summer visits with their presence; and yet when they sigh to partake of the more serious side of the Association's work you sternly and even brusquely refuse to listen to their appeals. Surely the electorate of to-day in this Society cannot be misogynists, with such hard and unrelenting natures as the electorate of thirteen years ago. I believe that if we took a vote on the subject now we should find you all prepared to adopt the fashionable "open-door" policy, and be ready and anxious to welcome, metaphorically speaking of course, the fair intruders with open arms.

I do not propose on this occasion to say very much about the architectural happenings of the past year. Of course in London the great event has been the seventh International Congress of Architects. It is not within our province nor is this a suitable assemblage for the discussion of the results it has attained, and the disappointments of some of its procedure. These will of course be dealt with by competent authorities, and in their proper place. So far as we are concerned with it here in the Association, it may interest you to know that although we as a body were unable, owing to the strain we have recently had on our resources, to take any official part in extending a welcome to the Congress, over 330 of our members, including "their sisters, their cousins and their aunts," attended its entertainments and deliberations, out of a total membership (for the United Kingdom only) of about 864. That I think is a sufficient indication of our sympathies.

Another event in the architectural world since the last presidential address was given from this chair has been the international competition for the proposed Palace of Peace at The Hague. If the results of this competition were not such as we could feel unqualified satisfaction with in this country, I trust it will not merely be put down to insular prejudice on our part, engendered by the melancholy fact that none of our British competitors appear in the winning list.

We in this great Metropolis will shortly, as you know, be holding a great competition for the London County Council Hall. The London County Council, with that cosmopolitan benevolence which has so distinguished them since the interchange of visits with our charming neighbours across the Channel, has opened wide the competition lists, and invites all the world to tell the Londoner what his architecture should be like.

I trust, and I believe all, or nearly all, British architects are ready to recognise the merit in the noble modern buildings we see on the Continent and the United States of America, but in this instance I think we have some justification in expressing our dissent from the decision of the County Council. The County Hall has not, and it never can have, any international significance. It is to be a building from which the administration of the affairs of London will be conducted, and a home for those whose duty it is to see to its thousand needs. It is to be a structure for London alone, and London only. All English architects will commend heartily any steps which the County Council can reasonably take to secure a design of the greatest possible merit, but I feel convinced that in London we want—and, gentlemen, I am equally convinced that we intend to have—an edifice which interprets for us the great heritage of our national architecture. We desire in these days to see no alien structure, no matter of what magnificence, set down to face the quiet serenity of our Palace of Westminster and the very heart of this great Empire.

A British brain must conceive this great new building and British hands must alone bring it into being. I trust I am no "little Englander," but I would ask the London County Council, the educated citizen of London, or that particularly common-sense and level-headed member of the proletariat, the "man in the street," whether any of them have for one moment contemplated the possibility of our having raised up for our edification across the river a structure resembling, for instance, the grotesque design for The Hague Palace of Peace, as a monument to the taste of our municipal government, and as an everlasting protest by them against the incompetence of our own architects and as an object lesson to us of what they deem the highest form of our art. I very much fear that the County Council in their collective capacity have not as yet recognised a due appreciation of the broad national characteristics and constituents of our calling which go to form the history of its particular evolution in this land, and still less those subtle phases and delicate variations which invest its study with such infinite charm to the architect himself and to the educated portion of the community. Is this natural solicitude of ours for our own particular national type of architecture an effete product unworthy of consideration at the hands of the councillors?

The London County Council has exercised its beneficent sway actively during its short life and in many respects for the improvement of London, as well as in directions which should more nearly appeal to architects. I hesitate, therefore, to criticise its tendency to lose sight of, among the preponderance of the other interests involved, those matters of artistic importance (minor details perhaps the London County Council would call them) which, in the aggregate, mean so much in their appointed place. It would be a matter for congratulation if the County Council could see their way to institute a committee of taste, whose duty it would be to overlook all new schemes before they are put into actual execution, with a view to the avoidance of such unfortunate solecisms as those which have, alas! been perpetrated in the past, and to safeguard us in the future against thoughtless and unnecessary offences against the canons of art and the beauty of our great Metropolis. I would go further, and urge that this committee should be given the larger reference of seeking how actual æsthetic improvements could be introduced into those proposals which come before them for consideration.

It has been my pleasing duty this evening to hand a number of medals and other prizes to those of our students who have most distinguished themselves during the past session. Such rewards as those we gain in these early stages of our setting out on the career we have chosen bring with them infinitely more sense of satisfaction and pleasure than those larger and more important successes which some (I hope all) of you will attain later on in your professional life. The course of years, the greater occupation of our minds with the duties and worries attendant on the exigencies of actual practice, seldom permit us to pause over the good fortune which comes to some men after what is known as their "student days." Therefore make the most of the opportunities you now have. But you cannot all win prizes, and I would say both to those who have and those who have not, do not set much store on the value of these awards, for they will mean nothing to you later on. Do not forget what Ruskin has said about this:—"It is the 'effort' that deserves praise, not the success; nor is it a question for any student whether he is cleverer than others or duller, but whether he has done the best he could with the gifts he has." The prize-winners here are by no means certain winners in the struggle for the topmost rungs of the ladder of architectural fame, and they may very likely find those coveted situations already in the occupation of those who plodded steadily and quietly through our schools without achieving any very notable prominence. I do not believe in the "genius," so called. It is an uncertain and dangerous rôle to play. "Genius" is generally defined as the "infinite capacity for taking pains." But I think that is a better definition as a rule for what we call "success," the offspring of perseverance and hard work.

Before I close, and as a student myself, may I remind you of a little precept which has always seemed to me particularly appropriate to us architects, when the time arrives for us to meet that wide circle of society whose orbit we must cross in the exercise of our calling. "Do not talk but of what you know; do not think but of what you have material to think justly upon; and do not look for things only that you like, when there are others to be seen." And in conclusion, gentlemen, let me felicitate

those of you who this evening carry off the garlands of victory, and allow me also to congratulate with an even greater degree of heartiness those of you who, while not attaining the goal you strove for, have yet, let me assure you, gained that even greater triumph, in the full consciousness that you have done your best. To each of you I offer my good wishes, and may you one and all for ever zealously uphold the proud and ancient traditions of the Architectural Association.

Mr. E. GUY DAWBER, proposing a vote of thanks to the President, congratulated him on his election to the chair, though the office was one full of responsibilities, since the Association held the premier position for architectural education in Great Britain. While listening to the address he was greatly surprised to hear that as many as 1,032 members had not subscribed one penny towards the building debt. The apathy of these members could not be understood, and it came very hard upon those who had worked for the welfare of the Association. He thought all students, as long as they were members, should help in clearing off the debt, and he hoped this would be accomplished before the end of the session. He agreed with the President that there should be an examination for students who wished to join the day school, for he felt there was rather the danger of making the training too easy and popular. They had a great responsibility upon their shoulders in undertaking training for the profession, and he thought they ought to hesitate before admitting students into their school unless they had proved themselves fitted to become capable architects.

Mr. E. T. HALL seconded the vote of thanks and advocated the admission of ladies to the membership of the Association. Great care, he said, should be exercised in admitting students to the day school, for he understood that no fewer than 25 per cent. of the applicants were rejected as incompetent to commence the studies.

Mr. A. NEEDHAM WILSON blamed the training in public schools for the ignorance displayed by many of those who applied for admission to the day school. To remedy this he thought the Council should get in touch with the head-masters of public schools.

Mr. G. H. FELLOWES PRYNNE also supported the vote of thanks and agreed with Mr. Wilson that the Council should get into communication with the head-masters of public schools, and draw their attention to the neglect of useful knowledge essential to everyday work.

Mr. H. P. G. MAULE described specialising as the curse of school education.

FORESTRY APPOINTMENTS.

THE selection of candidates for the Indian Forest Service is at present done (1) partly by an examination held by the Civil Service Commissioners; (2) and partly by nomination. At the end of the three years' course, successful candidates receive 100*l.* for passage money and outfit, and are appointed assistant conservators of forests at a salary of 350 rupees a month, which, with exchange compensation, may be placed at 300*l.* a year. The grading of the department is such that they can rise to a salary of 2,500 rupees a month, or about 2,000*l.* a year. Indian forest officers can retire after twenty-two years actual residence in India on a full pension, with a maximum of 525*l.* a year, and after eighteen years actual residence on a proportionate pension. There is also a provident fund managed by Government. The recruiting of the forest departments in Ceylon and in the Federated Malay States is effected on lines similar to those applying to the Forest Department of India. Further details can be obtained by applying to the secretary of the delegacy, Professor Schlich, 29 Banbury Road, Oxford. Eighteen nominations will be made during October 1906 (without examination), and candidates for these should without delay apply to Professor Schlich, at the address given above. Candidates must have passed Responsions or an equivalent examination, and bring proof of having a knowledge of physics and mechanics and chemistry, according to the standard of the preliminary examination in the Honour School of Natural Science, Oxford. Some knowledge of botany and German is also desirable, but it will not be insisted on.

A Bronze Statue representing a nude girl with a hoop, by Herr Arthur Lewin Funcke, has been stolen from an exhibition in Berlin.

NOTES AND COMMENTS.

WE suppose there are few architects surviving who have heard of **FREDERIC DIAPER**, who died recently in New York. He was a pupil of **SIR ROBERT SMIRKE**, but he preferred to try his fortune in the United States. He was one of the founders of the American Institute of Architects. **Mr. A. J. BLOOR**, who was his pupil, says that he was rewarded by quick recognition and constant patronage from the merchant princes and wealthy financiers of New York. According to **Mr. BLOOR**, "as far as he found his chance in domestic work my preceptor showed a full appreciation and skilful handling of the Italian Renaissance in its purity, and his buildings emphasised the characteristics of that school with precision and dignity, without the slightest penchant toward the latter-day flamboyancy of its French variety. His designs for exterior work were free alike from pedantic overlaying and from baldness, while his planning was wonderfully apt and complete, and his construction uniformly of the most thorough, stable and enduring character." He was ninety-six at the time of his death, and until a few years ago he was engaged in quiet practice among the children and grandchildren of his old friends and patrons.

In last July, it will be remembered, the Tribunal of Appeal decided against the superintending architect of the London County Council in reference to the lines of buildings in Euston Road. The Council were ordered to pay 110% as costs. It was argued at the time that inasmuch as the appeal was made against a decision of the superintending architect acting in a judicial capacity under powers vested in him by Act of Parliament, and the Council were not a party to that appeal, the action of the Tribunal in ordering the Council to pay the costs of the appellants was *ultra vires*, but the objection was not upheld by the Tribunal. They, however, expressed their willingness to state a case for the opinion of the High Court. The Building Act committee having been advised that the matter is one of importance, which should be authoritatively settled, they have given instructions for the necessary application to be made to the Tribunal, and recommend that the solicitor should take the necessary steps to obtain the decision of the High Court. The case will be interesting, but inasmuch as the appellants were put to expense it would be strange if part at least of their outlay could not be returned to them. According to the Building Act the costs of any of the parties to the appeal, including the Council, shall be in the discretion of the Tribunal. Originally the Tribunal decided only appeals from the superintending architect's decisions as to lines of frontage, but now other acts by him come under their jurisdiction.

It is remarkable how quickly the theory is being accepted that it is advantageous to have all branches of fine art taught together in order that students may obtain more or less acquaintance with all of them. A meeting was lately held in Dresden for the purpose of advocating the necessary changes for the realisation of the theory. **Professor FRITZ SCHUMACHER**, who is an authority, described in detail the official arrangements for the teaching of the arts. He expressed regret that in Saxony architecture, painting, sculpture and industrial art continued to be taught in separate schools. Elsewhere, in Germany and other countries, efforts were made to bring them together, in order that students could realise the relations between them. And he considered that architecture especially would be the gainer if the unity of the arts was more recognised. For only in that way could it have the living spirit which prevailed in past times when the arts were not divided. If all the arts could not be taught under similar conditions, at least architecture and industrial art should be recognised as having the closest connection. There are several artists in Germany who do not adopt those views. But there is no doubt a change is inevitable.

THE completion of the great bronze doors for the cathedral of Milan was celebrated last month with much ceremony. In connection with it there is a curious history. In the fifteenth century several of the great Renaissance artists, including **BRAMANTE** and **DA VINCI**, gave advice as to the completion of the exterior of the building. In the next century the work was entrusted to **PELLEGRINI**. He made a design, but before it was realised in marble he went to Spain in order to erect the Escorial. The design was then altered, and, in fact, the work went on for an indefinite time. **NAPOLEON** expended over three millions of francs on alterations. In 1847 an Italian nobleman offered 100,000 francs towards the expense of doors for the principal entrance, which were to be in bronze. Nothing was done to carry out his intention until 1894, when a competition was arranged. The Milanese sculptor, **Signor POGGIAGHI** was successful. Delays, however, followed, for it was proposed to alter the façade of the cathedral, and the size of the opening was therefore uncertain. At length, however, the doors have been set up. One door represents the sorrows of the Blessed Virgin, the other the joys. As the doors are large and weigh several tons, it will be necessary to employ an hydraulic machine in order that they may be opened and closed with ease. The grouping of the different scenes is considered to be successful, and the new work will increase the interest of the building.

ILLUSTRATIONS.

WEIGHTS AND MEASURES OFFICE, CITY GREEN YARD, E.C.

THE new Weights and Measures Office of the City Corporation, in Whitecross Street, is, as shown, a red-brick structure in the Renaissance style, designed by the City surveyor, **Mr. SYDNEY PERKS, F.R.I.B.A.**, and cost about 6,200/. The contractors were **Messrs. JOHNSON & Co., of Wandsworth Common.**

MARISCHAL COLLEGE, ABERDEEN.—ENTRANCE—MITCHELL TOWER.

MEMORIAL OF HIGHLAND LIGHT INFANTRY, KELVINGROVE PARK, GLASGOW.

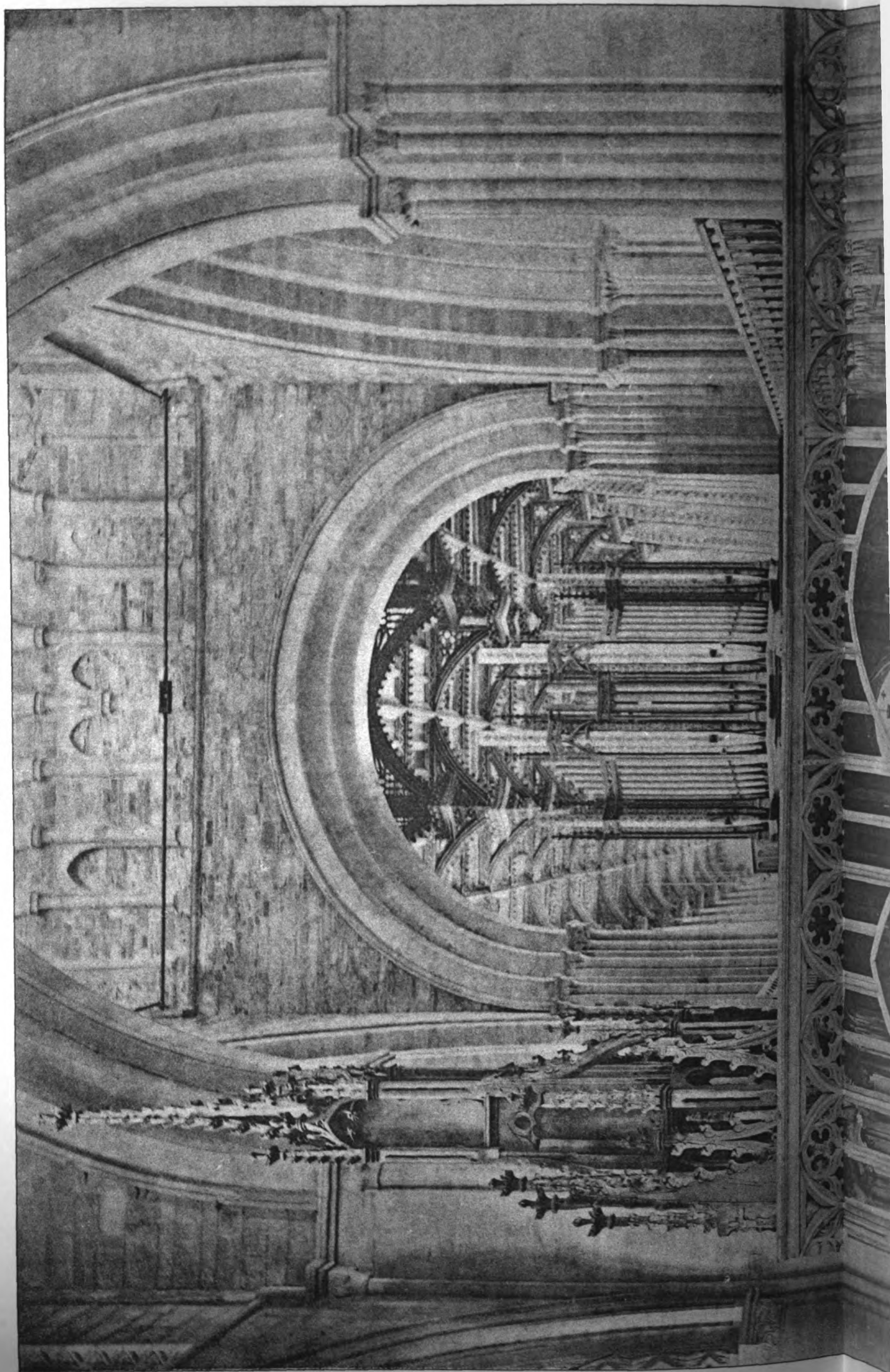
THACKERAY was not well advised when he condemned the Guards Memorial in Pall Mall. Why should they, he asked, have any special recognition when other men, French and Russian as well as English, fought as well in the Crimea? It was like ordinaire giving itself the air of port. But a wider knowledge of life would have convinced the critic that the ordinary soldier does not grasp the idea of an army in which he is a unit. He is more limited in his belief, and prefers to be counted as a representative of a regiment. The Guards are, or were, the protectors of the Metropolis, and it was right that they should be honoured in one of its thoroughfares. The efforts of civilian rulers to do away with regimental or brigade associations was a failure, and it was found necessary to go back to what was practically the family system. Some of the memorials of the South African war express the old-fashioned but excellent desire of local fame for local warriors. One we now illustrate is an example. It has been erected in Kelvingrove Park, Glasgow, as a tribute to the officers and men of the Highland Light Infantry who fell in 1899-1900-1-2. It was unveiled by **Field-Marshal the Duke of CONNAUGHT** about a fortnight ago. **Mr. BIRNIE RHIND, R.S.A.**, the sculptor, has departed from the stereotyped treatment. He represents the typical soldier as a scout, and thus combines fitness with repose, which is desirable in sculpture. The memorial stands in an excellent position, and the effect against the trees is pleasing.

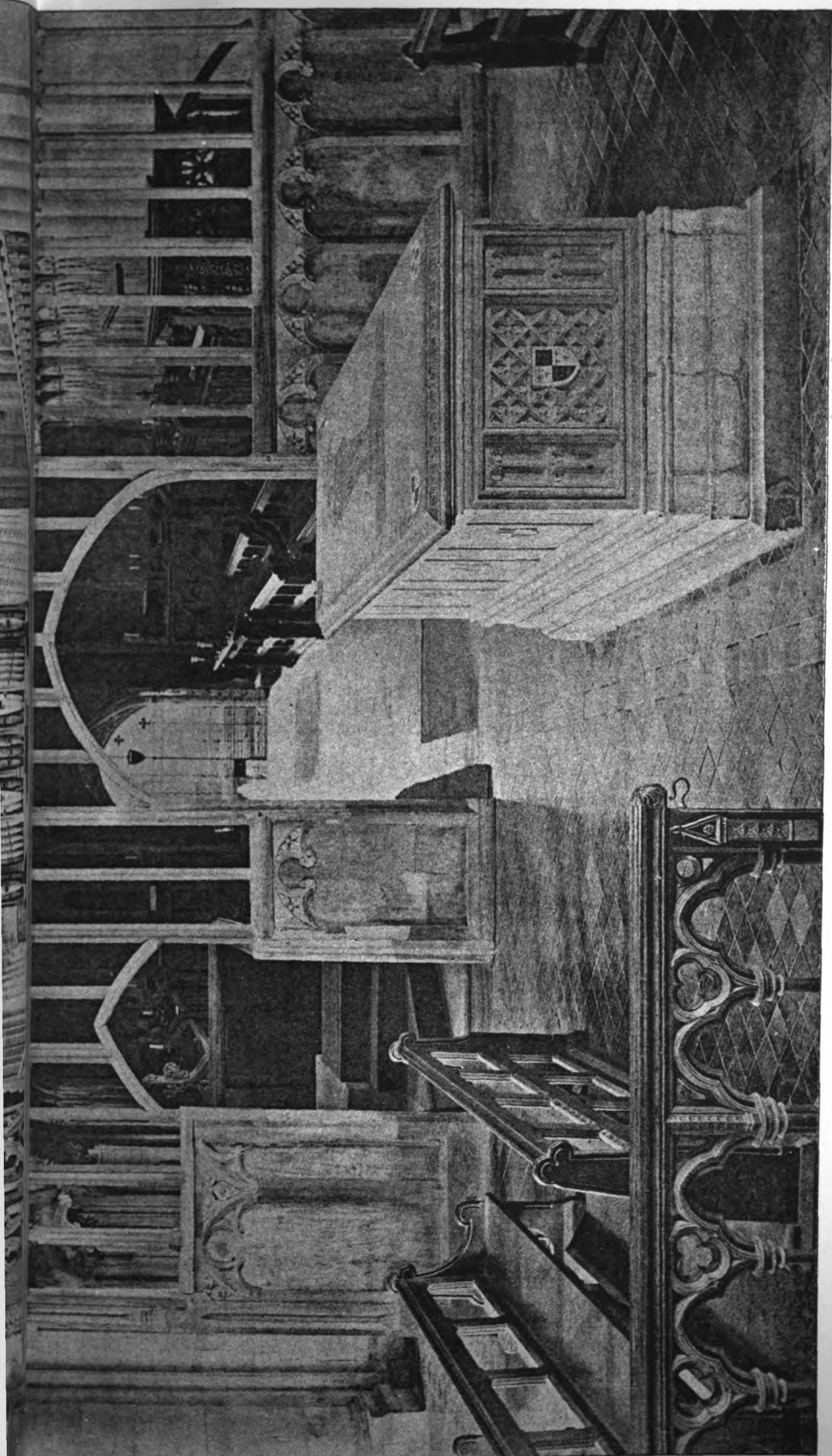
OLD HOUSE, THE PLAIN, WANDSWORTH.

SIDE DOORWAY, GREAT HOUSE, BURFORD.

CATHEDRAL SERIES.—ST. DAVIDS: THE CHOIR, WESTWARDS FROM HIGH ALTAR

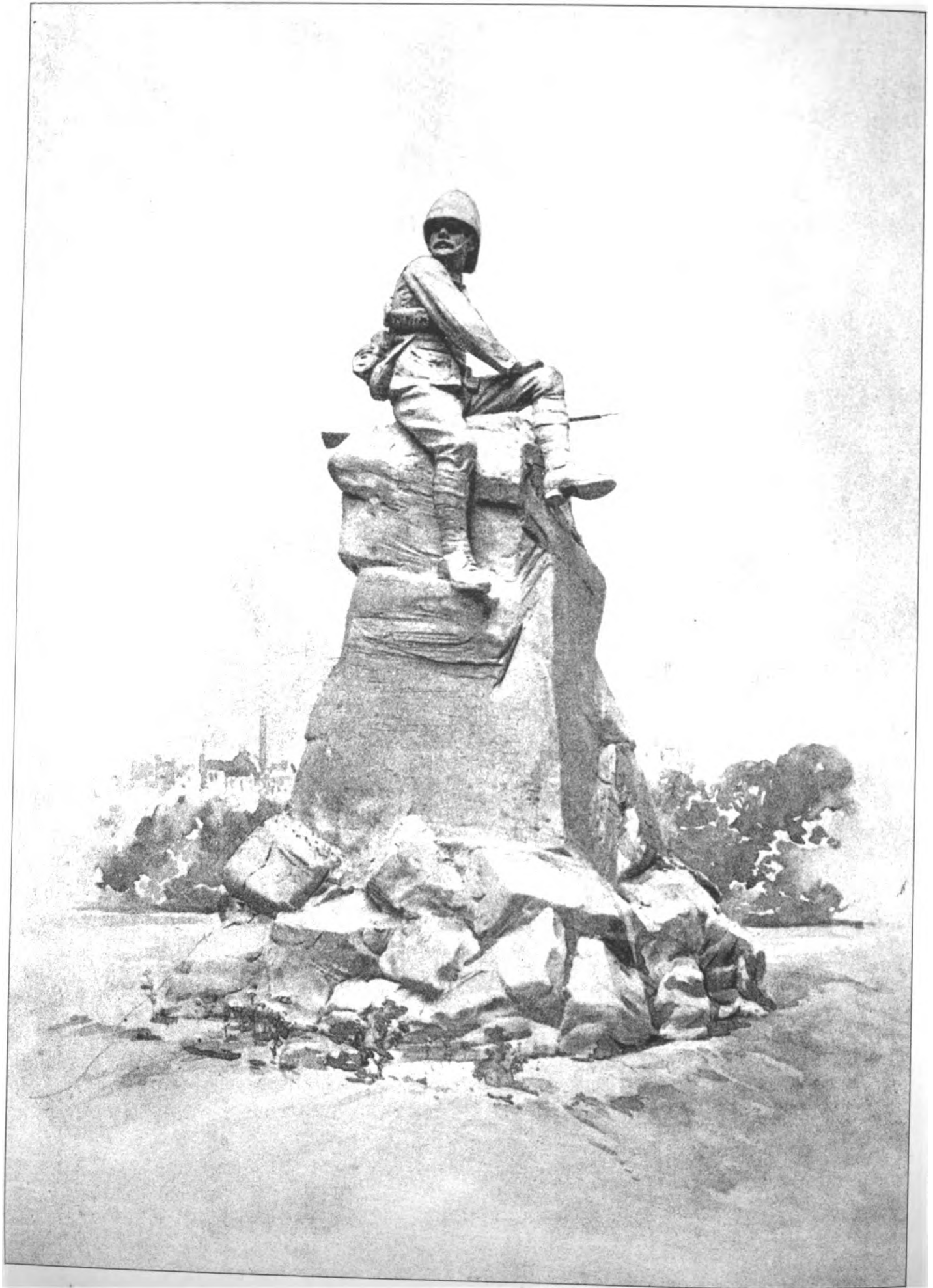
The Architect, Oct. 12th 1906.





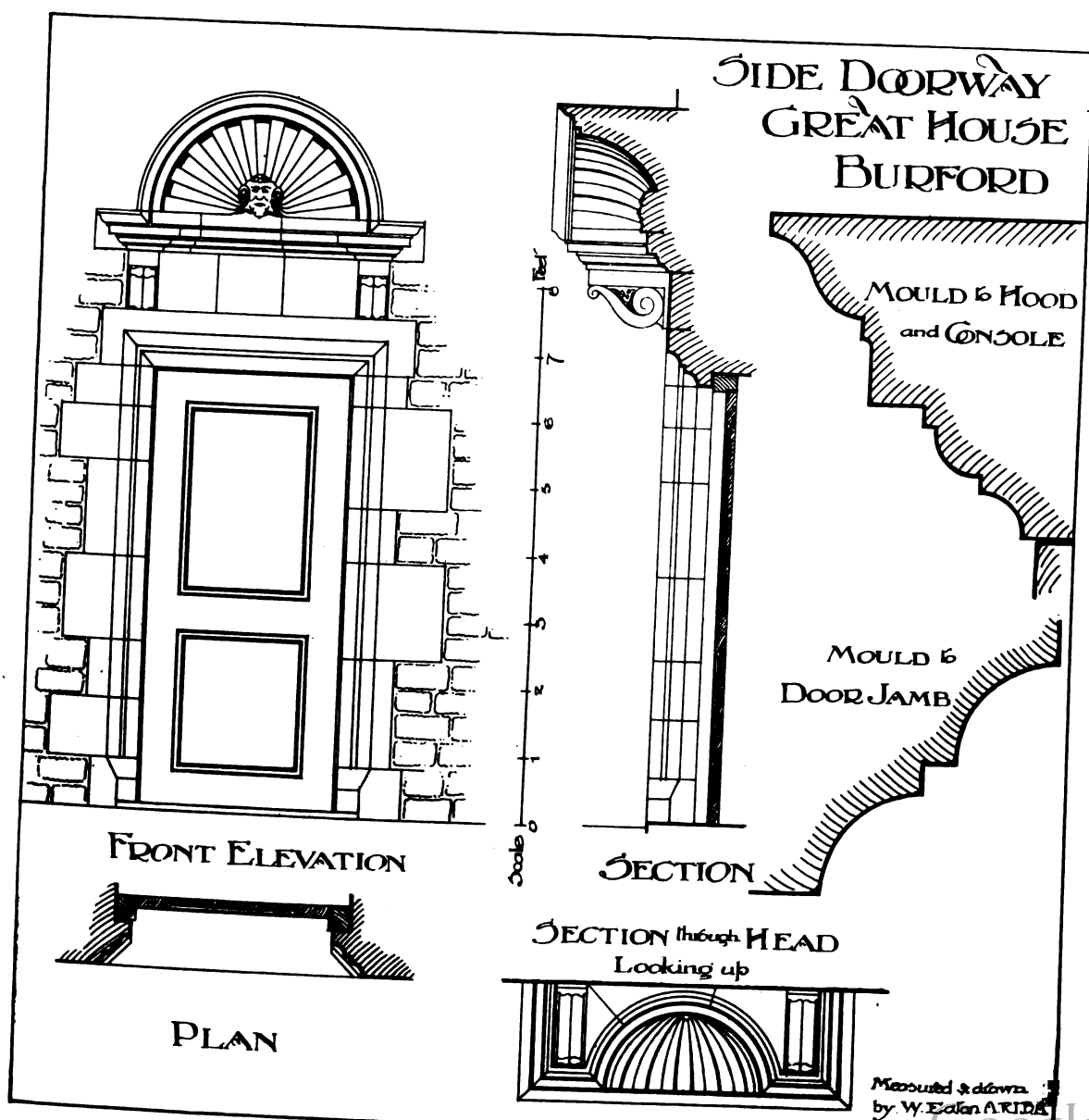
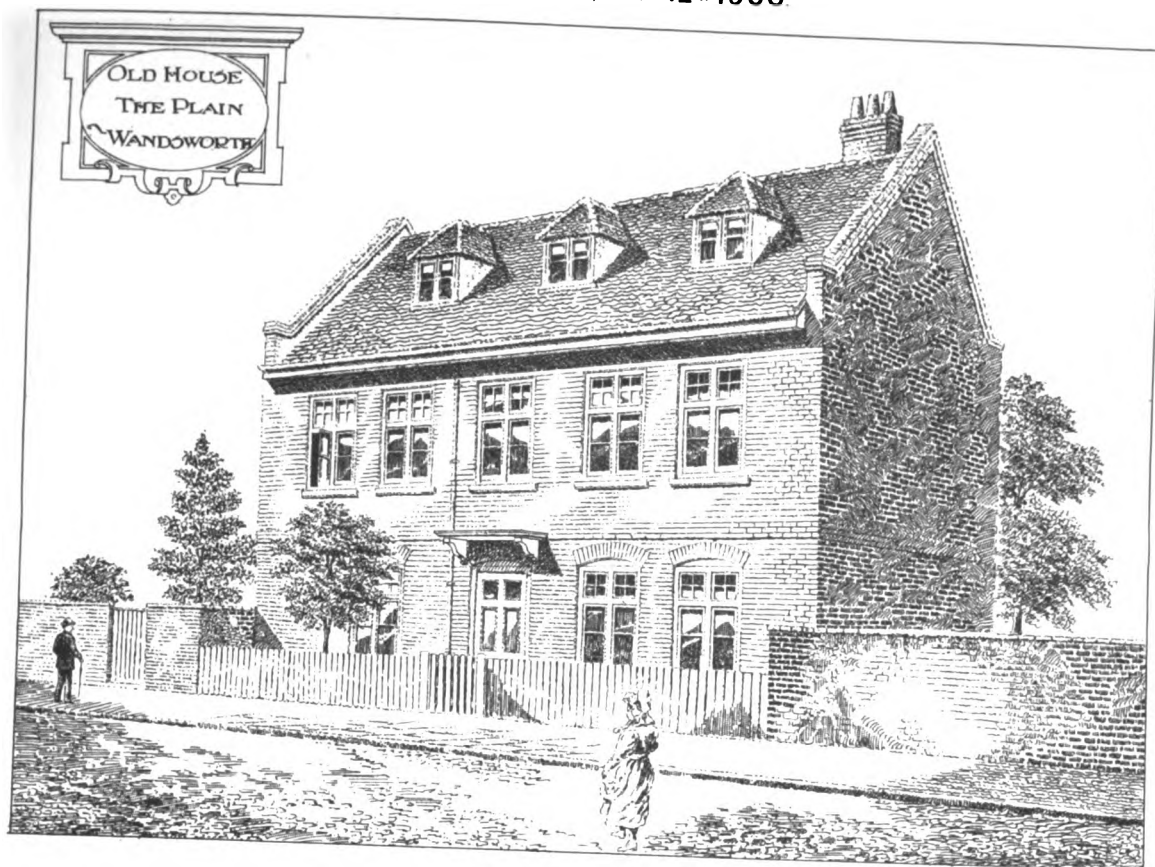
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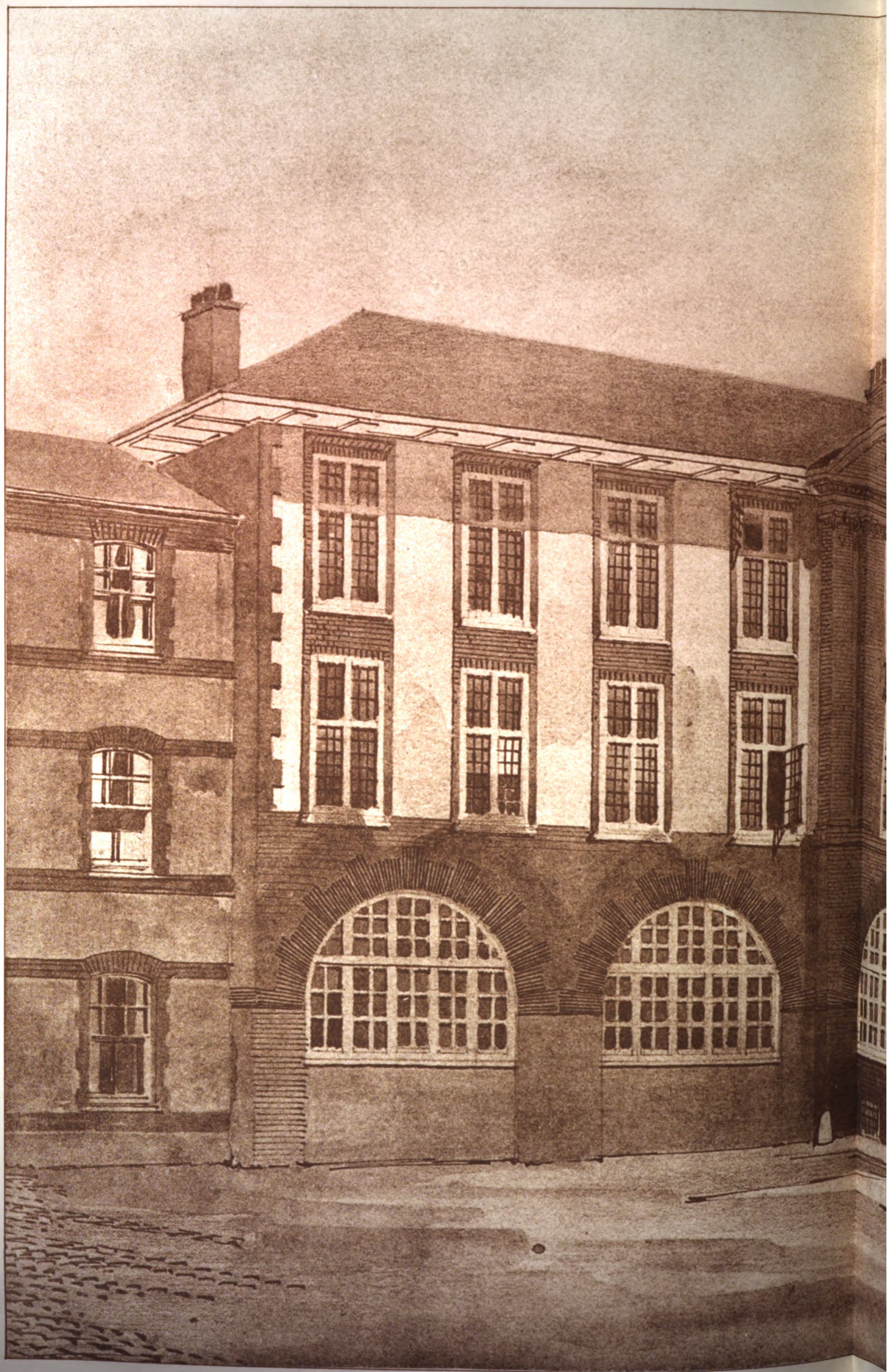
CATHEDRAL SERIES, No. 578.—ST. DAVID'S: THE CHOIR, WESTWARDS FROM HIGH ALTAR.



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MEMORIAL OF HIGHLAND LIGHT INFANTRY, KELVIN GROVE PARK, GLASGOW.
W. BIRNIE RHIND, R.S.A., Sculptor.





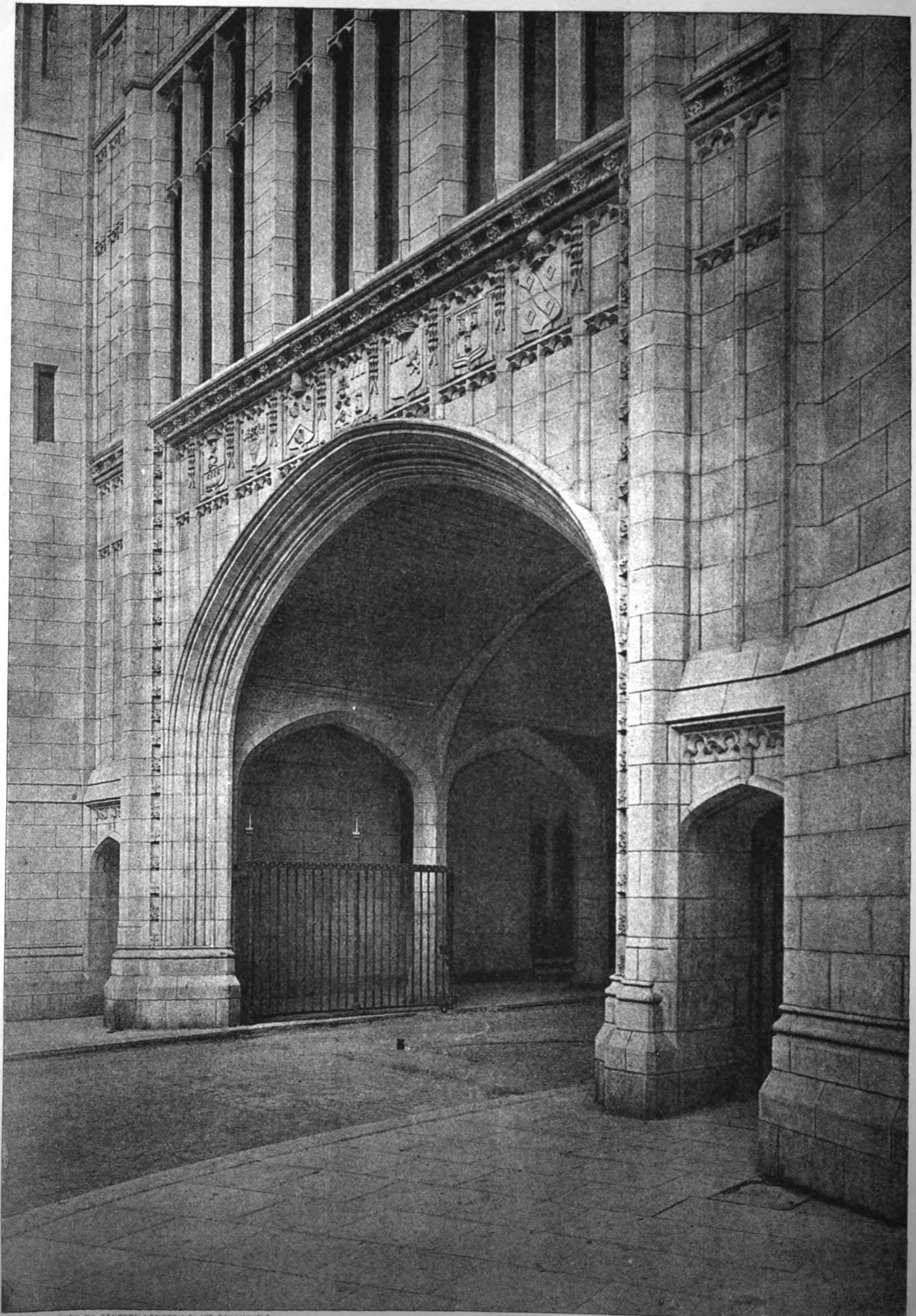
12th 1906



ICE, CITY GREEN YARD, E.C.
R.I.B.A., Architect.

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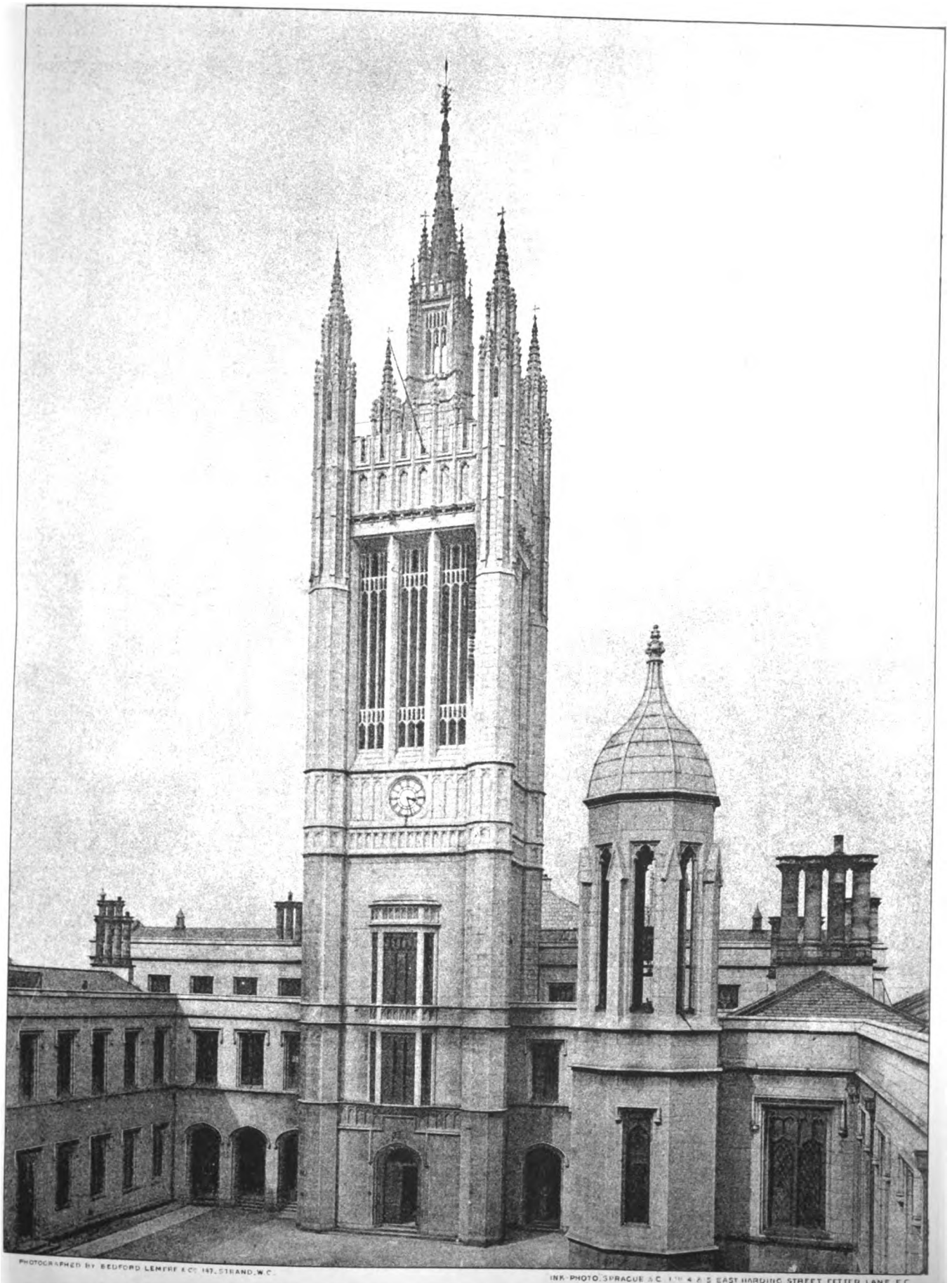


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MARISCHAL COLLEGE, ABERDEEN: ENTRANCE.
Messrs. A. MARSHALL MACKENZIE, A.R.S.A., & SON, Architects.

The Architect, Oct 12th 1906.



MARISCHAL COLLEGE, ABERDEEN: MITCHELL TOWER.

Messrs. A. MARSHALL MACKENZIE, A.R.S.A., & SON, Architects.

THE SOCIETY OF ARCHITECTS.

THE twenty-second annual report of the Society of Architects says there is a further marked increase in the strength and influence of the Society. Its membership is still steadily increasing, and there has been a large addition to the register of students. During the past session fifty-seven have been added to the roll of members, three elected to honorary membership, and fifty-four students have been registered, a total of 114. On the other hand, the Society has lost thirty-two by deaths, removals and resignations. The death of Sir Wyke Bayliss deprived the Society of an honorary member who was connected with it for a number of years, and took great interest in its proceedings. The total membership is now 778, a net increase of seventy-five over last year.

Early in the session the Council appointed a committee to inquire into the desirability or otherwise of revising the articles of association. The result is seen in the document submitted to the members on June 28 and confirmed by them on July 19. These new regulations come into force on November 1, and their chief points need only be briefly referred to. It has been decided to do away with the class of associates, the present three gentlemen in that class being transferred to honorary membership. The students who, up to now, have had no recognised status in the Society, are provided for as a class, with their own committee, under the chairmanship of a member of Council. At the request of a number of foreign members, provision has been made to enable them to compound for the annual subscription. The strength of the Council has been increased from twelve to eighteen, and each committee will have its appointed chairman. The office of honorary corresponding secretary has been abolished as no longer necessary. A new class of "retired members" has been formed. Various further slight alterations have been made, all tending towards increased facilities for carrying on the business of the Society.

The Council having been invited by the London County Council to make any suggestions with reference to the proposed new Bill, referred the matter to a committee, which has not yet made its final report, and, in view of the fact that the Bill is for the present withdrawn, the matter is in abeyance.

The Council, after careful and prolonged consideration of the report of the R.I.B.A. committee on registration, decided to proceed with the Society's Registration Bill. Advantage was taken of the general election to send a circular letter and prepaid postcard to every Parliamentary candidate asking him to record his opinion on the principle involved, and his intention or otherwise of supporting the Bill if elected. Many promises of support were received, while only one declared against the principle. The members of the Society were also circularised, asking them to co-operate by communicating with their local Parliamentary candidates, and in many cases this was done with satisfactory results. At the recent International Congress of Architects, Mr. Robert Walker, J.P. (past president), read a paper on "A Statutory Qualification for Architects," and subsequently the following resolution was passed:—"That it is desirable in the interests of the public of all nations and of the profession of architecture that all practitioners should have a statutory qualification." This resolution was immediately communicated to the members of Parliament, and of the Society, with a view of obtaining their co-operation and support to the measure on its second reading. Unfortunately the Bill was not reached, and its further progress has been for the present delayed, but the Council is in a position to say that the Bill has, this session, met with more support from members of the House of Commons than at any other period, and no effort has been or will be spared to secure the object which your Council has in view. It may be of interest to the members to know that a member of the Government, Mr. James Bryce, shortly after his speech at the Society's annual dinner, secured the adoption of a clause in the Irish Labourers' Bill, providing that every person whom a District Council in Ireland proposes to employ as an architect, for the purposes of the Labourers' Act, must satisfy the Local Government Board that he is duly qualified to act in that capacity. This is the first instalment of registration, and every architect will be grateful to Mr. Bryce.

In response to Mr. Belcher's appeal to the profession for financial assistance, the Council contributed 100*l.* from the Society's funds to the Seventh International Congress, towards the cost of entertaining the foreign delegates in this country, and during the Congress papers on the following

subjects were read by members of the Society:—"Steel and Reinforced Concrete Construction," by Mr. Henry Adams; "The Planning and Laying-out of Streets in Cities," by Mr. Raymond Unwin; "A Statutory Qualification for Architects," by Mr. Robert Walker, J.P. The president (Mr. Albert E. Pridmore) and the honorary secretary (Mr. Ellis Marsland) were appointed by the Council to officially represent the Society at the Congress, and a considerable proportion of the members gave their personal support to its proceedings.

One of the features of the year has been the growth and development of the students' section. This is due largely to the institution of the Society's travelling studentship of 25*l.* (which carries with it the Society's silver medal) offered by your Council for annual competition among the students of the Society. The subject for the 1906 competition was a small country house to cost 3,000*l.* The offer was well responded to, twenty-seven sets of drawings being received, with the result that the first travelling studentship competition was won by Mr. Victor H. Grist, of Reading. A special prize of the value of 3*l.* 3*s.*, placed at the disposal of the Council by the president, was awarded to the author of the design placed second; Mr. Alan G. Brace, of Knowle, Warwickshire, and three other competitors, viz. Mr. Geoffrey Morland (Croydon), Mr. Sydney G. Scales (Westcliff-on-Sea) and Mr. Robert O. Jackman (Kingston) received honourable mention. An exhibition of the designs was held for one week on the Society's premises, to which admission was free, and a large number of persons took advantage of the opportunity of seeing the drawings. A further exhibition was subsequently held in the Guildhall, Devonport, under the auspices of Mr. Edgar M. Leest, J.P. (member of the Council), and was an even greater success than was anticipated. The drawings were afterwards exhibited in the Art Gallery at Bath, where Councillor Herbert W. Matthews (member), of that city, undertook the arrangements.

The Council has since approved the work done during the winter's sketching tour, and in accordance with the conditions the balance of the money award, and also the silver medal, will be presented to Mr. Grist at the first ordinary meeting of the session. The Council also instituted an architectural scholarship of the value of 10*l.*, tenable for three years, and open to persons of not more than nineteen years of age, who are desirous of receiving a course of architectural training preparatory to their eventually adopting the profession of an architect. A competitive examination was held in the form of an essay on "Architectural History" and a freehand drawing, for which thirteen candidates presented themselves, the scholarship being awarded to Mr. Harold F. Trew, of Gloucester. Under the new regulations of the Society the students' section will, as before stated, be controlled by a committee elected from among themselves under the chairmanship of a member of the Council, and it is anticipated that the coming session will see a still further extension of this branch of the Society's work.

The Council is glad to find that its action in developing the library by the expenditure of a considerable sum on the purchase of modern technical works has been justified by results. More than 140 members and students have taken advantage of the loan collection during the past session, considerably over 200 books having been borrowed during that period. It is the Council's intention to supplement from time to time the useful collection already in the library. The members and students of the Society were invited to submit designs for a "book plate," a prize of the value of 3*l.* 3*s.* being offered; but though eleven designs were received, the Council did not consider any of them to be suitable for the purpose. Numerous gifts of books and some donations to the library fund have been received during the year, and the Corporation of the City of London has presented the Society with a complete set of commemorative medals struck from time to time during the last seventy-five years. The latter have been framed and placed in the reading-room.

The half-yearly examinations have been held as usual in London and Manchester, Mr. T. Cook, the local honorary secretary, undertaking the arrangements for the latter. Owing to the resignation of Mr. S. M. Wyborn, examiner in Section 1A (planning and design), a vacancy occurred on the Board of Examiners, and Mr. W. A. Scott, A.R.I.B.A., of Dublin, was appointed in his stead. The number of entries has been in excess of any previous year, but the percentage of successes is very low, and no candidate secured more than a pass.

The Council has been in communication with its local honorary secretaries in Bombay and Johannesburg with reference to the formation of branches of the Society in each of those districts, and, while the former is not yet completed, the South African branch has been formed and will be duly constituted at the commencement of the new session.

On March 24 the members of the Council were entertained to luncheon at the Guildhall by Mr. Alexander Ritchie, J.P., the chairman of the City lands committee, and other members of the Corporation. Subsequently the visitors and their host proceeded to the new Sessions House, where they were joined by a large party of members and their friends, who, by kind permission of the authorities, were enabled to view the building under the best possible conditions. On May 5 a party of members paid a visit to the Ilford Crematorium under the guidance of Mr. Albert C. Freeman (member). The annual summer excursion was postponed for this year so that the energies of the Society might be centred upon the International Congress, in view of which the annual dinner was deferred until July 19 in order that members attending the Congress might be enabled to take part in it. The chair was occupied by the president (Mr. Albert E. Pridmore), and a very successful evening resulted, the Society being honoured by the presence of a member of the Government, Mr. James Bryce, Chief Secretary for Ireland, and other distinguished guests.

During the past session papers have been read and discussions held on the following subjects:—Presidential Address; "Cheaper Cottages in Rural Districts," by Mr. J. R. Manning; "The Planning of Crematoria and Columbaria," by Mr. A. C. Freeman; "The Architecture of the Cotswolds," by Mr. Ellis Marsland; "The Painted Rood Screens of East Anglia," by Mr. E. F. Strange; "Shakespeare and Old London," by Mr. T. R. Croger; "Some Recent Law on Sewers and Drains," by Mr. A. P. Poley.

The Council joined in the petition of the Further Strand Improvement committee to the London County Council, with reference to a proposed improvement involving an alteration to the plan as proposed by the latter body, affecting particularly the island site at the foot of Kingsway. The memorial for signature lay at the Society's offices for some time, and the Council subscribed 5*l.* 5*s.* towards the committee's expenses on behalf of the Society.

The Society was represented at the Congress of the Royal Sanitary Institute and the Seventh International Congress of Architects.

The Council appointed Mr. B. R. Tucker (hon. treasurer) to represent the Society on the Council of the Photographic Survey and Record of Surrey in place of Mr. Herbert Knight, resigned. Mr. Albert E. Pridmore (president) will represent the Society at the International Congress on School Hygiene, to be held in London in August 1907.

The employment register continues to be of service to members and students, and the supply always exceeds the demand. Members requiring assistants should bear the register in mind, as a telephone message will bring a number of qualified candidates for the vacant post at short notice. There is no charge to members or students for the use of the register.

Early in the year the Council invested 500*l.* in Consols, bringing up the invested funds to 1,000*l.*, leaving a small sum on deposit. The auditors' report and balance sheet will be presented at the November meeting.

In response to an appeal for support, the Council offered a donation of fifty guineas to the Architects' Benevolent Society conditionally on having proportionate representation on the governing body; but on Mr. Belcher's assurance that the regulations did not admit of such an arrangement, the Council made the donation unconditionally. This was accepted, and subsequently the Council was informed that the Benevolent Society had revised its regulations so as to provide that societies making a donation of not less than fifty guineas should have representation on its Council in the person of their chairman or president for the time being. To mark the termination of his second year of office, the immediate past-president, Mr. Walter W. Thomas, J.P., qualified as a life member by a donation of 10*l.* 10*s.*, made through the Society, and other members also contributed to this most deserving charity. The Council commends the work of the Benevolent Society to notice; in more than one case it has been the means of securing substantial assistance to former members of the Society in time of need.

The Council, recognising the services rendered to the Society for many years by Mr. Walter W. Thomas, unanimously decided to ask his acceptance of the gold medal as

a mark of its and the members' appreciation. The medal was presented at the ordinary meeting in February. It may not be out of place to refer here to the honour which Mr. Thomas received about the same time on his being appointed a Justice of the Peace for the city of Liverpool, which was largely the result of representations made by the Council on a vacancy occurring owing to the death of Colonel Ellison, of Liverpool, the first president of the Society.

Much of the progress of the Society is due to the work done in committee. During the session there have been thirty-two meetings of standing committees, besides a number of special committees, and the work has so greatly increased, and is increasing, that it has been found necessary to make special provision for coping properly with it. Very many questions come before the committees of which the members of the Society hear little or nothing, but which require careful and prolonged consideration, and those who are honoured by being elected to represent you on the governing body are called upon to devote a very large amount of time and trouble in administering its affairs. In submitting this report of the results of its labours during the past session, the Council acknowledges and expresses its appreciation of the co-operation and support without which it would be impossible to carry on the work of the Society.

HERALDRY AS APPLIED TO ARCHITECTURE.*

IT may perhaps be urged that heraldry is now well-nigh an obsolete piece of pedantry. And Alfred Austin, in his poetical drama "Prince Lucifer" (act iv. scene 1), makes that Mephistophelian monarch say—

heraldic blazonries
Are fireworks for the foolish.

Yet, one might remark, his Satanic Majesty may be as over-interested in fireworks as those who look askance at the ancient art of armoury are in utilitarianism. Gray, in elegiac phrase, tells us—

The boast of heraldry, the pomp of pow'r
... lead but to the grave,

and seems to forget that heraldry, if she leads to the grave, very frequently stays there. For through the dignified decoration of sarcophagus tomb and monument with armorial insignia do we to-day possess so many fine examples of old-time heraldic ornamentation and emblazonment.

One could go back to the times of ancient Chaldaea, B.C. 4000, and to the accounts given in the Old Testament regarding the standards and ensigns of Israel, and still probably not then treat of the very earliest beginnings of this antique art. In the writings of Homer, Æschylus, Herodotus, Virgil, Tacitus and others are many references to the armorial bearings of Classic times. And the ancient Britons, the Picts, Scots and Celts doubtless, like the latter-day North American Indians, Maoris and our own aborigines, with their war-paint, tattooing and totems, each carried out their individual ideas of what heraldry originally was. Emblems and devices have world-wide use, and are easily understandable as designed for decorative purposes, or as a means of distinguishing certain persons. Such was assuredly the *raison d'être* of the emblazoned surcoat (from which comes coat-of-arms) worn by the mail-clad warriors of the Middle Ages, who would otherwise have been unknown to friend and foe alike.

To the architect, as well as the artist, archæologist, genealogist, sculptor, painter, engraver, medallist and numismatologist the study of blazonry is essential. And the sculptured monuments and carved shields may often elucidate history and clear up doubtful points. As Parnell says in one of his poems—

The marble tombs that rise on high,
Whose dead in vaulted arches lie,
Whose pillars swell with sculptured stones,
Arms, angels, epitaphs and bones—

are often of the highest artistic and historical value when the tale they tell is rightly comprehended.

The presence of armorial inscriptions on a building has decided complex law cases. There is the incident of an ancient church which formed part of a contested estate, and in searching for evidence of prior possession Lord Eldon had the old plaster—containing the Ten Commandments—chipped away. Underneath was found the coat-of-

* From a paper read by Mr. E. Wilson Dobbs at the Royal Victorian Institute of Architects, and published in the Journal.

arms of an ancestor of one of the parties to the suit, which decided the issue in his favour. And as Lord Eldon said, he was very glad he had broken the Ten Commandments. Then a hatchment placed in front of a mansion may, to the uninitiated in armorial law, be but an unsightly diamond-shaped frame, covered with grotesque figures and scrawls. Yet to one who possesses but an elementary knowledge of the subject a hatchment is full of meaning. It is seen at a glance that it is, say, exhibited by a widow in memory of her deceased husband. The Badge of Ulster, "a red hand on a silver inescutcheon," bespeaks him to have been a baronet; while the well-known motto, "Tria juncta in uno," surrounding the shield, shows he was a Knight of the Bath. The charges on the shield also denote that his wife was an heiress, possibly the daughter of a duke. Thus indeed is heraldry the handmaid of history, a benefit to biography and an aid to art and architecture.

During the reigns of the first three Edwards, comprising what is commonly known as the Decorated period of Gothic architecture, armorial devices were introduced in the principal edifices to a considerable extent. But when the Decorated gave place to the Perpendicular style of Gothic, heraldic devices and shields of arms were employed to a still greater extent, and formed an integral part of the design. Placed alone, held in the hands of saints, or supported by grotesque figures, they form corbeilles and brackets, and are frequently to be found over doorways, in stained-glass windows, over windows, on the spandrels of subellia and arcades, in panels, upon bosses in vaulting, on stone benches, enriching gables, columns and dripstones, and on encaustic floor tiles. On altars and fonts, sepulchral monuments and tombs, shields of arms and other armorial devices are displayed, along with analogous memorials, such as monumental effigies and brasses. In the church vestments also the figurings on the textile fabrics are sometimes purely symbolical and frequently of heraldic import. Cathedral treasuries abound with such work as the badges of their respective donors. About the middle of the thirteenth century Richard, Earl of Cornwall, gave to Exeter Cathedral a beautiful cope, figured with double-headed eagles. There is also the famous Syon cope, which is embellished with forty-five shields of arms, being perhaps the richest specimen of heraldic embroidery of the thirteenth century.

Similar evidences of hereditary dignity were conspicuously displayed on the castles and mansions of the nobility without and within. Gates, walls, windows, battlements and vanes, on each and all were exhibited the devices of their illustrious owners. The palaces of the kings and queens and the Houses of Parliament were also likewise embellished with the royal arms and emblems. In the will of Henry VII., for instance, when referring to his chapel at Westminster, he directs that "the walles, doores, windows, archies and vaults, and ymagies of the same, our chapell within and without be painted, garnished and adorned with our armes, bagies, cognoisants and other convenient painteng, in as goodly and riche maner as such a work requireth, and as to a king's work apperteigneth." The canopies of State, the furniture and plate, the rich tapestry and hangings were all emblazoned with the arms of the royal and lordly families connected therewith. As a modern example of this we have the fine specimens of heraldry as applied to architecture shown by Pugin's artistic and effectively treated armorial details in Barry's design for the present British Houses of Parliament. Views of these are illustrated in H. T. Ryde's work on the Parliament Houses, containing Sir Charles Barry's illustrations, entitled "History of the Palace of Westminster;" in G. W. Eve's "Decorative Heraldry," and in the photographic representations of the Houses of Parliament from the collection made by Sir Benjamin Stone, M.P. As is but fitting, these Houses of Parliament were designed in that Perpendicular style of Gothic architecture with which heraldic art seems so peculiarly associated.

Yet the Renaissance monuments, in common with their predecessors of the Gothic era, abound in every variety of armorial blazonry. The monument of Margaret Beaufort, Duchess of Richmond, in the chapel of Henry VII., of the sixteenth century, with its wealth of heraldic ornamentation, is a fine example of the influence of the Italian Renaissance. The badge-decorated fragment of the monument to Edward VI. in Westminster Abbey, by Torregiano, also shows the same Renaissance feeling. It now forms part of the altar in front of Henry VIII.'s tomb. On the other hand, the ornaments on the tomb of Lady Margaret Lennox, in Westminster Abbey, are of the early seventeenth century

full Renaissance style, being weak in form and wanting in balance. And the worst form of the Renaissance character in heraldry came in at the epoch of the Restoration.

So it is not at all to Gothic alone that heraldic decorations are limited, and fine examples of heraldic monuments are no less abundant than are the shields and other insignia that appear on particular memorials. It is, however, to the architectural enrichments of the cathedrals, and of the stately monuments they contain, we owe the large number of examples of the best kind and of the greatest interest, for the heraldry is always applied there with full regard to its decorative possibilities as well as to its meaning.

The principles which directed the selection of shields to be introduced into the composition of early monuments are worthy of careful consideration, and the same remark is no less applicable in the case of the architecture. Westminster Abbey is one of the richest treasure-houses of such work. Shields of arms of various great personages of the thirteenth century appear in the spandrels of the arches of the nave aisles. Therein also is the beautiful tomb of Queen Eleanor of Castile, the first wife of Edward I., which is an early instance of an application of a series of shields decoratively repeated in the adornment of a monument. The memorial crosses erected to this dear queen's memory between Nottinghamshire and London are also decorated with similar shields. There are also the monuments to Queens Philippa of Hainault, Elizabeth Tudor and Mary Stuart; of Kings Edward III. and Henry VII., and also those of Alianore de Bohun, Duchess of Gloucester, the Countess of Lennox, the Countess of Derby, the two De Valences, Earls of Pembroke, Edmund Earl of Lancaster, Lord Bouchier and Sir Giles Daubeney, K.G. In Canterbury Cathedral the monument of the Black Prince and of Henry IV. and Joanna of Navarre; in Salisbury Cathedral, the monument of Earl William Longespée; in St. Albans Abbey Church, the monuments of Humphrey, Duke of Gloucester, and of the Abbots Wheathampstede and Ramryge; also other fine monuments in the churches at Elsing in Norfolk, Ewelme and Northleigh in Oxfordshire, King's Langley in Hertfordshire, and Cobham in Kent; in Beverley Minster, and in the Beauchamp chapel at Warwick.

Nearly every church in Warwickshire and Leicestershire had a multitude of arms on its windows. Those still remaining in the east windows of Bristol Cathedral are early and good examples of the arms of the great barons Berkeley, Clare and Warren.

Mention should also be made of the fine work that existed in the cathedral of St. Paul, in London, and other great clerical establishments at Peterborough in Northamptonshire, Ely, Norwich, Lincoln, Newark-upon-Trent, Southwell, Kingston-upon-Hull, Selby, Chester, Lichfield and Tamworth.

Then, with regard to variety in composition, at Beverley in the Percy shrine in the Minster, upon a shield of England, the three lions are all of course heraldically the same; but there is nothing of sameness in them, nevertheless, because in each one there is some little variety in the turn of the head or in the placing of the paws or in the sweep of the tail. And again, at Westminster Hall, the favourite badge of Richard II.—namely, a white hart chained and in an attitude of rest—is repeated as many as eighty-three times, and all are equally consistent with heraldic truth and accuracy without any one of them being the exact counterpart of any other. Shields also can be of several forms, and the mode of suspending shields can vary so as to be in accordance with architectural requirements, being shown upright or hanging *couché* or diagonally.

A good example of the characteristic heraldic lion, with attenuated frame, yet full of fierce elasticity, occurs on the finely sculptured shield of Prince John of Eltham, younger brother of Edward III., together with his effigy in alabaster, in Westminster Abbey, dating from A.D. 1336. The lions on the tomb of Edward III. at Westminster are also excellent instances of the splendidly decorative quality of the earlier work of heraldic artists. The chivalric sympathy of Edward III., which impelled him to dedicate Windsor Castle to St. George, and found the most noble Order of the Garter, expressed and fostered the regard for armoury. And the several great seals of King Edward symbolise and show in their ornament and shrinework the development of architectural decoration linked with heraldry.

Then, as showing the decorative value of armorial bearings and badges as architectural ornament, the chantry of Henry V. at Westminster Abbey is a beautiful example, its heraldry forming a large and important part of the design.

With regard to other examples of good work, Champlévé enamels applied to monumental purposes are well represented by the well-known shields of the arms of the sons and daughters of Edward III. on his tomb at Westminster. Those who have studied the enamelled shieldwork of the fourteenth century and recognised the ornamental value of the method there adopted will also gain simplicity and directness in design and in colour or monochromatic effect. There is, besides, the equally familiar shield of William de Valence, Earl of Pembroke—reproduced in colour in Boutell's "Heraldry" and elsewhere—and the casket in South Kensington Museum, said to have belonged to the same Earl William. An actual crest and shield of Edward the Black Prince can be seen among the achievements over his tomb in Canterbury Cathedral, and exhibit excellent work. Then there is the fine example of the lion rampant on the shield of the headless figure in Rheims Cathedral, dated *circa* A.D. 1200. The collection of rubbings at South Kensington Museum from brasses and incised slabs contain many specimens of interest, and quite a lecture could be given on the strange and quaint work done in monumental brasses. And I am glad to learn that a lecture on that special subject will shortly be delivered before this Institute.

While not limited then to that style of architecture, it is still manifest that to Gothic work heraldry is always a consistent, beautiful and most effective accessory. Indeed, so thoroughly is the spirit of heraldry in harmony with the great architecture which grew up in the Middle Ages, that it must be considered rather as an element of its nature than as merely an allied art. Gothic architecture is essentially heraldic, and hence as well from its elastic nature as its equally effective and happy applicability to every use and requirement, heraldry is peculiarly appropriate to that style. For from the earliest years of its existence as a definite art or science, heraldry is found to be most intimately associated with the Gothic architecture of England, and happy it was for the early heralds that in their day the English Gothicists were at work in the full strength of their matured conceptions. And this alliance was never interrupted or permitted to decline from its original cordiality. So long as Gothic flourished heraldry held its own place in architecture. And in the finest works that exist in Great Britain as relics of the grand Gothic ages of English architecture, heraldry is ever present to adorn them with her graphic records. As has been already instanced, in almost every position in which such ornamentation could be admissible the early herald is found to have been the fellow-worker with the early Gothic architect. Gothic architecture accordingly has preserved for us magnificent collections and specimens of the most valuable illustrations of national heraldry. In addition to the fine examples before referred to—and many others that may be mentioned as existent in those splendid ecclesiastical edifices—one must not omit York Cathedral, with the chapel of King's College, Cambridge, as especially rich in heraldic display. The gorgeous chapel too of Henry VII. in Westminster Abbey is an example of decorative heraldry hard indeed to parallel, while Westminster Hall and the northern castles of Alnwick and Warkworth may be specified as containing grand examples of heraldic enrichments. Numerous heraldic encaustic or inlaid tiles of a very interesting character also remain in the cathedrals of Worcester, Gloucester and Exeter, and in the churches of Great Malvern, King's Langley, the Abbey Church of St. Albans and many others. Sometimes the devices are shown reversed on the tiles, evidently the result of the neglect to reverse the design upon the original die or stamps. (In the vestibule of our Federal Parliament Houses, Spring Street, is a fine example of heraldic encaustic tilework.) Unfortunately, in the so-called Reformation days, the Royal Commission of Henry VIII. with great vandalism destroyed many of the armorial insignia in churches bearing the arms of Roman Catholic families. And the fanatical zeal of Cromwell and his followers well-nigh completed the work of spoliation instituted by Henry. Stained-glass windows were ruthlessly broken, altars and screens destroyed, effigies mutilated and monumental brasses stripped for their metal.

Still heraldry had taken too firm a hold of the minds of the higher classes of society to escape the notice of the architects, who have been since engaged by the sovereigns of England and by the wealthy peers and barons and others to erect the palatial structures and stately homes which still exist as the architectural gems of Britain. And a branch of art which our forefathers found so useful as an ornamentation to architecture cannot be beneath the notice of those who are desirous of treading in their footsteps.

Surely at the present day heraldry can be found to be a far more effective means of even interior decoration than the unmeaning Italian and other scrollwork that is so much used. And why should not the arms of different countries be placed on the walls of an exchange as an indication of the various places with which it has dealings than mere conventional ornament? A striking instance of the use of shields of arms of various cities and countries, &c., is contained in the coffered ceiling to the Banking Chamber of the English, Scottish and Australian Bank, Collins Street. Therein twelve shields are tinctured in gold and heraldic colours, and form an effective and appropriate method of ornamentation. There are also some finely-carved shields of arms in the panelled canopy over the bank entrance from Collins Street.

These and other examples that will be noticed in connection with Melbourne architecture are of special interest when one considers that there is a recent revival in the use of heraldry as a decorative adjunct to architecture. For long heraldry has only been approached on the scientific side even in latter-day treatises. And the admittedly artistic side of heraldry has not apparently attracted that amount of attention which the highly effective and ornamental character of the subject might have been expected to secure. In fact, except for short, incidental references in general works on heraldry, and in papers read before certain learned and artistic societies, this decorative aspect has been practically neglected. Heraldry, however, from its origin in the personal adornment of a warrior, through its systematised splendour in the Middle Ages, down to its more modern and chequered existence has, however, been an object of especial interest both as an aid to history and as supplying a strong tone of colour to the times. Its value in decoration, moreover, importing and imparting, as it does, a note of personal historical interest hardly to be had in any other way, can scarcely be over-estimated.

Therefore, it is welcome news to record the remarkable revival which this fascinating subject shares with recent decorative art at large, and how in architectural decoration armoury, which has too often appeared in a small, ineffectual and shamefaced manner—as though it realised its weakness—is again beginning to take the proper prominence to which its value as decoration and its historical interest entitle it. Thus more and more is this heraldic work becoming effective with vigorous drawing, fine modelling and true decorative feeling.

The great change in architectural taste and the Gothic Revival, which took place in the early part of the nineteenth century, revived heraldry. Thomas Willmott, F.S.A., stained-glass artist (1812), was one of the first to re-study the really decorative stained-glass work of earlier periods, his best work being the beautiful glass windows of St. George's Chapel, Windsor, and the armorial window in the Great Hall of Hampton Court Palace. These examples show how well he understood Tudor work, and in his "Regal Heraldry" (published in 1844) the old-time arms and badges with which St. George's Chapel is so profusely decorated are admirably dealt with. Augustus Welby Pugin also assisted *con amore* with his heraldic details for the Houses of Parliament, as before alluded to. The neighbouring chapel of Henry VII. furnished him with the very best material for the designs in question, and the heraldic facts are handled with sincerity, combined with freedom of treatment, high executive ability and artistic excellence. For while following the lines of the Mediaeval method, denoting that the designer had recognised their ornamental value in form as well as spirit, still the more modern mode of application was also aimed at. Thus the resultant effect is characterised by great simplicity and originality.

Pugin's frieze, composed of demi-angels with badges, has served as a model for the embellishment of the lobby of the House of Commons as well as of St. Stephen's Hall. The royal arms on the throne and the arms and badges which form a large portion of the decoration, both within and without, are also very satisfactory examples of the modern use of such forms.

Another noted exponent of heraldic art was Father Dom Anselm Baker, a Cistercian monk of St. Barnard's Abbey, at Charnwood, Leicestershire. His work (of which the best known, though not the best examples, are his illustrations to Foster's "Peerage and Baronetage," 1880-2) vividly illustrates the supremacy of heraldic draughtsmanship that is based on correct ideals. Working with the patient thoroughness of his monkish predecessors, he was not content to copy the mere outline of his art, but succeeded in

infusing the true inner feeling of the earlier artists into a latter-day concept. The whole of his rendering was therefore strikingly in keeping, having true curve of line and tone of colour-tincture, combined into a rich yet subdued composition. He thus showed forcibly how possible it was by sincere effort and loving care to reproduce in the present time some of the best qualities of the early masters of the art.

In architectural design the beauty of heraldic decoration, when introduced as a prominent feature, is nowhere better shown in modern work than in the finely conceived Central Institute of the City and Guilds of London, designed by Mr. Alfred Waterhouse, R.A. There one sees well thought out and admirably modelled armorials fittingly embellishing a broad and dignified façade, forming a handsome example of the use of heraldry as applied to architecture.

Mr. Charles Alban Buckler (Surrey Herald Extraordinary), an architect, has also had executed work in connection with armorial decorations of a very high order. Such examples as those in the modern additions and restorations to Arundel Castle and for the heraldic decoration upon and in Mowbray House on the London estate of the Duke of Norfolk, prove him to be one of England's foremost heraldic artists. In the hall, staircase, gallery and dining-room of Allerton Park, the seat of Lord Mowbray and Stourton, several hundred carved and painted shields appear, modern in decoration and beautiful in design. These are also specimens of the heraldic artwork of Mr. Buckler. And the designs of Mr. Alfred Gilbert, R.A., in the shields forming part of the richly-elaborated monument to His Royal Highness the late Duke of Clarence, are excellent examples of armorial treatment. Then with regard to interior heraldic ornamentation, the British Houses of Parliament present fine examples, as illustrated in the excellent photographic reproductions from the collection of Sir Benjamin Stone, M.P. A great variety of decorative American *motifs* are exhibited in the various splendid apartments of that grand structure.

"The Gilded Chamber" is Gladstone's descriptive phrase springs to the mind as one stands at the bar and surveys the House of Lords. But though the chamber is glowing in gold and colours, the effect is not garish, for the hues of the superb decorations are subdued and harmoniously blended with an artistic effect that is a delight and refreshment to the eye. The solemn stillness and the soft light of a sacred edifice prevail. The figures of the kings and queens of England in the lofty stained-glass windows look like saints in their antique garments. On pedestals between the windows are large bronze statues of knights. At the top of the chamber is the imposing canopied throne. It is magnificently carved, glistening with gold and sparkling with precious stones, and suggests an altar, flanked as it is on each side by costly candelabra of wrought-brass. Formerly there was but one chair of State on this throne; it was designed by Augustus Welby Pugin, the eminent architect who was engaged—under Sir Charles Barry—in the erection and decoration of the new Houses of Parliament. This State chair had been in the House of Lords ever since the Chamber was first used in 1847, and Queen Victoria sat in it whenever she opened Parliament in person. On these occasions the lower chair on the left hand was used by the Prince Consort, and that on the right by the Prince of Wales. But by royal command of King Edward VII. on February 14, 1901, the throne was provided with a second State chair for Queen Alexandra, and for the first time in English history a queen consort accompanied the king in equal state at the opening of Parliament. The new State chair—that on the left of the throne—is almost an exact replica of the old one in design and ornamentation, the only distinctive difference being that it is an inch and a half lower. Both chairs are finely carved, gilt with English gold-leaf, and have the royal arms richly embroidered on the crimson velvet back.

"The Gilded Throne," used at the king's coronation, differs, of course, from those which are situated in other places, such as at the House of Lords and elsewhere. It, however, was very finely designed, and had the king's monogram in the centre of the back, surrounded by the royal and imperial emblems, the rose, shamrock, thistle, lotus and fleur-de-lis, while the royal arms appeared on the curved and carved top of the back part of the throne. The rare Persian carpet beneath the king's throne was also of very beautiful design. It was woven as long ago as 1540 A.D.

The new processional carpet was of dark blue—having been specially manufactured by Webb, of Worcester—of

deep and elastic pile, bearing a design in somewhat darker hue than the ground. This design included the Star of the Garter frequently repeated and an intertwining of the Tudor rose, the thistle and shamrock with the Egyptian lotus, the various spaces being outlined in wreaths of laurel leaves.

LIVERPOOL ARCHITECTURAL SOCIETY.

ON Monday the session of the Liverpool Architectural Society was opened. Mr. Edmund Kirby, in his presidential address, said that nearly twenty years ago that Society honoured him by also electing him president. Having briefly alluded to the Society's position in the old days, he dealt with the developments which had since then taken place in the improvement of the Classical style of architecture, and the influence of Mr. Norman Shaw's work in this direction. The result in the present day had been the erection of many fine buildings in London and the provinces. Among the latter one of the first examples of the Classical style on a large scale in Liverpool was the stately building and the costly offices erected by the Royal Insurance Company. There were also the fine buildings approaching completion, viz. the new Cotton Exchange and the new offices of the Mersey Dock Board. This latter presented a harmonious pile of buildings advantageously surrounded by spacious streets which allowed a full view of the entire groupings to be seen in their best aspects, and with the conspicuous dome centralising the whole composition. As regards the other two large vacant sites at the George's Dock, the northern one of which had lately been sold by the Corporation for the erection of new offices, whilst it was reported that the larger vacant space between it and the dock offices was also to be purchased for building purposes, Mr. Kirby said it was to be hoped that the best architectural efforts would be put forward by the purchasers and the new owners in the development of these schemes to render them worthy of such sites, rare in a great commercial centre, with unique advantages—privileges, he was going to say—for architectural display, with practically unlimited light and air, and great open spaces on every side in which to enjoy the beauties of the buildings they might surround. The opportunity was thus presented of achieving at what might be called the "gate of the city" an effect of architecture which, when completed and in conjunction with the dock offices already erected, would command a frontage to the noble river worthy of rivaling that presented by the quays of Venice. The new dock offices were the result of a design selected through a competition, and finally submitted before adoption to a careful study and revision. He did not know what control, if any, of the plans and elevations had been reserved by the Corporation of Liverpool over the erection of any schemes that might be put forward for the adjoining sites, but he would point out that in similar cases of choice of sites in London the Council of the Royal Institute of British Architects had for several years been asked to advise the Government and also the London County Council upon the designs of new buildings and the laying out of important new routes and street developments, before erections thereon were permitted to be begun. He felt confident that the Council of the Liverpool Architectural Society had men in its body to whom the City Council could, similarly to London, refer such questions of design, and with the same excellent results. In the last twenty years changes had been so numerous in Castle Street that it might be said to be nearly rebuilt. With the town hall as the end of the vista of view looking north, he knew no commercial street, even in the City of London, comparable with its appropriate and complete architectural effect. Having referred to the erection in an up-to-date style of branch banks, free libraries and schools, the great tobacco warehouse, the grain warehouses at the South end, and the new Corporation small-pox hospital at Fazakerley, which from the reports on all sides seemed to be the best hospital in the country, Mr. Kirby said he rejoiced that the new cathedral was rapidly being pushed on, and its progress would be watched with the keenest interest in the development of its fine and original design. He then gave an account of the International Congress of Architects, held in London in July last, at which one of the subjects discussed was municipal work and the housing of the working classes. In Germany much care and thought had been devoted to laying out the suburbs for workmen's dwellings; the new streets leading to them were contrived with a view to

spaciousness, for light and air, and were ample enough in width to allow for the free passage of tramways leading speedily to and from the business centres without disturbing the ordinary traffic. Liverpool was sadly backward in this movement. The medical officer had lately made some strong reports and some drastic orders were in progress for the sweeping away of some of the worst dwellings of the poor, but before these were carried into effect it was imperative that the great suburban schemes above shadowed forth should be immediately taken up by local authorities, bearing in mind in the disposition of the improvements not only the actual housing of the poor, but their easy and rapid transit by tramways or the overhead railway to and from the principal centres of labour. Whatever was done he trusted that cottage houses (preferably with small gardens) might be adopted in preference to the "flat" system, the cottage houses being more wholesome and healthier than high "flatted" houses. The subject of "Official or Municipal Architecture" was also one of the subjects dealt with at the Congress, this having been brought into prominence by the growing tendency of municipal bodies not only in England, but in many other countries, to give the designing of purely architectural works to their own officers. Lately architects in various towns had protested against the practice as being an injury to their livelihood and the art of true architecture. Clever as they might be, town surveyors were not generally born or trained as architects. Many corporations nevertheless spent large sums on art in various forms to train both the public and professional men in technical schools, schools of art, and in Liverpool especially at the art and architectural schools of the University. It stood to reason, therefore, that the natural development of this expenditure on this educational movement was in the employment of local talent. It was not fair to expect from salaried officials that they should render to corporations services of a high-class order equal or comparable to those of the first-class and trained architects.

Mr. P. C. Thicknesse proposed a vote of thanks to the President.

Mr. Grayson, in seconding, emphasised the importance of the authorities consulting with the Institute or profession in cases where, like that of George's Dock, they would have buildings springing up which might or might not be in harmony with the one now erected there.

Professor Riley, in supporting the vote, agreed with this view, adding that there was a magnificent opportunity afforded at the George's Dock.

Mr. E. P. Hinde remarked that whilst there appeared to be an endeavour to improve the town in the slum districts, no steps seemed to be taken for laying out the suburbs in a proper manner.

Mr. W. E. Willink congratulated the Society upon again having Mr. Kirby as president.

The motion was carried with acclamation.

MODERN VANDALISM.

A PARTY of members of the Sussex Archæological Society visited Chichester on Monday. The cathedral was described by Mr. E. S. Prior, M.A. In the course of his remarks he pointed out the dangers that threaten fine monuments of art in our churches and cathedrals from unscrupulous American visitors. He told his hearers that he was recently at Christchurch, photographing some fine carving in the church, and noticed that one of the best portions of the carving had been ruthlessly cut and hacked about since his previous visit, a few months earlier. When he called attention to this, the vergers told him that a party of ten Americans had recently visited the church, and that while six of them had held him in conversation at the other end of the building the rest had occupied themselves with cutting pieces from the carving—presumably to take away as mementoes. Since he had lived at Chichester he had himself noticed six distinct chips which had been knocked off the beautiful figure on the tomb of Lady Maud Fitz-Alan, one of the most beautiful monuments of its kind in the country. We kept the statues of Greece and Rome in our museums, said Mr. Prior, and visit any damage committed to them with severe penalties, but statues which are quite as valuable, as being the best art, and should be more so, as being English, we are content to leave at the mercy of the vulgar curiosity or the carelessness of the public.

Mr. P. M. Johnstone read a paper on church chests. Mr. W. V. Crake afterwards, at Priory Park, read a paper on

the history of the building and site of the Guildhall. The mayor (Alderman W. L. Gibbing), in referring to the work of repairing the roof, which the City Council had put in hand, said a great deal of money might no doubt be spent with advantage on the building, but money was scarce in the city, and although they recognised their responsibility for keeping the building in a state of repair and preventing it from falling into ruin, he was afraid if very much more was found to be desirable they would have to depend to a great extent on outside help from those who were interested in archæological matters.

GLASTONBURY ABBEY.

WE understand, says the *Guardian*, that the famous ruins of Glastonbury Abbey will shortly be for sale. We are informed, indeed, that an offer of purchase has already been received from America and refused. It would be extremely regrettable if these thrice-famous ruins were allowed to pass either into foreign hands or into the possession of some owner who would fail to realise his responsibilities. Glastonbury is inseparably connected with the legends of the Sangreal and the Holy Thorn. There in Arthur's Avalon stood from early British days down to the Reformation a Christian church, and there, as in a national Pantheon, were continuously buried kings and heroes innumerable, until the day when its last abbot was judicially murdered at the bidding of King Henry VIII. and the great monastery broken up. Now that Tintern has become a national possession, a precedent has been set which can hardly be ignored. What remains of Glastonbury Abbey may lack the scenic attractions of the ancient foundation among the hills by the Wye, but there is certainly no monastic building in England which can vie with it in architectural splendour or august association.

PARNELL STATUE, DUBLIN.

THE artistic work connected with the Parnell monument is now practically complete. That work has been greatly delayed by many unforeseen circumstances, among others by a fire which took place at the studio of the artist, Mr. St. Gauden, in America. He is under contract to complete the work in the year 1906, and has practically done so. His model of the central figure of the monument of Mr. Parnell is at present on its way to Italy to be cast in bronze, and with certain trifling exceptions the other ornamental work of the monument has also been completed. Tenders have been received from Irish firms for the erection of the monument. It is hoped that the contract for this portion of the work may be entered into very shortly, and that operations may immediately commence. Satisfactory arrangements have been made with the Dublin Tramway Company so to alter their lines outside the Rotunda as to suit the dimensions of the base of the monument, and it is hoped that the actual work of the architectural portion may be entered on very speedily.

The design consists of a slightly tapered triangular shaft standing on a circular platform 26 feet in diameter. The width of the base will be 13 feet, and the total length from the ground to the top of the tripod, which will surmount the shaft, will be 65 feet. In the pavement of the circular platform is represented in green granite a large conventionalised outline of the shamrock, within which is symmetrically placed the triangular shaft. Around the carved base the counties and provinces of Ireland are represented—the former by thirty-two bronze panels or tablets, surrounded by an inlaid bronze ornament of shamrocks, and the latter by four bronze laurel wreaths on the face of the pedestal which carries the statue of Parnell. On the angles of the base are inserted large bronze torches. Since the statue of Parnell is the most important part of the monument, it is necessary that the shaft should form such a background as will least detract the eye from the statue itself, and the plain surface against which the statue will be outlined on the proposed form of shaft will attain this.

In front of the shaft on an extension of the base, as a pedestal, will stand a bronze statue of Parnell, 8 feet in height. The attitude of the figure is striking—the facial resemblance is perfect, and great care has been taken to render all the minor details faithful to the surroundings of the chief in life. On the face of the shaft, just over the head of the figure, a large harp is incised, and also an inscription, including the following extract from the famous speech delivered at Cork on January 21, 1885:—

"No man has a right to fix the boundary of the march of a nation. No man has a right to say, 'Thus far shalt thou go and no further.' We have never attempted to fix the ne plus ultra to the progress of Ireland's nationhood and we never shall."

From this up the shaft remains perfectly plain, finishing, however, with a carved finial, surmounted by an immense bronze tripod flamboyant. The only other inscriptions are the word "Parnell" in large bronze lettering near the top of the shaft, and the words in Irish letters, "God save Ireland of the Clans."

ART COMPETITIONS.

THE following candidates were successful in the competitions for Royal Exhibitions (Art), Local Scholarships (Art), and for National Scholarships (Art) and Free Studentships (Art), 1906.

ROYAL EXHIBITIONS.—John D. Revel, Preston; William J. Watts, Liverpool; George H. J. Day, Chester; Percy Gleaves, Burslem; Richard Wallwork, Manchester; Frank C. Stone, Rochester; William O. Miller and Douglas S. Andrews, Brighton; Alan W. Bellis, Leeds; Percival Moore, Keighley.

LOCAL SCHOLARSHIPS.—George A. Lowis, Nottingham; Ernest Hartley, Rochdale; William H. Rogers, Birkenhead and Liverpool; Edward Ridley, Birmingham (Municipal); Lucy Wakefield, Maidstone; Grace D. Harold, Brighton; George J. Cox, Cheltenham; Leslie G. Brockhurst, Birmingham (Municipal); Alexander S. Hill, Royal Institution, Edinburgh; William F. Chandler, Bath; William MacBride, Belfast; George F. Quarumby, Holmfirth and Huddersfield; Benjamin Hancock, Birmingham (Municipal); John H. Molyneux, Carlisle; Ruby Sheffield, Poole Hill, Bournemouth; Adam B. Thomson, Royal Institution, Edinburgh; *Arthur Scott, Burslem; Frederick C. Herrick, The Newarke, Leicester; Raymond Jones, Ashton-under-Lyne; Harold Rhodes, Bradford; Frederick S. Smith, West Bromwich; John F. Bohs, Poole; *William Hill, Bradford; John W. Chester, Burnley.

* These candidates declined the scholarship, and the vacancies thus caused have been filled by the appointment of other qualified competitors.

NATIONAL SCHOLARSHIPS.—William T. Benslyn, architectural pupil, Birmingham (Municipal); Charles L. J. Doman, monumental sculptor, Nottingham; George Ruston, modeller, West Bromwich; Sidney Tushingham, china painter, Burslem; Frederick P. Brown, decorative artist and designer, Rochester; Tom Whitehead, textile designer, Halifax.

FREE STUDENTSHIPS.—John Smiley, Belfast; James F. Flanagan, Macclesfield; Walter Ashworth, Rochdale; John P. Clark, West Bromwich; James T. Niven, Sheffield; Dorothy M. Dyer, Clapham high school, London; Noel H. Leaver, Burnley; Sydney J. Pearson, Leeds; Edith A. Camp, Chelsea, London; Lucy E. B. Mackenzie, Elgin; Harold Gardner, Beckenham; Annie C. Acheson, Belfast.

TESSERÆ

Subject in Painting.

IT is not in the subject, but in the manner of treating it, that the man of true genius shows his capacity, be he painter or poet. The most captivating pictures of the Flemish and Dutch old masters are not unfrequently nothing more, as to subject, than the simple basse-cour behind their own domicile. Girtin was a Londoner, so was Turner. Varley was of the same great smoky town. These, deeply imbued with the love of art, and knowing that the real objects of nature and art were the proper subjects for their imitation, wandered not far from home in search of the picturesque—no, they used their eyes, and exploring the shores of the Thames between Blackwall and Battersea, found subjects enough worthy of being painted to supply material for new subjects, with all their multifold, yea, exhaustless combinations, ever changing as they are, to last, if the things themselves were durable, for a thousand years. A fastidious young painter of portraits, whose parents provided him with more money to purchase canvases and paints than nature had supplied him with talent to use them, calling with his father on Sir Joshua Reynolds, who was his countryman and friend—the good gentleman, on submitting a specimen of his son's work, a bust likeness, was astounded at the great man's not thinking quite so highly of it as himself. The tyro, who was not wanting in

self-conceit, expecting praise rather than advice, pertly observed, "You, Sir Joshua, can command your subject; whilst a young man like myself must paint from what I can get." "No, sir," mildly replied Sir Joshua, "I cannot command: you have had nature for your prototype, I suppose, and I always found that enough. It is neither your business nor mine to be fastidious—imitate what you find in your model and the fault will be yours, and not your prototype's, if you do not produce a good picture." To assert that one subject may not be very preferable to another as to its general characteristics for a picture would be nonsensical. It may, however, be safely asserted that taste and judgment, without which neither painter nor poet will ever do credit to his craft, will lead to the development of qualities in almost every object in nature, sufficient, if well applied, to constitute not only a picture but a picture "delectable to behold." It is not with pigments, oils and varnishes alone that a picture is wrought. Reynolds, Titian, Rembrandt and Wilson mixed their colours with genius, and painted not only with their brushes but with mind.

Eginetic Sculpture.

This school is dominated from the figures found at Ægina. The muscles and the veins, which are anatomically correct, exhibit the soft flexibility of life, and even motion of the body, in scientific harmony with nature. The limbs are strong, though not Herculean, and elegant without effeminacy. No preposterous muscular protuberance, no unnatural feminine delicacy offends the eye. They are natural without being harsh or rugged, and are composed with Doric severity, mingled with the airy grace of the youthful form. The perfection of the finish is quite wonderful. Every part is in a style worthy of the most beautiful cameo. The extremities of the hands and feet merit more particular admiration. Indeed, the ancients thought that elegant fingers and nails were essential ingredients in the composition of the beautiful. The most extraordinary circumstance, however, in these statues is the want of expression and the sameness of countenance, which is to be observed in all the heads. This approximation to identity is certainly not fortuitous, for the artists who were able to throw so much varied beauty into the forms of the bodies were no doubt able to infuse a similar diversity of expression into the features. Their talents were probably confined to one style of countenance by some religious prejudice. Perhaps some archaic and much venerated statue served as a model, from which it might not have been consistent with the feeling of reverence or with the state of opinion to deviate. The formation and postures of the bodies offered a greater scope and a wider field for the talents of the sculptor; for while the Doric severity of the early Eginetic school is evidently diffused through the whole, yet a correctness of muscular knowledge and a strict adherence to natural beauty are conspicuously blended in every statue. An unmeaning and inanimate smile is prevalent in all the faces. Even one of the heroes, who is mortally wounded, is supporting himself in the most beautiful attitudes and smiling upon death. In short, the conqueror and the conquered, the dying and the dead, have all one expression, or rather none at all. The high finish of the hair is particularly worthy of notice. Some of the curls, which hang down in short ringlets, are of lead, and still remain. The helmets were ornamented with metallic accessories, and the offensive weapons were probably of bronze, but they have not been found. All the figures have been painted. The colour is still visible, though nearly effaced. The statues are in the museum of Munich. Pausanias mentions the Eginetic school of sculpture.

The Greek Stage.

The theatres of the Greeks were not intended, as ours are, for performances during several consecutive months, but were open only for a short time at the seasons appointed for religious festivals, when the capitals were crowded with a population gathered from a wide circuit. The word "theatre" is associated in our minds with night, and gaslight, and heated houses; but the acting of a play in Greece took place under very different circumstances. The performance was invariably by day, and their theatres had no roof, so that the spectators sat beneath the open sky. It was thought improper for women to appear on the stage, and female characters were therefore personated by men, as they were in England in the time of our early dramatists. A great concourse of people was the natural consequence of the particular period, and of the shortness of the time during which the theatres were open, and thus

it was necessary to build them on a vast scale. Some were large enough to hold 15,000 or 16,000 people. In this fact we may discover some justification for certain peculiarities of costume that would not be tolerated amongst ourselves, because they would remove one source of pleasure with which theatrical amusements are witnessed. The actors were raised above the ordinary height by means of the cothurnus, or buskin, and their faces were concealed by carved and painted masks. From the great size of the building the spectators were too far removed from the stage to enable them to read on the actor's countenance that language of feeling and passion which speaks so powerfully, even when the tongue is silent. "And how did Garrick speak the soliloquy last night?" "Oh, against all rule, my lord; most ungrammatically. Betwixt the substantive and the adjective, which should agree together in number, case and gender, he made a breach thus—stopping as if the point wanted settling; and between the nominative case, which your lordship knows should govern the verb, he suspended his voice in the epilogue a dozen times, three seconds and three-fifths by a stop-watch each time." "Admirable grammarian! But, in suspending his voice, was the sense suspended likewise? Did no expression of attitude or countenance fill up the chasm? Was the eye silent? Did you narrowly look?" "I looked only at the stop-watch, my lord." "Excellent observer!" The critic's conduct, at which Sterne rightly dealt his sarcasm, would not have been so egregiously out of place in a Greek theatre. The masks were so fashioned as to indicate with more or less distinctness the person represented; and if they concealed the workings of emotion, the contrasting differences and nice transitions of expression, they helped to idealise the actor, and so far carried out the Greek notion of tragedy. Even the reader who never entered a theatre may conceive that the occasions are innumerable in which an actor, by his countenance, can add a most expressive commentary to his words, and at another time can hint a thousand words when he does not utter one. Yet all this kind of acting, and the pleasure derived from its successful accomplishment, the Greeks deliberately denied themselves by the use of masks. At the same time, it should not be forgotten that they were contrived with a view to increase the power of the voice, and that they were embellished to a high degree by the united efforts of the first sculptors and painters.

GENERAL.

Herr Max Rabes has completed three large wall-paintings for the foyer of the new theatre at Breslau. The subjects are the "Drama," "Opera" and "Operetta."

Mr. Sturge, one of the members of the London County Council, has given notice of a motion "that it be referred to the general purposes committee to consider and report as to whether the Council should, by application to the College of Arms or otherwise, take steps to obtain a coat-of-arms, with a view to commemorating worthily its work in connection with public improvements, such as the construction of new streets and bridges, the restoration of ancient buildings and the like."

Mr. G. A. Hill, of Albert Chambers, Manchester, has been appointed arbitrator on behalf of the Bolton Corporation in the claim by Sir Wm. Hulton for 143,554*l.* in respect of lands in Turton and Belmont required by the Corporation under the 1905 Act, and in the claim of Mr. Edward Deakin for 50,000*l.* for other lands in Turton.

A Memorial to the officers and men belonging to the Royal Irish Fusiliers who died in South Africa has been unveiled at Armagh. It consists of a bronze figure of a trumpeter of the regiment, and is named "The Last Post." The figure stands about 7 feet high, and is erected on a granite base with a pedestal 12 feet high. On the front face of the pedestal is a bronze badge of the regiment, giving the list of engagements. The other three sides contain the names of the officers and men. The bronze figure weighs 12 cwt., and was designed and modelled by an Irish lady artist, Miss Kathleen M. Shaw.

The New Fresco Painting entitled "Modern Commerce," which will form a companion picture to "Ancient Commerce" (by the late Lord Leighton), will be received on the 22nd inst. by the Lord Mayor. Mr. T. L. Devitt, the shipowner, is the donor of the picture, which has been painted by Mr. Frank Brangwyn, A.R.A.

A Paper on "Old English Customs and Folk Lore" will be read by Mr. P. Cowell at the meeting of the Liverpool Architectural Society on Monday next.

Mr. Edwin Ward, one of the assistants of the Royal Scottish Museum, is to accompany Professor Flinders Petrie to a district some 200 miles south of Cairo, where they will spend about four months in camp. Mr. Ward will assist in directing the operations of a regiment of Arab diggers and carriers, who will clear away the sand and *débris*, and, it is hoped, will bring to light a number of ancient tombs containing examples of Egyptian art.

The Newman Memorial Church, Birmingham, was opened on the 9th inst. The church has been designed upon the model of San Martino in Rome, in accordance with the wishes of the cardinal himself. He caused the exact ground plan and elevation of San Martino to be made for him in 1850.

The Works Committee of Ayr Town Council have resolved to recommend that the request of the Auld Brig preservation committee for an extension of time be granted until March 31, 1907.

Mr. Deputy C. T. Harris has presented to the Guildhall Art Gallery a picture by the late Mr. Frederick Goodall, R.A., entitled *Early Morning in the Wilderness of Shur*.

A Design for a new tympanum for the west door of the famous old parish church of St. Bees is to be submitted for the approval of the chancellor of the diocese at the Consistory Court which is to be held at Carlisle on the 16th inst. The design has been prepared at the request of a lady resident, who has also undertaken to restore the missing pillars in the stonework of the beautiful Norman doorway, and to repoint the arch. The west front of the church dates from the eleventh century.

The Belgian Government has sent its thanks to Mr. Pollock, ex-mayor of Birmingham, for the picture by the Belgian artist Stevens, which he has presented to the Belgian Museum.

The Society for the Protection of Ancient Buildings have consented to restore an old cottage in the churchyard of Theydon Garnon, Essex. The cottage dates many centuries back.

The First Ordinary General Meeting of the Surveyors' Institute will be held on Monday, November 12, when the president, Mr. George Langridge, will deliver an opening address. The portrait of Mr. Julian C. Rogers, the late secretary, will be unveiled. The Council have decided to award a gold medal for the best paper, if of sufficient merit, read during the session.

The Waterworks Committee of the Coventry City Council have decided to invite Professor Lapworth, of Birmingham University, to report upon the geological features of the site at Weston-under-Weatherley, where it is proposed to bore for water in order to increase the city's supply.

The Cape Cod Pilgrim Memorial Association, U.S.A., offered five prizes of 200 dols. each to be awarded to competitors submitting to them designs for a monument to be erected at Province Town, Mass., to commemorate the Landing of the Pilgrims and the Signing of the Compact. The monument is to be of granite, not less than 250 feet in height, built upon a hill of sand formation about 90 feet above sea-level and to cost 80,000 dols. It is to have an inclined walk (no steps) of concrete from bottom to top of interior.

The Birmingham baths and parks committee report that satisfactory progress is being made with the sinking of the artesian well for the supply of the proposed baths at the corner of the Aston Church Road and Nechells Park Road. The present depth of the well and borehole is 250 feet. It is intended to erect a building which shall comprise one large swimming bath and a suite of private baths for men and women. The committee have decided to ask the Council for permission to make applications to architects to send in competitive plans with a view to secure tenders for the erection of the baths.

A Consular Report issued from Washington states that both Great Britain and the United States are rapidly increasing their foreign sales of machinery. American statistics for the fiscal year ended June 30, 1906, show 18½ per cent. increase over 1904, while the British figures of export for those months show 24½ per cent. increase over the same months of 1904. South American markets proved the best field for British locomotive expansion, the sales there increasing from 157,000*l.* for the first half of 1904 to 636,000*l.* for the first half of 1906, being 50 per cent. of Great Britain's sales of locomotives this year up to June 30. The South American sales of British stationary engines advanced from 100,000*l.* in the first half of 1904 to 240,000*l.* for the first half of 1906.

The Architect.

THE WEEK.

THE late Sir RICHARD TANGYE, who died on Sunday, deserved to be taken for a typical Birmingham citizen. Yet, like many other men whose names will always be associated with the city, he was not a native, for he was born in Cornwall in 1833. He was known as the head of a firm that manufactured machinery. But he was engaged in other pursuits prior to undertaking that work. Fortunately for him he had two brothers who were acquainted with practical mechanics, and in consequence their productions always answered the purpose for which they were intended. They became known for hydraulic jacks which were used for lifting heavy weights. BRUNEL was in a difficulty with his colossal *Great Eastern* steamer. The vessel was too big and too heavy to slide gracefully into the river at Millwall. He therefore resolved to try the experiment of using jacks, not for lifting the mass, but for gently propelling it. In that way the fame of the firm became established. More general use was made of their improved differential pulley-block, with which most builders are acquainted. The business increased and the firm became one of the best known in Birmingham. More than two thousand men were employed in the works. In 1881 TANGYES, LTD., was constituted. It is absolutely necessary for anyone who wishes to stand well in Birmingham to take a share in municipal government. For a few years RICHARD TANGYE was one of the most useful members of the Council. He and one of his brothers, Mr. GEORGE TANGYE, may be said to be the founders of the Art Galleries and School of Art, for they gave 10,000*l.* towards the establishment of those institutions. Afterwards they contributed 11,000*l.* in addition. They also presented valuable works of art. Sir RICHARD TANGYE was the author of "Reminiscences of Travel" and "One and All," two interesting books. His name will long be remembered as one of the worthies of Birmingham on account of the example he set as a citizen as well as for his benefactions.

THE President of the Architectural Association in his address took care to refer to the Rifle Club of the Association. "One would imagine," said Mr. BALFOUR, "marksmanship should be a strong point with a body of men who, like ourselves, require an accurate eye, a steady hand, and who deal so much in straight lines. As to the patriotic point of view I need not speak." The rifle section has practice on Thursday evenings at the headquarters of the London Scottish, 59 Buckingham Gate. Although so lately formed a great many members have joined. The rifle club will be inaugurated at 3.30 P.M. on the 27th inst. by Major-General Lord CHEYLESMORE, C.V.O. It is to be hoped that the Association will be well represented on so important an occasion, when the members can demonstrate that they also are inspired by a spirit of defence. The honorary secretary and treasurer is Mr. J. H. SQUIRE, 69 Palace Court, W., who will be glad to attend to any communications made to him.

WHEN the London Building Acts came before Parliament last year for amendment all the parts were withdrawn with the exception of Part 8, which related to fires in buildings. It was anticipated that the parts withdrawn would be amended according to the suggestions of the Metropolitan Borough Councils and other authorities. But the Building Act committee have not been able to report in time for a Bill to be drawn. They say, however, that "there are two matters with regard to which we think that an amendment of the law

should be sought without further delay. These are the constitution of the Tribunal of Appeal and the method of remuneration of district surveyors. These two matters can be conveniently dealt with, apart from the others which require attention, and if a satisfactory amendment of the law in these two respects can be secured it will greatly facilitate the work of formulating proposals with regard to the other necessary amendments. An additional reason for urgency exists in the fact that a considerable number of district surveyors' districts are vacant at the present time, and it is desirable that the temporary arrangements made for the supervision of these districts in view of the possibility of securing at an early date legislation with regard to the mode of payment of district surveyors should be terminated as soon as possible." It may, therefore, be assumed that an application will be made for an amendment of the Building Acts to that extent. There will probably be opposition from officials affected by the arrangements. It will, of course, be assumed that the Tribunal of Appeal have incurred the displeasure of the Council by seeking an increase in their fees and by allowing costs to an appellant against the Council.

THE district lying between Clerkenwell and Holborn, where the poorer Italians most do congregate, is one of the parts of the Metropolis where sanitation continues to be almost disregarded. The foreign population look on London as only a temporary place of sojourn. They are miserly and they come from a country where godliness is not supposed to be allied to cleanliness. Most of the inhabitants spend the days in the open air perambulating the streets with organs or other means for obtaining money. On their return, if the evenings are fine, they prefer the streets to their noisome dwellings, and in consequence the death-rate is not as high as might be imagined. The density of population is more than four times that of the remainder of the Holborn borough. But in spite of overcrowding and other sanitary defects the Italians appear more healthy than the inhabitants of some of the districts in the East End. On Monday the adjourned inquiry of the Local Government Board was resumed. But it did not last long. Counsel for the Holborn Town Council said that all the owners of property in the district with one exception had agreed upon a partial scheme of improvement. Some houses will be demolished. Henceforth underground rooms will only be used as kitchens or as stores. The tenants occupying them received notices, and nearly all have left. The Chandos Land and Building Company, who own most of the houses, expect to complete the alterations and repairs to their property before Christmas. It was therefore decided to again adjourn the inquiry until April, when it could be ascertained whether a more extensive transformation of the area would be necessary.

EXCAVATIONS are in progress at Alise-Sainte-Reine, not far from Dijon, which is supposed by some investigators to be the site of Alesia, where VERGINGETORIX made his last stand. There is no doubt the village must have been occupied by Romans, for there was lately found a statuette of MERCURY, a bust of SILENUS, and other examples of ancient metalwork. The SILENUS is a remarkable work, and could only have been modelled by an ancient sculptor. The beard has been elaborately treated. A branch of ivy is round the head, and the eyes seem to have been encrusted with silver. After the departure of the Romans the inhabitants were unable to appreciate the beauty of the bust; a ring was soldered to the head, and the bronze was utilised as a weight for heavy articles. Henceforth the bust will, of course, find a place in one of the museums.

HOLYROOD ABBEY.

IT would be interesting to know what unbiassed people in Edinburgh must think about the adverse opinions which have been expressed concerning the restoration of Holyrood Abbey. The late Lord LEVEN AND MELVILLE, it will be remembered, bequeathed 40,000*l.* for the work, on the understanding that it was to be carried out from the plans of Mr. THOMAS ROSS, architect, one of the authors of a fine work on Scottish churches. It is always easy to find arguments against restoration. And yet we suppose there is not an architect in Edinburgh who would not attempt a restoration of the chapel if the commission were offered to him. Few of them probably would adopt the formula of the English restorer, who used to say that for years he was dreaming of whatever undertaking was proposed to him, and that it would be the crowning effort of his life. But we may be sure that good reasons would be found for accepting the responsibility.

Lord LEVEN was desirous of a restoration in order that a chapel might be provided for the Knights of the Order of the Thistle. But it is not unlikely that he was also urged to bequeath the money by the remarks which he heard upon the desolation of the ruins from Englishmen and foreigners. The approach to Holyrood through the Canongate may, in spite of all the influences of romance, raise doubts about the greatness of Edinburgh at a former time. One decayed house after another can be pointed out as belonging to some of the Scottish nobles. Various causes can be brought forward to explain the decline of the habitations. But the palace as a royal residence still retains a certain amount of grandeur. It cannot, of course, be compared with similar buildings in other countries. But when all that history relates concerning it is considered, the "princely bower" becomes an impressive building.

When, however, the visitor sees the adjoining ruins their condition must strike him as the most melancholy of such spectacles. All that can be said about the havoc caused by invasion and by the vandalism of the Edinburgh mob cannot explain sufficiently the desolation, which seems to be increased from the position of the building. No doubt there has been a great change in the religion of Scotland, and in consequence in the North, as well as in England, several beautiful examples of architecture have suffered. But it is only natural to assume that the rulers who possessed, if they did not always use, the palace would have taken steps for the preservation from the elements of an abbey which was connected so closely with the Scottish kings and with the national history. In the seventeenth century, it is true, the Barons of Exchequer ordered the ruins to be covered. But heavy freestone was employed, and sufficient allowance was not made for the weakness of the walls which had to support the masonry. In the course of a couple of years the roof collapsed, and caused great destruction of the ornamental details. No second attempt was made for the protection of the chapel.

The origin of the abbey is indicated by the name, which unites the Edinburgh church with several others in Europe. Many are acquainted with the story of St. HUBERT, the huntsman, who encountered a hart bearing a crucifix between its antlers. About the year 1128 the Scottish king DAVID I., when hunting, was attacked by a stag, and was in danger of death, when a cross was suddenly interposed, at the sight of which the animal fled. Out of gratitude DAVID resolved to found a church dedicated to the Holy Rood, which he endowed and placed in the charge of the Augustinian canons. In addition, many other privileges were granted to them. And indeed there was some reason for one of the kings describing DAVID as "an sair sanct for the crown." They were allowed the right to make a separate burgh or district

around the abbey. Many Edinburgh gentlemen were glad to escape from their creditors to the monks' district. Sir WALTER SCOTT at one time anticipated that he would have to seek refuge there, and THOMAS DE QUINCEY was quite familiar with it. It is well to remember that the abbey existed long prior to the palace. Some of the kings preferred the monastery to the castle as a residence. It is doubtful whether a separate dwelling for royalty was erected previous to the reign of JAMES IV. The building was connected with the abbey church by a cloister.

The abbey probably became the richest of all those in Scotland. On that account it was doomed to suffer whenever an English invasion occurred. In 1544 the monastery was destroyed but the church was spared. What is now known as the chapel of Holyrood is, however, really only the nave of the ancient abbey church. But whether that arose from the burnings by the English or through neglect it is now difficult to determine. In 1569 a bishop was charged with such neglect of the building that it was dangerous to enter it. His defence was that for twenty years the chapel was falling into a ruin, and that 2,000*l.* would not be sufficient for reparation. He proposed that the choir and transepts should be demolished and the materials sold to provide money for building a parish church for the Canongate.

The monastery, like others, was suppressed at the time of the Reformation. The ROXBURGH family obtained possession of property and privileges which they held until 1636, when the Corporation of Edinburgh obtained the rights over the Canongate and deprived it of its independent jurisdiction. JAMES I., when he ascended the throne of England, neglected Holyrood; but he revisited it in 1617, and in spite of its decay service was held in the chapel in the English manner, which offended Scotland. During the Civil War the palace was destroyed by fire and injury done to the chapel. CROMWELL gave orders for the rebuilding of the palace. But CHARLES ordered that the part built by the "Usurper" should be taken down. The Merry Monarch and JAMES II. gave as much attention to the new works as if they expected that sooner or later the palace would serve as a permanent residence for them.

JAMES II. created the Noble Order of the Thistle, and he desired that Holyrood Chapel should be used by the knights. The inhabitants of the Canongate were ordered to worship elsewhere. Carved stalls were introduced for the knights, a college of priests was also established, and daily services according to Roman rites could be seen in the chapel. This caused great dissatisfaction among the populace. When the news arrived of the flight of JAMES and the arrival of the Prince of ORANGE, an attack was made on the building. Some defence was offered, but finally the insurgents prevailed. They destroyed the new stalls and the costly fittings which JAMES had introduced. They even broke open the tombs, and the remains of kings and nobles were thrown about. Then came the attempt to roof the chapel, which, as we have said, only increased its ruin.

Afterwards the palace was long disused, and the local prejudices against the chapel were unfavourable to outlay on restoration. The palace was inhabited for a time by the Pretender. At the time of the French Revolution the Comte d'ARTOIS, who was afterwards known as CHARLES X., spent three years at Holyrood, and when the revolution of 1830 broke out he again returned to it. When it became known that GEORGE IV. was about to visit Scotland some of the Scottish peers and other gentlemen considered proposals for repairing and re-establishing the chapel for the king's use. But the desire was never approved. The late Lord LEVEN AND MELVILLE has therefore by his bequest endeavoured to have realised a project which should have been accomplished some eighty years ago. We hope that this time his aspiration will not be in vain. The parts which remain are insufficient to give an idea of the abbey which

DAVID I. founded. Indeed, if it were not for the associations, or, in other words, if the remains were found elsewhere in Scotland, they would not be considered as interesting as those of Melrose. On that account it should not be difficult to retain all the masonry which has survived. The additions which should be necessary in order to form a chapel for the Knights of the Thistle would undoubtedly preserve the remains more effectually than by any other arrangement. To enclose the present area by a structure of steel and timber would only make confusion more confounded, for under those circumstances the ruins would be little respected. What Lord LEVEN proposed and what Mr. THOMAS ROSS can accomplish is the only way out of a difficulty which certainly has not afforded much pleasure to those who have to deal with it. Restoration has of course many interpretations. But Holyrood cannot be restored in the same way which is possible with an English cathedral or church which has been carefully tended.

IRISH ARCHÆOLOGY.

THE Journal of the Royal Society of Antiquaries of Ireland is usually interesting, and the latest number is no exception. Every one who reads newspapers must be aware that a large number of the inhabitants are endeavouring to resuscitate ancient ways by joining societies which have Irish titles. An example of the length to which the enthusiasm can go was afforded a few weeks ago at Brighton, when a variety to the monotony of the sombre coats on the platform was afforded by the appearance of a son of an Irish Lord Chancellor, who was clad in a suit that was supposed to be the ancient garb of his countrymen. It is to be hoped that all the revivals will be equally harmless and amusing. Some wisecracks, however, attach to the make-believe performances a political signification, and interpret them as outward and visible signs of a desire for independence of English rule.

What is to be devoutly wished for is that the efforts will have the effect of inducing the people to show greater respect to ancient remains of building and sculpture. For generations Irish ruins have been treated as if they were quarries from which stone could be obtained without other expense than the cost of removal. It cannot be said that the practice is at an end. The Journal furnishes evidence of the prevalence of the evil. Mr. P. J. LYNCH, for example, describes a remarkable circular stone fort which existed at a place called Caherlehillan, in the county of Kerry. It is now, he says, a complete ruin, for the stones were utilised by the improving farmer and road contractor. According to him "the stones are being removed for any purpose they may be required for; and in hare and rabbit hunting many a fine old *caher* has been almost levelled to the ground. And there are those who believe that the improving farmer will be so fully developed by the recent Land Act that it bodes ill for some of our ancient structures. However, a new spirit is animating the youth of Ireland, which, in its efforts to diffuse a knowledge of the nation's history and language, will, I believe, in no small measure assist in preserving our national monuments." The Rev. Mr. CARMODY, when describing an abbey in the same county, says:—"It were much to be desired that the Board of Works would take up the care of what remains of the abbey of Killagha. Our old ruins are our country's asset. These walls, whose value to the builder may be reckoned at a few shillings, become priceless as interpreters of our nation's history. With them we may live the past over again. By them we read into the ways and habits and thoughts of those who went before us." Others propose that the new County Councils of Ireland should undertake the preservation of remains. But as it would be impossible to have guardians surrounding every one of the numerous survivals of antiquity, there is little hope for their protection by officials unless the people are

desirous to respect such objects, whether they are in the form of ruined churches or single inscribed stones.

The necessity for greater general interest in remains is more urgent because the scope of Irish archæology is becoming wider almost every year. At one time abbeys, round towers, castles and crosses were supposed to represent the science. Subsequently stones with patterns on them and ogham stones bearing inscriptions were recognised as evidence. Later still earthworks and other forms of primitive fortification were valued. From a paper by Mr. T. J. WESTROPP it is evident that a very remarkable variety of the latter has still to be worked out, viz. what he calls "promontory forts." From being an island the coast was exposed to invasion. Landings were so numerous that one of the early annalists was able to compile the "*Leabar Gabhala*" or "*Book of Invasions*." Not only hordes of foreign peoples sought to secure possession, but the inhabitants of one district of the island could easily be organised for attacking another district by sending men in boats instead of over the land, where the roads were few or most likely did not exist. The construction of forts on the coast became a necessity. Nature also offered facilities for defence which were often turned to account. Mr. WESTROPP does not like the term "*cliff castles*" for those duns along the deep. He prefers "*promontory forts*" because they are generally found on projecting points of the coast. Before the attempts described in the paper were undertaken very few efforts were made to study or classify the defences, although everyone knew of their existence. Dublin, for instance, had a fine example at Howth. But about the attractiveness of the inquiry there can be no question. Mr. WESTROPP says of his own experience:—

A most fascinating study it has proved to be; and it is wonderful that many have not examined these monuments, and that notes on the majority of the forts are not to be had. The structures by their very nature occur in the boldest and most picturesque spots of the coast. Those who have joined the sea voyages of the Society round Ireland will recall the noble beauty of several of these sites; the great fort and cliff-crowned hill of Ben Madighan over Belfast; the rugged "*Balor's prison*" of Torry Island; the huge tower of rock fenced by Doonvinalla; the cliffs and bays at Doonamoe; Dubh Cathair in Aran; Doondoillroe in Clair; the hill that overlooks the Blasquets and bears Dovinia's ogham pillar at Doonmore near Sleah Head; the ramparts of Dunbeg and the great entrenchments at Baginbun.

Mr. WESTROPP proposes a provisional classification like the following:—(a) The simple promontory fort with a single wall or mound and fosse. (b) The complex fort of several earthworks with or without a wall. (c) The entrenchment and citadel, and (d) The multiple fort with a fenced promontory and lower fortified headlands connected with it.

The investigation is only, as it were, in its infancy, and therefore it is impossible to say at present when the forts were erected, and who were the enemies that had to be resisted. Some probably are prehistoric. But some are supposed to have been rebuilt if not originally constructed in Christian times. Legends are connected with several of them. Mr. WESTROPP in his paper describes only the examples he has visited in Waterford and Wexford. In one there is a fosse of over 50 feet in width. In another there is still a platform measuring 141 feet by from 40 to 60 feet. Some had a souterrain as a sort of final refuge. In one case the fosse was cut through the drift nearly down to the rock. But the most picturesque of those described by Mr. WESTROPP is at a place called Dane's Island, of which he gives the following description:—

Nothing save an actual visit can convey any adequate impression of its natural strength and grandeur; descriptions, views and plans tell but little. A huge tower of dark rock, a natural castle, raises itself up out of a dark recess in the cliffs, and high above the southern headlands, nearly (and in places absolutely) perpendicular, covered in parts by shaggy mantles of long grass, and joined only by a

narrow neck to the mainland, along which a dangerous path leads down and up steep slopes to the level platform on its summit. It must have been nearly impregnable to ancient warriors, with even a few defenders on its summit. The platform measures 150 feet to 170 feet across in both directions: the older maps marked the sites of three dwellings on the summit. These we could not see on our visit, the only earthworks visible being a slight fence like that at Island Hubbock, and about 4 to 5 feet high along the landward face. There was, however, in 1840, memory of, and evidently some trace of, a large entrenchment on the mainland, which has now entirely disappeared, its place being taken by modern fences. Smith, in his "History of Waterford," describes this rock as the resort of fowlers, but, as usual, tells us nothing of the earthworks. However, we can easily see that it represents an entrenched village on the cliff, with a citadel secure from any foe who did not take the trouble to blockade it—so far as we can judge, a very rare expedient in early times. To the east of the tower in the bay is a most curious group of monument-like rocks and islets rising over the shallow water, a huge menhir of rock, a natural edifice called Templeobrick and numerous reefs.

The advantages of these ancient fortifications is suggested by the old saying,

At the creek of Baginbun
Was Ireland lost and Ireland won.

The reason for it is that REYMOND LE GROS, one of the early Norman invaders, was able to hold the position with ten men-at-arms and seventy archers against 3,000 men sent to attack him. If Mr. WESTROPP is not able to continue his survey of the cliff forts it is to be hoped some other archæologists will take up the subject.

The most important description of a building relates to the abbey of Killagha, which is about eleven miles north of Killarney. The abbey was founded in the twelfth century on the site of an earlier abbey, and the name signifies the church of the beautiful place, for the district is picturesque. It belonged to the Augustinian canons, who at one time possessed a surprising number of churches in Ireland. Mr. CARMODY says that after the dissolution of the monasteries in the sixteenth century they did not seek, like the Dominicans and Franciscans, to recover their lost homes and to renew old connections. The two Orders named are now to be found in several places in Ireland near the convents of their predecessors, while there are not more than one or two Augustinian houses. The reason for the difference probably arises from the fact that as LUTHER was an Augustinian friar the Order was suspected of heresy. At the suppression of the monasteries in 1536 Killagha was overlooked. The monks remained until 1576. The church alone exists; the abbey was destroyed and the materials removed for use in other buildings. The church was rectangular and without aisles, having a length of 125 feet 5 inches and a breadth of 23 feet 5 inches. At the intersection of chancel and nave there was a bell-tower. The east window is still to be seen, and is one of the best examples of its kind in Ireland. But the view of it from the interior is obscured by a hideous vault, for not only the site of the abbey but the space within the church are used as a cemetery.

There are two papers by Mr. R. A. S. MACALISTER on "Inscriptions." In one of them there is reference to the drawings made by the late Sir THOMAS DEANE. The Americans in their eagerness to possess examples of antiquity are quite willing to be enriched with rude examples from Ireland. Iniscaltra is one of the islands in Lough Derg. An American who was one of a party was heard to remark on seeing one of the inscribed stones how pretty it would look in a garden on the other side of the water, whereupon it was carried off in a boat, and no doubt now ornaments the grounds of some costly residence. Other stones have likewise vanished from the same place. Students of archæology will find much else in the pages which will afford them interest.

CHICHESTER CATHEDRAL.

IN the course of the observations addressed by Mr. E. S. Prior, M.A., to some members of the Sussex Archæological Society who visited Chichester Cathedral, he said that although in point of size it was not among our large cathedrals, it was second to none in the interest of its story. Chichester Cathedral was founded at the latter end of the eleventh century as the capital church of the diocese, to be served by secular canons, that is, for the services of a body of priests (the bishop their head) who were, in the Middle Ages and are now, under no monastic rule to separate them from the common public life. As so built, and so continuing to be served, the cathedral had a distinction which separates it from half the cathedrals of England. It is, in this respect of being a bishop's secular church, on the lines of the great cathedrals of the Continent, but is on this account distinct from many of the old great cathedrals of England, which were founded as the churches of monks and continued monastic till the Dissolution. This distinction of having been founded as a secular cathedral Chichester shared with some other English cathedrals, but among these it has preserved to our times a larger and more complete body of its original eleventh-century secular building than any other. Now on the side of the faith and the liturgy which this building expresses this is a most significant distinction, for it was in the eleventh century that faith and liturgy stamped the whole craft of building, and therefore here, if anywhere, we might recover the methods and forms of that building of mighty churches which was the unexplained outcome of the Norman Conquest.

But beyond and apart from the interest of these questions should be our wonder at the building of the cathedral in the eleventh century—so sumptuous, so immense for the purposes to which it was put. It is to be observed that this first erection was on such a scale that the needs of the next eight centuries of Christian worship, with the vastly increased populations and their vastly increased luxury, have not needed materially to enlarge its ground plan. How was it that there came the ambition and the power of building so hugely and so commandingly? Surely not as mere heaps of stones, not as shapes and styles, not as designs and fancies, should we rate this eleventh-century building. The wonder of the cathedral was in the spirit of the men of the eleventh century, a mere handful of population compared with what now covers the countryside, and yet how filled with this passion to build magnificently. Custom has made us take the Mediæval cathedral in an ancient town as a matter of course. We accept it as natural that a building enormously larger and more massive than the whole tenements of a city should be put up as its church. But when we go back to its beginnings, when as yet there was no precedent, when we see how big a meadow, edged by the Lavant, was set apart for it, how around it were mostly wattle huts and thatched hovels, and then think of the cathedral as so conceived—the enormous masses of stone that had to be brought from over sea to make its walls, the forests that had to be cut down for the scaffoldings—when we see it set out with so sumptuous a choir, so extended a presbytery, such wide transepts—all so much in excess of anything that was really required for the services of the canons—and when we think of these mighty masses of masonry in the walls, such as needed the whole population to build them, then in Chichester Cathedral as it stands to-day we may read what a power lay in the faith of the eleventh century and how strongly the passion for building was part and parcel of that faith.

And not only what was built, but the way of building, can excite our wonder and admiration. A second ground for satisfaction with our Sussex cathedral lies in its fine presentation of the methods of Mediæval mason-craft. If the eleventh and early twelfth centuries were those in which the religious life expressed itself more markedly than in any age in building, the ensuing three centuries were those in which the craft of the builder developed in a way unexampled in the history of the world's art. Though its exhibition of this development is here but on a small scale compared with what the thirteenth century can exhibit in France, still the record is unrivalled in the lessons it gives, and in letting us read clearly the story of the Mediæval masons, the creators of the greatest stone architecture of the world. For one thing, the cathedral (as far as its interior is left at present) has not, as yet, been surrendered to the senseless surface scraping and renewal which, in some cathedrals, has given a nineteenth-century skin to the ancient work—not only an action of evident

ineptitude, but as repugnant to decency and reverence as when the wrinkles of old age are plastered up with enamel and paint to ape the bloom of maiden youth.

Three savage hordes have swept down on our ancient churches and defaced them: the horde of the iconoclasts in the name of religion, the horde of the churchwardens in the name of tidiness and the horde of the restorers in the name of taste. Of the three the vandalism of the restorer has been the most destructive to religious art, because taste is such a fickle death-dealing engine of hatred; what it cuddles to-day it spurns to-morrow; therefore everything in turn comes to be annihilated at its bidding.

What can be called Victorian art has been something essentially different in expression and scope from what preceded it. The difference may be shortly put as this. Whereas the workshop artist made and sold his works, the Victorian artist does not make but sells his art. It is made for him. He employs others to produce, and sells their productions as examples of his taste and design. This is what is called commercial art. Pretty well all the nineteenth-century productions put in this, and other cathedrals are of this description. Art that is continually being made only to sell does sell only. It has no other quality. We need not enter upon the question of this present-day art in its relation to modern life, but even as an archaeological Society we are bound to do so in its relation to the ancient cathedral. We are bound as archaeologists to protest against one form of this commercial art, and that is its copies of the Mediæval arts. What a fate for a cathedral like this, full of the ancient beauty, that this should be swamped out and overlaid by objects whose conception is puerile, whose make is bad workmanship and whose make-believe is an offence to the religious mind. Will it be said that this has been inevitable, that there is no other art for cathedrals but the commercial art of the modern shammer? Believe me, this is not the case. The different eras of art are bounded by no fixed line. The workshop artist whose glory it was to make his works has lived on into the twentieth century. It is not the case that there have not been plenty of religious artists, from whom this church and others might have had works of genuine piety. Has there not been that celestial visionary, the painter Blake? And has there not been the eminent serious sculptor, Alfred Stevens? Has not the art of Ford Madox Brown, of Watts, of Rossetti been religious? Has not the craft of William Morris been worthy of church art? With these men—and there have been many others—their work has been prayer. But in this cathedral, if we look for the works of these, the artists of the nineteenth century, we become conscious that whereas in the past eras the cathedral has always received the best work of its times, in the nineteenth century it has taken to its bosom the worst.

TRINITY CHURCH, HULL.

A MEETING of citizens was held in the Hull town hall on the 10th inst., in response to an appeal by the Mayor, to hear a report upon the condition of Holy Trinity Church, and to support a scheme of restoration. There has been for some years a continuous settling in the foundations of the church, especially of the tower, and, according to expert engineers and architects, repairs costing fully 10,000*l.* must be carried out at once if the building is to be saved from ruin. The mayor (Alderman Larard) presided.

In front of the dais in the banquetting chamber, in which the meeting was held, says the *Yorkshire Post*, was arranged a series of photographs showing the state of the foundation, an ominous crack over one of the arches and the shoring up of the tower. There were also four glass jars filled with a dark powder, to which some of the oak beams have been reduced.

Mr. F. S. Brodrick, the architect who was consulted in the first instance by the church authorities, briefly described the present condition of the building. He said that the settling of the foundations of the tower had been going on for some time. This had rendered extensive repairs necessary six years ago to some of the arches adjoining the tower, and also to some of the windows. Latterly, having been asked by the vicar and churchwardens to watch the structure, he discovered that the movement had continued, and to such a serious extent that action should no longer be delayed. Knowing what a heavy amount of expenditure would be incurred, and not caring to take all the responsibility of advising it upon himself, he asked for the assistance of Mr. Francis Fox, and that gentleman was commissioned to examine the church and report. As soon as the report

was made it was resolved to shore up the tower, and the work was entrusted to Messrs. Thompson, of Peterborough, who had nearly completed their task. Upon examining the foundations of the tower they found a space of 10 inches of decayed wood upon which the tower was partially dependent for its support. They also found that the pillars of the nave were standing upon piles that were very badly decayed.

The Mayor said that as some doubt had been cast upon the accuracy of the report of the experts, he had been asked to get independent testimony as to the state of the church. Accordingly he communicated with the city architect (Mr. Hirst), who found that the cross timbers, upon which the piers of the tower rest, have been practically reduced to dust. There could be no doubt that the tower was settling down and unless the movement was arrested the church was doomed. He was certain that no man, whatever his religious opinions, would deny the desirability of keeping this magnificent fabric in order.

The Rev. A. B. G. Lillingston, the vicar, thanked the Mayor for the encouragement he had given them in this matter. Already 1,000*l.* had been spent in removing the organ and in shoring the tower in order to guard against imminent danger, and with these measures the church was now absolutely safe. But 9,000*l.* must be obtained beyond that sum in order to carry out the necessary work. He appealed not only to Churchmen, but to all the citizens of the town, because it was a national affair. Holy Trinity Church was the first place that strangers went to when they visited Hull, and he promised them that so long as he presided over it its national character should be preserved. He moved a resolution affirming the desirability of taking steps to carry out the proposed restoration and of opening a fund to be called "The Holy Trinity Church Restoration Fund."

The Bishop of Hull gave his hearty approval to the scheme. They had in the restoration of York Minster an illustration of what Yorkshiremen could do, and he had no fear that the men of the East Riding would neglect Holy Trinity, which was in a sense the centre of worship in that city, as well as its noblest edifice.

Mr. Francis Fox (architect and engineer) said that when he first examined the church at the request of the vicar and churchwardens, he thought the situation extremely grave. But he hoped they would be able to save the old church, which historically, archaeologically and architecturally was good enough to be a cathedral.

The resolution was carried unanimously.

EXETER CATHEDRAL.

THE secretary of the Society for the Protection of Ancient Buildings calls attention to the west front of Exeter Cathedral, which is, or was, one of the most interesting façades in the world. A short time ago the stonework of the large west window was rebuilt, and now the canopied work is being renewed.

Before the work was begun the Society asked the Dean and Chapter whether they intended to publish any report or statement upon the condition of the west front and what was proposed to be done to it. A reply was received to the effect that the Dean and Chapter, having taken the advice of a competent authority, declined to share their responsibility with any irresponsible authority.

The Society publicly called attention to the value of the west front and of the danger which threatened it, and although the Society was aware at a later date that the iconoclasts were at work, it took no further action, knowing that any remonstrance with the Dean and Chapter would be useless. There seemed to be nothing for it but to wait and see what the public would say. Now that holiday-makers are returning they are beginning to receive adverse opinions, and therefore it seemed wise to get a description made on the spot of what has been done, and the following is a quotation from it:—

"The most recent work done to the front is the complete renewal of a series of three or four canopies and a length of the cornice on the south division of the front. The shock of this work is almost more disturbing than any example of 'restoration' I have ever seen. In work mainly of sculpture this must be so, and the old images in such a setting are absurd. The new work is fully as striking as the marked photograph enclosed [a monochrome photograph marked in red]. As to the 'correctness' of the mere shapes, one might put a dozen things there and claim that they were 'correct.'"

"The canopied work is so weathered that to put a fixed form as definite as a piece of machinery on this faded lacework requires great hardihood, and that is what it has got.

"The great window, as you know, is now new, the upper gable is new, some of the raking arcade is new, pinnacles new. About half the front (except the images) is now new. Only a few years ago it seemed an ancient front. It looks strangely small and foolish now."

Deans and Chapters always say that they are solely responsible, but how the Dean and Chapter of Exeter can justify their action in this case it is hard to say. But it is quite certain, says Mr. Turner, that the Mediæval art treasures of England cannot be of modern carved stonework, and it is time to ask whether a modern cathedral or an ancient one is required. We believe, although we are not certain, that the evil deed cannot, as usually is the case, be thrown on to the shoulders of an eminent ecclesiastical architect. Of course, the real difficulty has been and is the surface decay of stone. In the opinion of the Society the application of lime and baryta meets this difficulty satisfactorily.

The Dean of Exeter, in the course of an interview with a correspondent, explained that the stonework of the large west window had not been rebuilt. It was restored when a stained-glass memorial to Archbishop Temple was inserted. At that time the stonework was found to be in a very dangerous state of decay, but not an atom that could be preserved was displaced, and, as a matter of fact, a good deal of the old stonework remains to this day. The work now being carried out in connection with the west front was absolutely imperative. There was a great risk of portions of the structure falling away bodily, with perhaps serious results for some of the public, for whom there is a footpath along its whole length.

The cathedral architect was, he said, not allowed an unfettered hand, for some members of the Chapter invariably inspect those portions of the building reported to require renewal, and in these cases every scrap of old material which could be retained was kept in place, and where new work was inserted details of the old work were faithfully reproduced. Great care was displayed in continuing the ancient features. "It is better," said the Dean, "to have faithful reproductions in new stone than a mere heap of black dust or a few broken walls of stone. That is our policy, and it has the warm support of the well-known ecclesiastical architect, Mr. Bodley."

THE HORNBY GIFT TO LIVERPOOL.

"AND I desire that my executors shall in due time offer to the authorities of the city of Liverpool my art library and collection of engravings, autographs, &c., on condition that they shall be kept as a separate collection for the use and benefit of the art-loving public of Liverpool. And in the event of their accepting the same on these terms, I further bequeath to the city of Liverpool a sum of 10,000*l.* to assist the authorities to provide a building in which to store this collection and in which the engravings, books, &c., may be exhibited to the public."

So runs a codicil to the will of the late Hugh Frederick Hornby, who died on September 5, 1899. Those instructions, so briefly and modestly set forth, have been fulfilled, says a correspondent of the *Liverpool Courier*, not with any great flourish of trumpets indeed, but with the utmost scrupulosity and enthusiasm. The magnificent gallery adjoining the Picton reading-room has been erected, the books, autographs, prints, etchings, engravings, mezzotints and bindings have been carefully systematised and catalogued, and on Friday, the 26th inst., the doors of the Hornby Room will be formally thrown open. That opening ceremony will be, no doubt, a comparatively brief and modest affair, but in spite of its brevity and its modesty it will mark not only an event of very profound importance in the art history of our city, but also the consummation of the life history of one of the most singular and most admirable of our city's sons.

Hugh Frederick Hornby was a man of considerable wealth, of wide culture, of strong and diligent enthusiasms, and during the last four decades of his life, with an energy that seemed positively to increase with increasing years, he devoted those gifts, both personal and pecuniary, to the pursuit of a single object. That object, as is now generally recognised, was the establishment in Liverpool of a collection of prints and art books which should take high rank

among the half-dozen most important private collections in the country, and in view of the codicil which we have quoted it is not difficult to believe that the ultimate goal of his efforts was the transference of that ideal collection to the city whose name was so inextricably associated with that of his family. It was a notable ideal and a difficult one, and although it is certain that many of his schemes were aborted by his death—although it is certain that the princely collection which he succeeded in making was scarcely more than the nucleus of the priceless collection he had designed—there is still room for not the faintest doubt that he moved admirably near to its realisation. He spent lavishly, but always shrewdly; he moved boldly upon occasion, but his plans were always laid with the extremest care; he knew the value of patience, the worth of the waiting game; he never permitted his own knowledge or instincts to carry him counter to the judgment of the little body of devoted experts whom he employed. And, as a result of these qualities, his collection has an interest and importance so great that it will inevitably command the most widespread public attention—an attention far from merely local, probably more than national—an attention, at all events, very dramatically at variance with the circumstances which marked its conception.

For it was with all the appurtenances of secrecy, in an isolation almost unbelievably complete, that Mr. Hornby followed his quest. No man, one would have said, was better equipped than he for the activities of society, the successes of public life. He was a man of singular charm and courtesy, eagerly intellectual, a lover of fine things as well as of rare. His own water-colours are distinguished by much delicacy and clarity. As a linguist he had something approaching a reputation. His fondness for music led him to take an active part in the foundation and early development of the Philharmonic Society. He had a knowledge of heraldry unsurpassed by experts, he had travelled widely, he read much, he corresponded freely, and he lived from first to last an intellectual life. And yet, in spite of these qualifications for the part of a man of the world, he lived a life of the severest reticence, a life almost monastic in its seclusion. It seemed to him that if he wished to realise his great ideal with any adequacy he must pursue his labours secretly. If his plans were to be prosecuted with complete success, if his collection was to become unique, he must make his moves both cautiously and covertly. And so, as his enthusiasm increased and his purchases multiplied in importance and extent, he withdrew himself more and more from the world, and built a high rampart between himself and the great public, whom he designed so splendidly to aid. These are no mere figures of speech; the precautions he took to secure his privacy were really quite extraordinary. He rented a room above Mr. Howell's bookshop in Church Street, and, carefully concealing the fact of its existence from his friends, from his intimates, even from his wife, brought there all the most valuable prizes of the last twenty years of his life, issued from there his instructions, retired there day after day to formulate his plans. A single individual shared his secret, and that individual was his aide-de-camp, Mr. J. S. Arthur, the well-known bibliophile and connoisseur. "The Crypt," Mr. Arthur used to call this stronghold in his letters to Mr. Hornby, and these cryptic references, and the atmosphere that surrounds all solitary and concealed endeavours, invest Mr. Hornby's figure with a curious romance. He sat there, forgetting his city awhile in order that he might one day become her memorable benefactor; and although the clangour of her movements surged ceaselessly about the walls of his chamber, he remained as remote, as unsuspected, as free from interruption as any wilderness-surrounded hermit.

Of the magnitude and variety of the collection itself it is impossible here to speak with any adequacy. The official catalogue of the books alone, compiled in the most admirable fashion by Mr. Cowell and his assistants, contains some 700 pages, and includes references to about 8,000 volumes, and there remain besides the autographs, the engravings, the art bindings. But it should at least be pointed out that, although Mr. Hornby was perhaps less an amateur than a connoisseur, more a student of "states" than of "états d'âme," he had also a keen appetite for the merely beautiful, for the things whose value is in no way dependent entirely upon their rarity. He was, as we have seen, a water-colourist and a musician, as well as a student of heraldry, and in this collection all that purely æsthetic side of him is very valuably reflected. Macbeth, Haig, Herkomer, Strang, Finnie, Blanchard, Cousins, Lowenstein, figure among the

engravers; there are some magnificent Whistler etchings, many Seymour Haden's, several Meryons, certain admirable Dürers, a complete set of the Kelmscott Press productions, a most excellent series of Walter Crane's, innumerable illustrations by Cruickshank and Bewick, a large collection of Constable reproductions and of Turner's "Liber Studiorum." Bartolozzi and his school are largely represented, and the series of eighteenth-century French illustrated books is of singular excellence and completeness. There are between six and seven hundred specimens of book-bindings, including examples by Marius-Michel, Thierry, Bozerian, Lewis, Bedford, Chivers and Fazakerley. It is no mere collector's collection; it is the collection of a shrewd bibliophile who was also a lover of art.

One word at least should be said with regard to the building in which the collection is to be housed. Constructed from designs prepared in the surveyor's office, its scheme is almost purely Classical, breaking here and there with a careful reticence into faint notes of the Renaissance. A bust of Mr. Hornby by Mr. C. I. Allen will be placed in the room, and there will be an elaborate arrangement of shelves, frames and cases, the result of Mr. Cowell's enthusiastic ingenuity. It is an admirable shell for so precious a kernel—dignified, reserved, austere—and reaching back through its Ionic columns to other ages and finer expressions, catching up these expressions, re-echoing and conjoining them, as does the collection itself, for the benefit and inspiration of modernity.

SHEFFIELD ARCHITECTS' SOCIETY.

THE opening meeting of the session was held on the 11th inst. when Mr. E. Holmes, president, delivered an address. After thanking the members for his re-election, he commented upon the fact that they were meeting again in their old rooms. Negotiations, however, were proceeding with the Sheffield University authorities which he hoped would result in all future meetings of the Society being held from Christmas onwards in the new University buildings. He also mentioned that a complete scheme for the education of architects and surveyors had been formulated by the Council of the Society, and now only awaited the sanction of the University authorities.

Mr. Holmes referred to the negotiations with the City Council as to the proposed new by-laws. Their criticisms, he thought, were now admitted not to have been in any way destructive, but intended to simplify the by-laws and render them more workable and practicable. He laid stress on the absolute necessity of providing better and healthier dwellings for the working classes, and expressed the opinion that it lies in the power of large landowners in the neighbourhood of large towns to correct the evil of overcrowding to a great extent by laying out their estates with wider roads and deeper plots, by judicious planting of trees, and by providing open spaces for recreation, &c. The co-operation of municipal authorities to this end was invited by framing by-laws more applicable to rural districts, and of less stringency than are necessary in purely urban districts, and he suggested that the Local Government Board should assist municipalities to this end. The housing problem might by careful thought be settled on natural and commercial, instead of on artificial lines, which did not commend themselves to business men. He then referred to the question of acquiring by municipalities open spaces round cities, and expressed the hope and the belief that the new road undertaken by the Corporation through the Rivelin valley would prove a success, both artistically and commercially. With regard to the vacant sites in the possession of the Corporation, he suggested to the members of the Society that they might usefully turn their attention to the solution of how to deal with these vacant sites. A vote of thanks was accorded to Mr. Holmes.

TRAJAN'S COLUMN.

AN article on Trajan's Column by Signor Boni appears in the *Nuova Antologia* for this month. The Rome correspondent of the *Morning Post* supplies an abstract of it. Signor Boni's excavations and investigations have led him to the following conclusions with regard to the column. First, that it formed no part of the original plan of the Ulpian Forum, for the surface of the latter was cut by its

construction. Secondly, that the column does not indicate, as is usually supposed from the inscription on the base and from the well-known passage of the historian Dion Cassius, the height of the rock which Trajan cut away and removed, and which before his time, in the picturesque phrase of Dean Merivale, had formed a "narrow isthmus" between the Quirinal and the Capitoline. Merivale himself regarded the statement of Dion Cassius as "quite inexplicable;" Signor Boni believes that he has disproved it by discovering, at the very base of the column, the remains of two ancient roads, one beneath the other, a drain, various pieces of archaic pottery and of terra-cotta lamps, and other archaeological strata of an obviously earlier date than the construction of the Ulpian Forum. Accordingly, he maintains that the column was not intended, as the inscription has been thought to imply, to be the record of an engineering feat, but as a monument sacred to the memory of the Great Emperor who had conquered the Dacians. Commendatore Boni's excavations certainly seem to have disposed of the conventional explanation of the inscription, "Ad declarandum quantæ altitudinis mons et locus tantis operibus sit egestus." At the same time his free translation of the words "To show how deep was the valley and how high the works," would scarcely, taken apart from his discoveries, satisfy Latin scholars. Pending further explanations, all that we can say is that there is a contradiction between the undoubted facts disclosed by the excavations and the words of the inscription.

Signor Boni's attention was first drawn to the column by the desire to discover the sepulchral chamber, where the golden urn containing the ashes of the emperor was placed. Although the fact of Trajan's burial there is mentioned by Dion Cassius in the third century, by Aurelius Victor, Eutropius and Eusebius in the fourth, and by Cassiodorus in the sixth, and although the sepulchral chamber and the loophole through which light could penetrate to it are plainly shown in plans of the sixteenth century, the entrance to it had been walled up in comparative recent times, and its existence had been denied by some competent archaeologists. Signor Boni's workmen with a few strokes revealed the entrance to the chamber, some 5 feet by 10. While making the recent excavations Commendatore Boni found some rough marble fragments, the remains, so he believes, of the primitive church of St. Nicholas of the Column, which rose at the foot of the monument, just like the still standing church of St. John of the Column at Athens. These pieces of marble, among them a portion of a screen, he has placed on the wall which bounds the excavated area of Trajan's Forum. Early in the eleventh century the spot must have been neglected and the very name of the emperor had been forgotten, for a document of 1003 describes it as a garden covered with fig trees, while the column was blackened by the smoke of a limekiln—a very dangerous but unusual neighbour of Classic monuments in the Dark Ages. In 1162, however, the Senate restored the church of St. Nicholas of the Column to the nuns of St. Ciriacus, and threatened to put to death anyone who might injure the monument of Trajan, and to confiscate the property of the offender. The church was demolished by Pope Paul III. about the middle of the sixteenth century in his zeal to preserve the Classical at the expense of the Mediæval buildings of the city. Before the century closed, however, Sixtus V. placed the existing figure of St. Peter on the top of the column, where that of Trajan had once stood, but whence it had long fallen. The biographer of that Pope tells us that the statue of the Apostle "supported the urn, in which the ashes of Trajan had been preserved"—a legend adopted by Addison and by Byron in the well-known lines of "Childe Harold":—

Apostolic statues climb
To crush the imperial urn, whose ashes slept sublime
Buried in air, the deep blue sky of Rome,
And looking to the stars.

As a matter of fact, the golden urn had long before that date disappeared.

A Proposal was made at the annual meeting of the Truro Cathedral building committee for a grant towards the cost of removing the stone pulpit to another part of the cathedral, in order that the preacher might be heard to greater advantage. The opening of the lantern tower, it was said, had resulted in an increase of beauty but an immense loss in acoustics, and until that matter was dealt with the services would never be satisfactory.

NOTES AND COMMENTS.

THE improvements committee of the London County Council were blamed on Tuesday for allowing themselves to be duped by speculators who obtained a promise of a lease for ninety-nine years of the central portion of the crescent site in the Holborn to Strand improvement at a rent of 55,000*l.* a year. The first year's deposit was to be paid on August 10. Then a fortnight's grace was given, and up to the present no money has been forthcoming. The syndicate offered the familiar excuse that they could have completed the arrangements if they were allowed more time. As the offer was accepted on March 20 last, or seven months ago, the excuse is of no value. Why should the improvements committee be blamed for the part they have taken? The so-called improvement was premature. An enormous sum was expended, for which there cannot be a speedy return, if ever there is one. And the improvements committee were only doing their duty in endeavouring to lighten the burden of the taxpayers to some extent. But the failure is likely to have an ill effect. The improvements committee, for a time at least, will be less disposed to meet the views of speculators, in order to avoid further abuse like that of Tuesday.

FROM the evidence which was given by Colonel HELLARD, director-general of the Ordnance Survey, on coast erosion during the last thirty-five years, it would appear to be difficult to balance the losses and gains. Particular districts, no doubt, suffer, and in some places there is reason to be panic-stricken. But, on the other hand, during the period mentioned the rateable area of land in England has been increased by over 30,000 acres. All the gain is not to be credited to the action of the sea. Some, no doubt, is due to reclamation, as at Southport, Morecambe Bay and the Wash. Lincolnshire lost 400 acres, but the area of the land was increased by 9,106 acres. Suffolk has been the greatest sufferer, having lost 367 acres, of which 250 were covered by the sea within the last twenty years. In the short distance between Littlehampton and Worthing, or about ten miles, there has been a gain of 1,018 acres. Northumberland is increased by 8,600 acres, Yorkshire by 1,404 acres. The coasts of Dorsetshire, Cornwall and Somersetshire have been little altered. The Royal Commission has yet to discover whether any methods can be adopted to prevent the loss of foreshore. But we suppose there is no discontent among owners of littoral properties where their lands have been increased in area without any expense to them.

THERE was a great deal of mystery about LEONARDO DA VINCI while he was living, and it was only consistent that there should be mystery concerning his death. VASARI says that the great artist was visited by FRANCIS I. after he had received the sacraments for the dying. He was seized with a paroxysm, and the king raised his head, and "the spirit of LEONARDO, which was most divine, conscious that he could attain no greater honour, departed in the arms of the monarch." The story is no longer believed. But it is remarkable that VASARI does not mention where the death occurred nor DA VINCI's burial-place. According to AMORETTI, DA VINCI made a will on April 13, 1518, or a year before his death, in which he expressed his wish to be buried in the church of St. Florentin at Amboise. He was living in the château of Cloux, near that city, and during the three years he was in France he was more occupied with a scheme for a canal than with art. Assuming that his intentions were carried out, there was not the least memorial set up in the church of St. Florentin. The building was demolished in the early part of the nineteenth century. M. ARSÈNE HOUSSAYE was allowed in 1863 to make excavations on the site of the church. A skeleton was found exceeding the

average size, and a skull that was remarkable in form. Fragments of slabs were dug up, on one of which "Leo" was inscribed, and on another "inc." The letters were assumed to be parts of a Latin inscription on the tomb. Afterwards a document was found which was supposed to be abstracted from a register, which stated that LEONARDO was buried in the cloister. The difference is not to be explained. The Società Leonardo da Vinci of Florence has announced that efforts are about to be made to discover the remains of the artist. But it is to be feared that no means were taken to distinguish LEONARDO's grave from those of ordinary men.

SCOTLAND is not rich in examples of the secular architecture of the Middle Ages. On that account Stirling Castle, parts of which date from the twelfth century, if not earlier, is of very great importance. JAMES III., who reigned in the fifteenth century, built the Parliament Hall which is a portion of the castle. The structure is still recognised as having some use as a fortification. It forms a most picturesque feature in the landscape, and for that reason has been a favourite subject with painters. At present the buildings are in the care of the Royal Engineers. They lately engaged in restoring the Parliament Hall, and there is no difficulty in imagining the manner in which the work was to be carried out. H.M. Office of Works for Scotland has taken the incomplete structure in Stirling known as "Mar's Work" into its charge. It is a sixteenth-century fragment containing a good deal of sculpture. The Town Council now wish that the castle should be transferred to the same authority, for with the officials of the Office of Works there is some certainty that there would be no destruction of any historic feature.

ILLUSTRATIONS.

RITZ HOTEL, PICCADILLY.

THIS large building was one of the first examples of the American system of construction which was produced in the Metropolis. In it are steel framing, fireproof flooring, a grillage foundation and other specialties. It was a difficult site to deal with, for the space was limited and there was no place for the storing of materials. The mortar was mixed in the basement and the stone was dressed on a platform with a watertight roof over the footway. Some of the girders were 30 feet in length and weighed about 20 tons, and there were also cantilever girders weighing 11 tons each. For these special methods of handling had to be adopted, while the remaining steel was delivered in 2-ton lots and hoisted by derricks. The excavation was commenced in June 1904, and the building was completed by October 1, 1905. Messrs. MEWES & DAVIS were the architects. They also designed the whole of the decoration of the interior. The general contractors were the Waring-White Building Company, Ltd. The flooring was constructed by the Columbian Fireproofing Company, the elevators by the Otis Elevator Company, and the locks and other ornamental metalwork by Messrs. YALE & TOWNE, Ltd. As a contrast we also give a design for a hotel in the same position by the late firm of Messrs. WIMPERIS & ARBER, when Piccadilly was considered to be a select street rather than a great thoroughfare to which all the world may resort for accommodation.

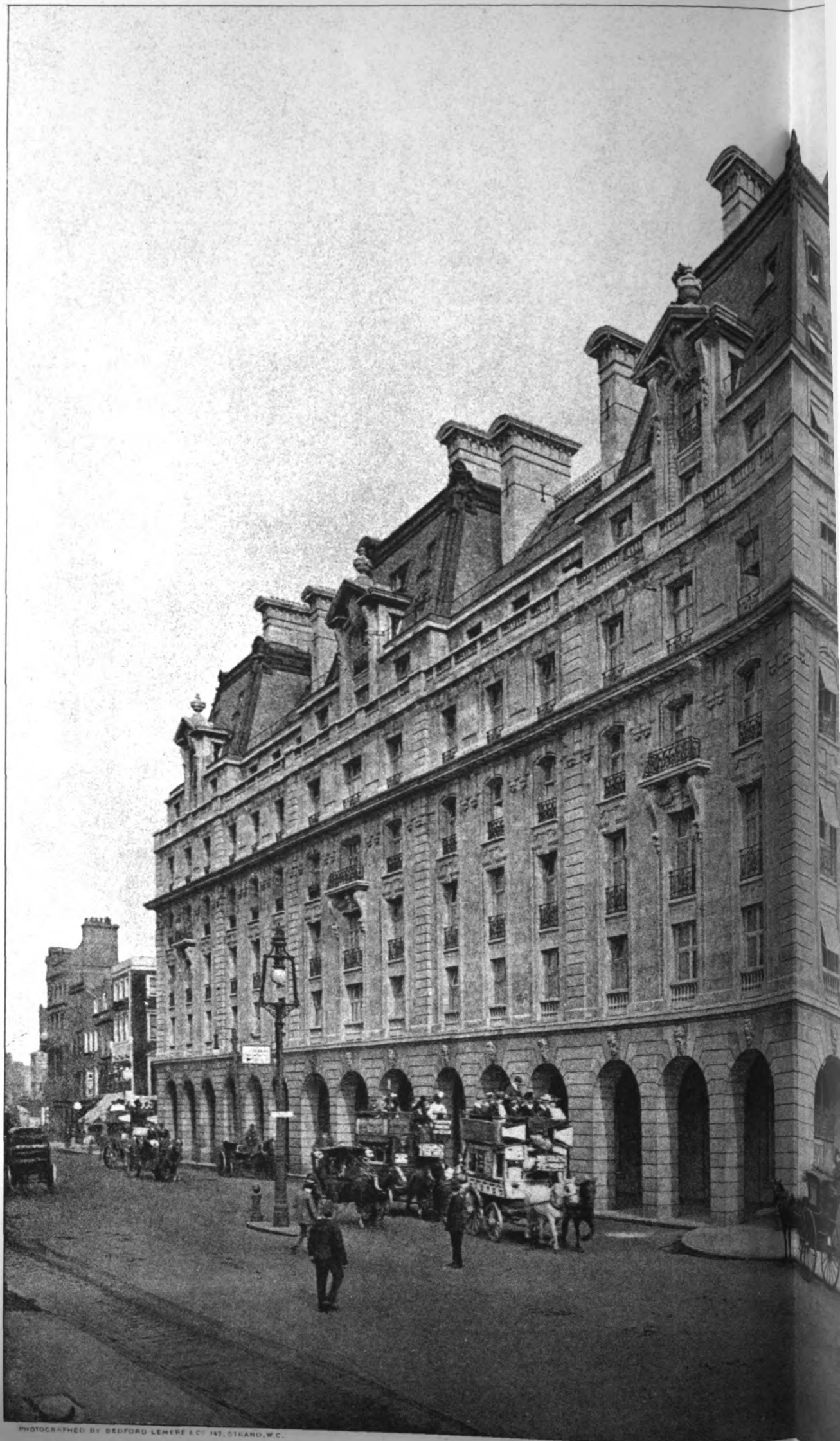
DESIGN FOR HOTEL, PICCADILLY.

MARISCAL COLLEGE, ABERDEEN: ENTRANCE, AND END OF BUILDING.

CATHEDRAL SERIES.—ST. DAVIDS: VIEW ACROSS NAVE FROM SOUTH DOOR—SOUTH CHOIR ABLE FROM SOUTH TRANSEPT.

THESE are the closing plates of St. Davids.





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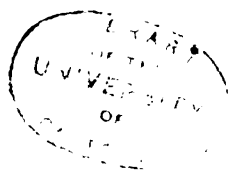
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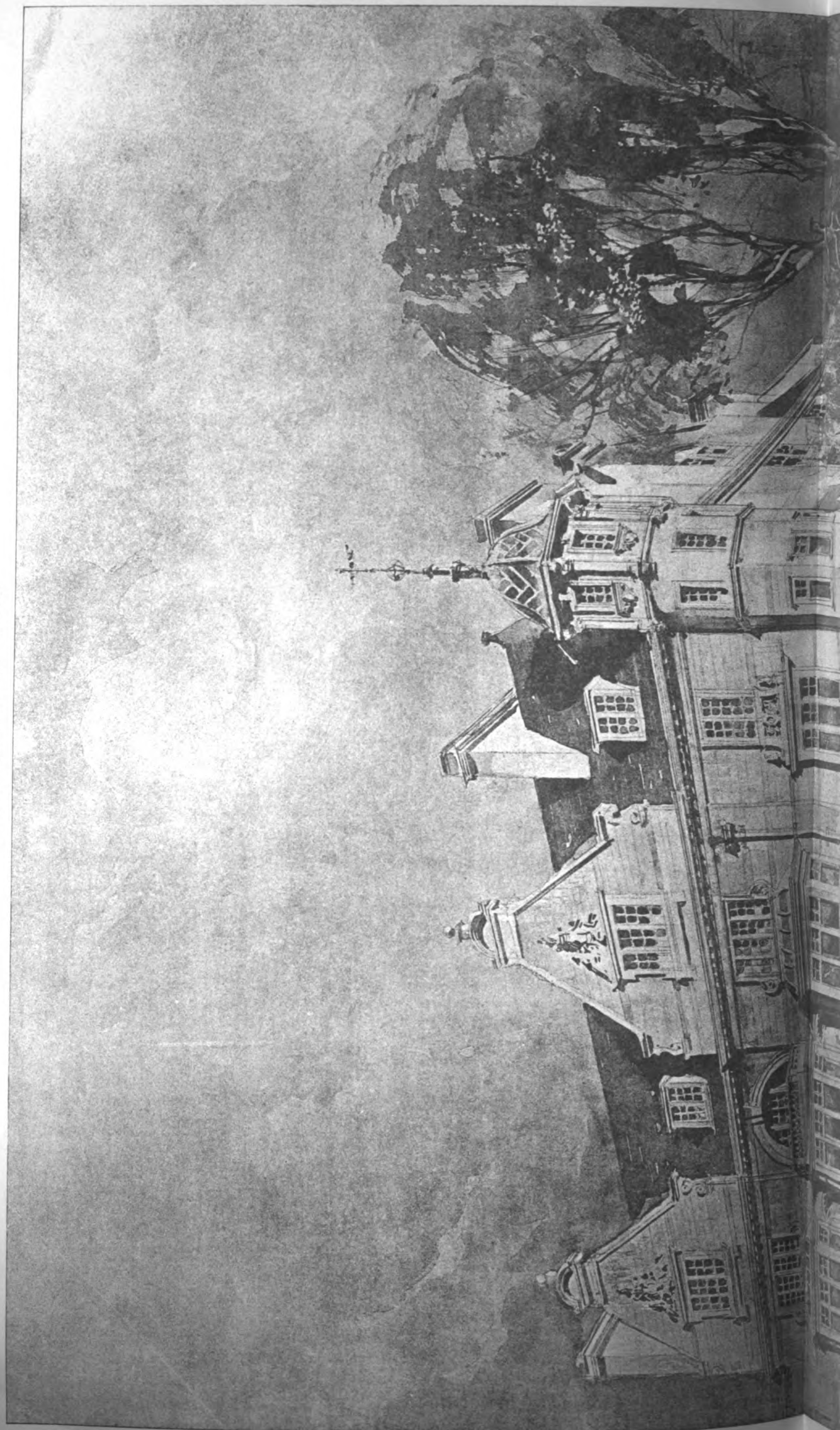
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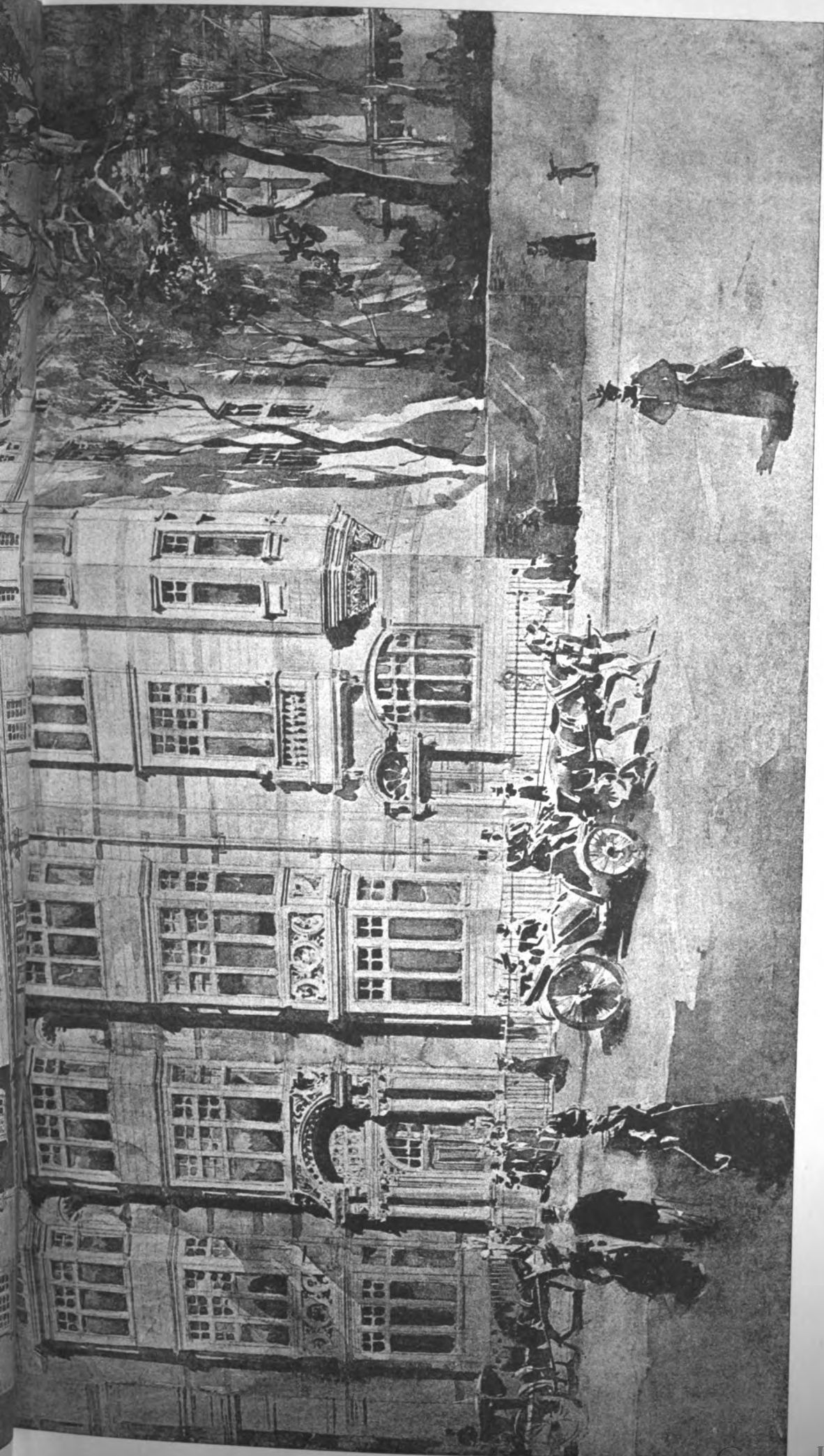
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AVIS, Architects.

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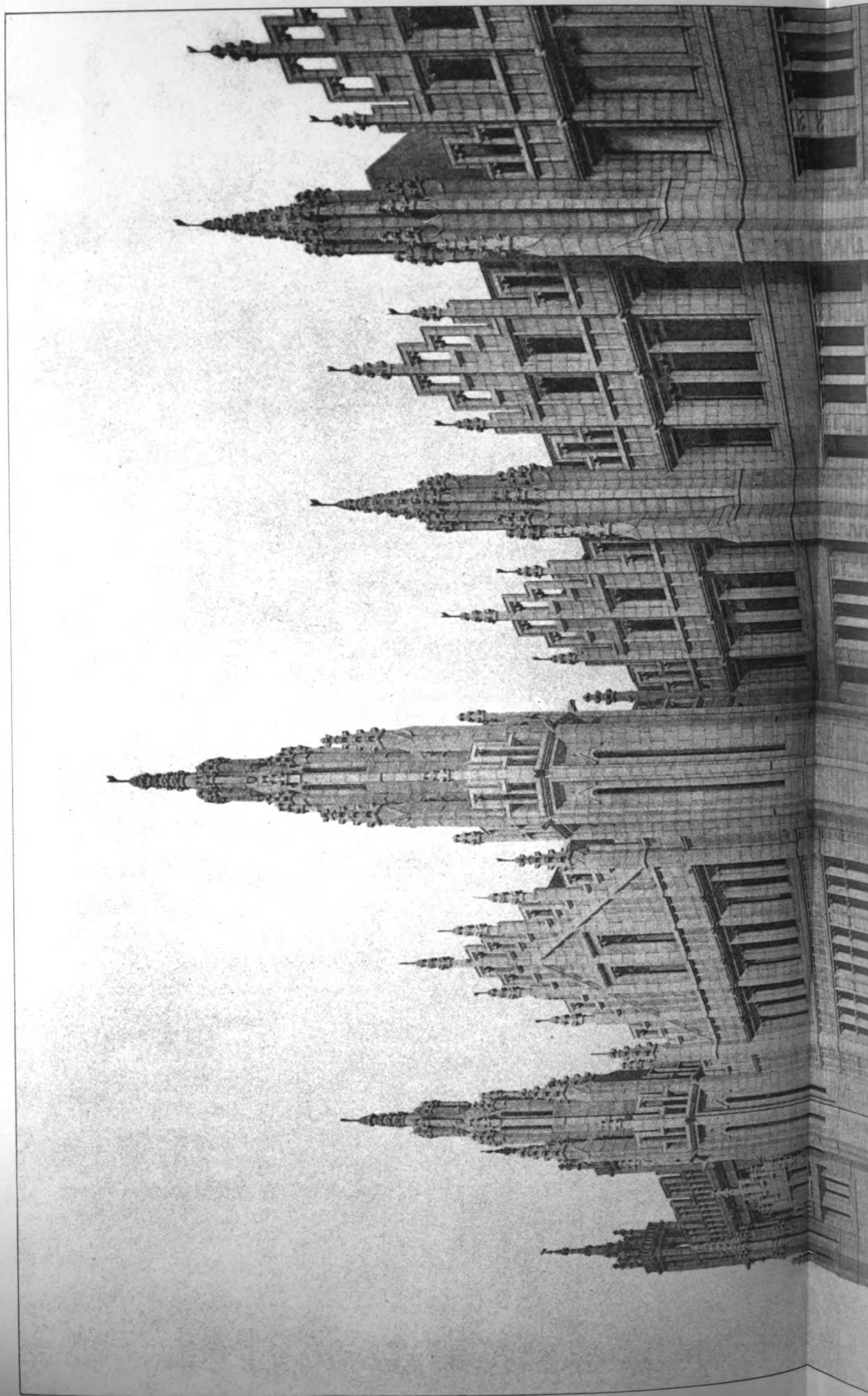


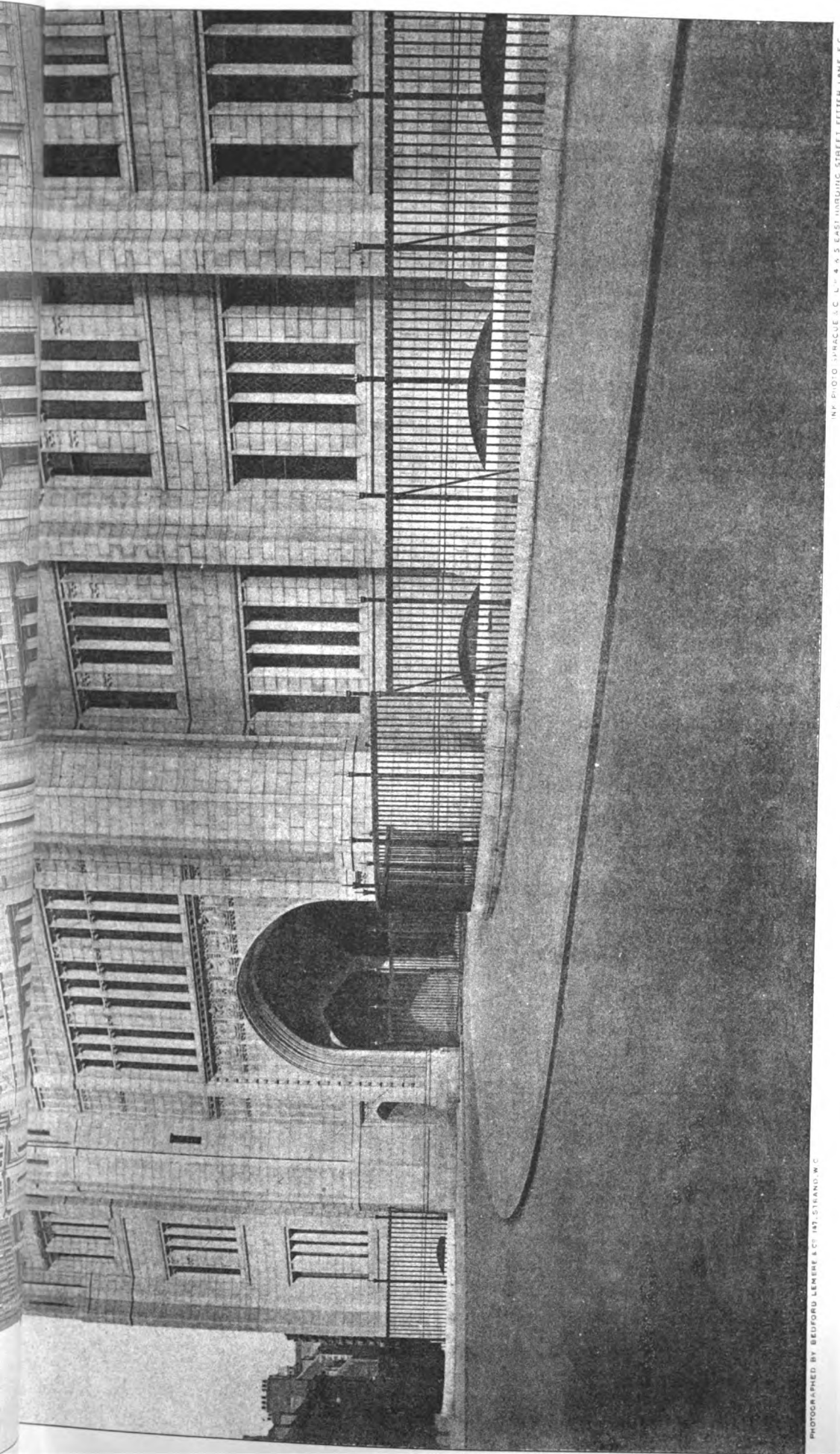
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DESIGN FOR HOTEL, PICCADILLY.

By Messrs. WIMPERIS & ARBER

The Architect, Oct'r 19th 1906.



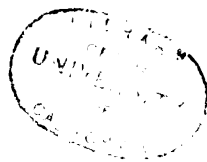


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MARISCHAL COLLEGE, ABERDEEN: ENTRANCE, AND END OF BUILDING.
Messrs. A. MARSHALL MACKENZIE, A.R.S.A., & SON, Architects.

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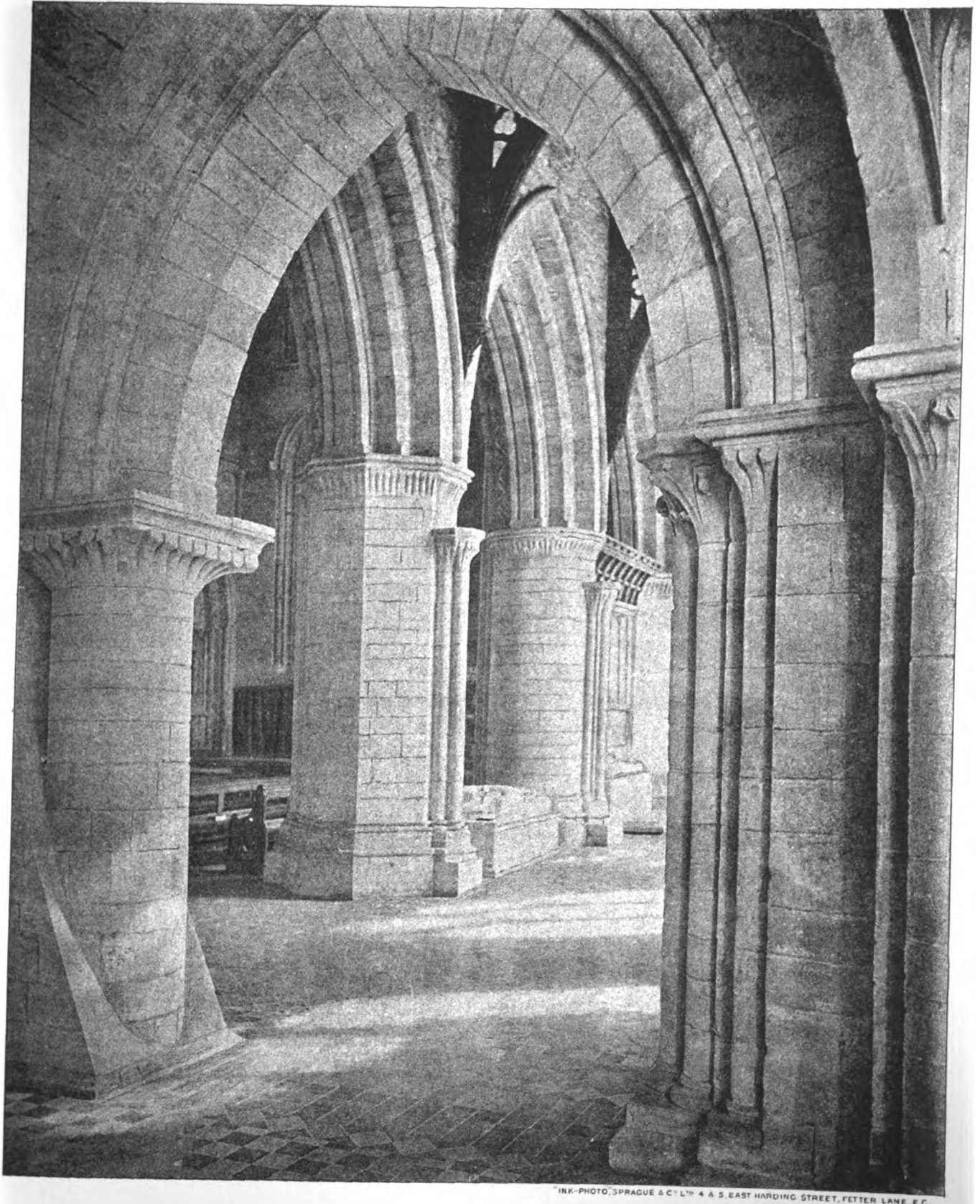




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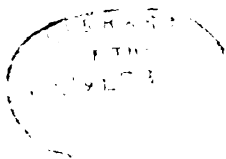
CATHEDRAL SERIES, No. 579.—ST. DAVID'S: VIEW ACROSS NAVE, FROM SOUTH DOOR.

The Architect, Oct. 19th 1906.



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CATHEDRAL SERIES, No. 580.—ST. DAVID'S: SOUTH CHOIR AISLE FROM SOUTH TRANSEPT.



BENFLEET AND HADLEIGH.*

THE great waterway to London town, which city from the earliest times has been both the wonder and envy of other nations, presented at its estuary the first opportunity to the marauding invader, who had braved the perils of the North Sea in his many-oared galley, of committing raids on the country side. In the days when the Norsemen and Danes visited our shores on those errands the river Thames must have presented at high tide an expanse of water many miles wide, while at the ebb miles of mud flats were revealed on one or both sides of the main stream, through which sundry tributary streams found their way.

At Benfleet such a one appears, and presented a favourable chance for a Danish headman named Hæsten, who landed and probably on the high land above the stream set up a castle with deep ditches, and it is recorded that from this stronghold "he and his men much infested the English thereabouts," so that King Alfred took the matter up, and making an expedition against the offender, took the castle, and after demolishing the stronghold and destroying the Danish ships lying in the creek, he took Hæsten's wife and children prisoners and brought them to London. Hæsten, however, escaped. The site of the stronghold can be traced between the station and the church. When the London,

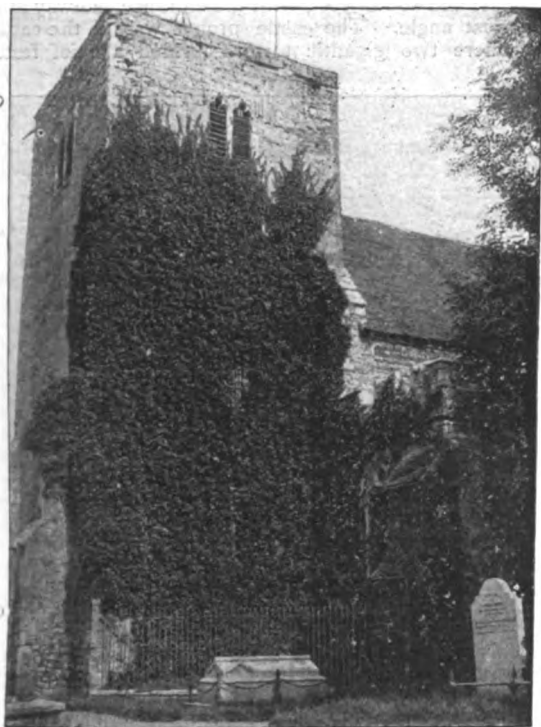
shall refer presently. The raised emblem is in excellent preservation, but the corner of the slab is gone, and only four letters—"M A R C"—are visible. This slab now lies on the floor by the pulpit.

There is a fragment of an old brass affixed to the dado on the south side said to bear date 1568, and to be in memory of one William Cardinall, whose daughter married (temp. Henry VIII.) Sir Wm. Appleton, lord of the manor of Benfleet, and whose descendant in 1622 engaged the enterprise of Joas Croppenbergh and of Cornelius Vermuyden to repair the broken sea wall of Canvey Island and embank portions not till then enclosed. Of the letters of his name "C A R D" alone are decipherable, the remainder having been lost.

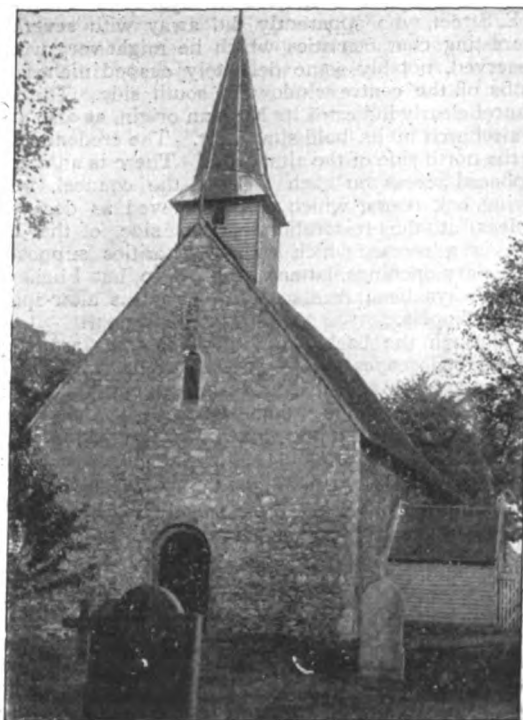
There is a well-preserved slab to the memory of a Sir William Appleton, his wife and their two sons, bearing date 1705, on which are the curiously quaint lines:—

Two blooming youths, Can you forbare a groane,
Inclosed ly, Beneath this marble stone.

There is also in the chancel a pretty cinquefoil-headed piscina well preserved. The south aisle was built 1320, and was originally at a higher level than the nave, and contained at its east end a chapel, the credence in which is an



SOUTH BENFLEET CHURCH.



HADLEIGH CHURCH.

Tilbury and Southend Railway Company were constructing the bridge over the creek on the London side of Benfleet station, they came, in sinking their pier foundations, upon the remains of some old viking's ships, very possibly those sunk by King Alfred in this engagement.

A Saxon church is said to have been in existence at Benfleet even at this early time, and if so we may assume that our gentle forefathers flayed their Danish prisoners and nailed their skins to the church door, after the manner customary in those days of celebrating a victory. The present church at Benfleet, dedicated to St. Mary the Virgin, is undoubtedly of Norman foundation, and is believed to have been built about 1140. It then consisted of chancel and nave only; the fact that the doorway to the tower at the western end of the nave is intact to-day shows that at this period it formed the exit door from the building. The chancel as it now exists was rebuilt in 1300, and there are several interesting points regarding it.

There is an old tomb slab fragment of uncertain history and date, but probably originally marking the grave of Wymarc, son of Suene and grandfather of the Suene who subsequently was known as Henry de Essex, to whom I

interesting feature to-day. In 1390 the tower was added, and you will perhaps have noticed the mixture of materials of which its walls are comprised, viz. flint, Kentish rag-stone, pieces of red tiles and other sundries, showing, as I think, that the remains of the earlier buildings, probably including Roman, were used as quarries. Consecration crosses are also noticeable on each of the tower buttresses. The north aisle was added, a new roof put on to the nave and the south porch built in 1430, and it is probable that at that time the arcades between the nave and arches were formed.

There was in pre-Reformation times a chapel at the east end of the north aisle matching that in the south aisle, and the credence or piscina is still visible, as also is curious recess on the north angle, where a picture probably was placed. The stairway up to the rood-loft is still intact in the last buttress of the north aisle wall, and it is remarkable for its position, inasmuch as a gallery must have been constructed across the aisle and the eastern nave arch opening to get to the rood-loft, which of course stretched across the chancel arch, and it is quite likely that there was also a rood-loft to the north aisle chapel, which was used as a lady chapel. Eight quaintly carved corbels are visible on the nave walls carrying roof bearers; four of them are said to represent the emblems of the four Evangelists. The

* Read at a meeting of the Upper Norwood Athenæum on September 8, by Mr. Frederick Higgs.

windows of the north aisle were inserted about the middle of the sixteenth century, and one of them contains fragments of ancient glass. The south porch is one of the finest examples of fifteenth-century woodwork of its kind extant, and deserves careful and close examination, particularly the beautiful cusped bracketing of the roof beams and the delicate form of the open panelling of the sides of the structure. It remains to-day almost entirely the identical article that left the hands of the craftsmen of five centuries since, saving only for the inevitable wear and tear of time.

There are five bells, the earliest dating 1636. The vicarage is in the gift of the Dean and Chapter of Westminster Abbey, and it was also in pre-Reformation times attached to that abbey and convent. The vicar, Rev. C. F. Box, has rendered a good service to our Society by being present and explaining the objects of interest connected with the church, and to-day we are grateful to him.

Hadleigh Church.

Hadleigh Church, which we next visited, is more interesting in some respects, inasmuch as the structure itself has been subject to less alteration than its sister building of Benfleet, and it is without doubt the identical Norman erection of the early twelfth century, the church having been erected in Stephen's time.

A restoration was effected in 1856 under the late Mr. G. E. Street, who apparently did away with several very interesting characteristics which he might very well have preserved, notably some delicately cusped niches on the jambs of the centre window on south side. The apsidal chancel clearly indicates its Norman origin, as also does the chancel arch in its bold simplicity. The credence niche is on the north side of the altar-table. There is an aumbry or cupboard recess on each side of the chancel, formerly having oak doors, which were removed as decayed and useless at the restoration. Each side of the chancel arch is a recess, which some authorities suppose were subsidiary openings, latterly blocked up, but I believe they have always been recesses, and served as altar-spaces for minor chapels.

Through the backings of these recesses are cinquefoil cusped hagioscopes, each formed on the skew.

On the reveals of the deeply recessed north aisle windows there are two remains of ancient frescoes. One a fragment only, representing an angel, the other, St. Thomas à Becket, who was the patron saint of the church, with the superscription "Beatus Tomas." This is quite an important fragment, and Mr. Street did well in both cases to take care of them. "Beatus" in the superscription, and the absence of a halo round the head, show it to have been executed subsequent to Becket's death, but anterior to his canonisation. There are also other pieces of old uncovered plaster, showing very faint traces of Mediæval mural painting, which many of you noticed to-day. The windows have in several cases been altered in the Decorated period, and contain no old glass, but the new memorial windows are very good of their kind, and there are some to the memory of the King family, who appear to have done a good deal in the way of assistance at the restoration and otherwise.

There is in the porch an old holy-water stoup which survived the reforming energies of the sixteenth century. A leper squint is said to have formerly existed in the south chancel wall, but no trace exists at the present day. A curious corbel is to be seen on the south side of the chancel apse, which once perhaps served to sustain an image, but now carries a quaint alms-dish presented to the church at a comparatively modern date, but is I believe ancient. It is illustrative of Paradise with the serpent tempting Adam and Eve. The font is of Purbeck marble. The pedestal dates from Mr. Street's restoration. I have said the building has been restored; plaster was freely used, and Mr. Street effected some wonderful ornamentation around the jambs and arches of the doors and windows, but one cannot but wish that he had (supposing such to have been possible) retained the old facings with simple repairs rather than entire renewal. The one bell (date uncertain) is hung in a wooden turret, shingle covered, at the west end, and supported by oak timbers built up from the nave floor. The church is dedicated to St. James the Less. In the churchyard is buried one "Cunning Murrell," who died as recently as 1860, and who is said to have "devoted much of his life to astrology, quack doctoring, veterinary surgery and the casting out of devils; an exponent of the black art, and capable of casting the evil eye"—eloquent testimony to the lack of enlightenment prevalent in this old-world district even so recently as forty-six years ago.

Hadleigh Castle.

We have seen how the Danish pirates in the eighth and ninth centuries harassed the then inhabitants of the country, and suffered alternately success and defeat. After a time they seem to have obtained the mastery, and we find three Danish kings occupying the throne. Their yoke could not have been by any means galling, as we find that they quite assimilated themselves with those they conquered. Accordingly, when William the Conqueror obtained sway, he found various lordships in the hands of Danes, and in these parts Suene, whose father-in-law's tomb we see at Benfleet, held fifty-five manors, including that of Hadleigh. His grandson, Henry de Essex, was dispossessed by Henry III. for cowardice during the Welsh wars. He was standard-bearer to the king, and in the thick of the fight, when it appeared that the Welsh would win, he flung down his colours and turned tail. The English lost the day, but subsequently won, when the degradation of this squire took place. This manor was granted by Henry III. to Hubert de Burgh, Earl of Kent, who constructed the stronghold whose ruins we have seen to-day. The situation is particularly fine, standing on the side of the bluff overlooking the Thames estuary, with the high land of Kent beyond. The enclosure measured about 300 feet by 120 feet, and was roughly oval on plan, standing north-east and south-west, with the entrance gateway at the north-west angle. The castle proper was at the eastern end, where two gigantic towers formed a chief feature



HADLEIGH CASTLE.

in the block. I suppose the dwelling was located at or in these two towers, and was constructed in three storeys, and I can quite imagine the gay times which must have taken place here when the courtyard was cleared for a tourney, and the royal and other ladies filled the window niches, encouraging by their glances the gallants who contended for their favours in the presence of all the country side assembled for the fête. The present ruins afford little indication of the arrangement of the place. It is evident that on the south-west side there were several apartments connected with the business of the place—ammunition stores, guard-rooms and the like, and perhaps a chapel. Although now little more than a mass of ruins, there is ample evidence that it was once a lordly and important palace. The thickness of the walls and their composition of flint, ragstone and mortar should be noted. One of the secrets of the sound building of this age was the ample grouting and flushing up they practised, rendering the walls thoroughly solid. After Hubert built the present building it fell into decay, and Edward III. appointed one John de Tyneside to repair certain houses in his castle of "Haddleye," at the rate of twelve pence per

day, principally in the apartments known as the king and queen's chambers, showing that it was a royal residence.

It remained in royal hands for several reigns, and we find Henry VIII. granted it to his fourth wife, Anne of Cleves, as a residence, together with a pension of 3,000*l.* per annum.

Edward VI. granted it in 1552 to Richard, Lord Riche, from whom it passed to his descendants, the Earls of Warwick. The castle and manor have recently been acquired by the Salvation Army social scheme organisation, and one hopes it may, like the Phoenix, rise from its ashes a nobler structure than ever it was before. I am greatly indebted to our secretary for his invaluable assistance in the arrangement of this ramble, and to his hints in the preparation of this paper; to the clergy of Bensfleet and Hadleigh for their kindness, geniality and hospitality.

GLASTONBURY ABBEY.

THE statement about the offer by Americans to purchase the ruins of Glastonbury Abbey may excite surprise. But they have of late years acquired so many works of art, it is allowable for them to imagine that they could increase the number by some examples of ancient architecture. So long as the Parthenon sculptures are to be seen in the British Museum, we should hesitate about condemning any people for endeavouring to enrich themselves in the same way. The selection of Glastonbury Abbey shows an appreciation of architecture. It is ancient, and it possesses extraordinary historic interest. The place is the poetic Avilon associated with the Arthurian legends. A church existed at so early a date at Glastonbury, the tradition was allowable that it was founded by Joseph of Arimathea. Geraldus relates that he saw a leaden cross in the twelfth century exhumed at Glastonbury, which stated that it marked the site where King Arthur was buried. In the beginning of the eighth century a new monastery was erected which was respected for centuries. A Norman was appointed by William the Conqueror as abbot, and he did much else to diminish its importance. But afterwards the abbey again prospered, and it was one of the mitred abbeys of the country. At the time of the Dissolution the revenue was about 3,500*l.* a year. The great church was cruciform in plan, and had a length of 380 feet.

When the Royal Archæological Institute visited the district some years ago the late Professor E. A. Freeman undertook the office of guide. He pointed out that in the morning he had spoken under the shadow of a great church which pretty well told its own tale. Standing under the cathedral church at Wells, and using their own senses, they might almost make out the history of that church in itself. At present here they were, some of them, standing inside another great church, the history of which was so special, so distinct from that of any other, that no man without knowing its recorded history could possibly make it out for himself. He could see that this was a great church of the first order, and would have little difficulty in proclaiming it a monastic church. The mere appearance on one side near where they stood would imply that there was a cloistery; here there was evidence enough to show there was a cloistery in the ordinary monastic place. They might see for themselves the central tower ending in an eastern chapel; they would turn round and see that there was a west end of that great church, and see that there was something beyond that. They could see the richest and most developed Norman tracery, and beyond that there was another building of the thirteenth century. What it was no man could guess for himself without knowing that history which placed Glastonbury in one of the first places, not only in England, but in Great Britain. The cause that gave the abbey of Glastonbury its peculiar, its special character, above all other places in our island, was that Glastonbury was the one great religious foundation of the Britons which lived on through the great storm of the English Conquest. People were very fond, sometimes from an historical point of view, and perhaps oftener from a theological point of view—with which, at all events, he had nothing to do—of talking about the ancient British Church, forgetting that in the greater part of this island the ancient British Church was swept away by the coming of the Anglo-Saxons. It was all nonsense, it was foolish when it was talked of in Canterbury, York, Winchester or London; but that which was nonsense and foolish there was not so here. In Glastonbury, in this old part of Somersetshire, in this one south-western corner of England, they were in

a land which was not conquered until after the English became Christians. In this land, therefore, the religious establishments of the conquered people were respected, and Glastonbury, the greatest of all, lived on as it had been the greatest of British ecclesiastical foundations, to become one of the greatest of English foundations; it belonged alike to the conqueror and the conquered. What Exeter was amongst cities Glastonbury was amongst churches. The great Dunstan, one of the most eminent men in the early annals of the country, the minister of Edward, Eldred and Edgar, belonged to the spot on which they now stood. He was born hard by this place, and his first great preferment was to the abbey. Reverting to the architectural features of the abbey, Dr. Freeman explained at some length that the great entrance into the abbey was on the west of St. Joseph's Chapel; it was an arched gateway, furnished with turrets, battlements and a heavy machicolation. A small arched way for foot passengers and the porter's lodge adjoined. The building remained nearly entire until a comparatively recent period, when the upper part of the gateway was taken down and a modern roof substituted; the great arch was enclosed, but the small arch and the porter's lodge still remained to this day, and the ancient gateway was now the "Red Lion Inn." The speaker went on to say that supposing they were walking down the nave of Wells Cathedral from the east, when they came to the western door they came to the end of the building, and walked into the air; but at Glastonbury the case was different. There was the west door—the west front of the great church, but unlike Wells and the great majority of churches, when they got to that door they had not got to the end of the building. There was a very considerable building beyond it—the building which, in comparatively recent times, since the fifteenth century, had been known as St. Joseph's Chapel, and in earlier times still was something venerable and precious beyond almost everything in our island—the original British church. There, in a figure, were the two churches—the old church of the Britons before the English Conquest, and the church of the English. When Canute came there and signed the charter, he signed it in the *lignia basilica* (wooden church), one of those rude and primitive churches of very early times. That old British church stood on the site of the chapel which is now standing there. It was one of the most beautiful examples of the richest forms of Romanesque architecture. That wooden or wicker church was standing when Glastonbury passed into the hands of the English; it was not destroyed but respected, and allowed to remain as a highly venerable place. At some distance to the east of it stood what is now called the English church, built probably by Kenred or Ina. Certainly Dunstan built a church there, a church of stone, so that they had two churches near together, but not touching—the wooden church of the Britons and the latter stone church of the English. Those were both gone, but they had left their impress behind. There were a great number of historical associations connected with that place. They had seen at Wells that morning the church of the Bishop; here they had the church of the Abbot. They should remember that the Abbey of Glastonbury was one of the abbeys whose abbots refused to surrender at the Dissolution. After St. Dunstan, one of the greatest men England ever sent forth, many men of more or less fame had to do with that place until they came to the last abbot, Richard Whiting, who was massacred on one of the hills above them because he refused to surrender the abbey to the king. Be it remembered that, different from most other monasteries, Glastonbury Abbey was never legally suppressed, whilst the lesser monasteries were regularly and lawfully suppressed by Acts of Parliament; whilst the mass of the greater monasteries made surrenders of their property to the king, which were afterwards duly confirmed by Act of Parliament, at Glastonbury, at Reading and Colchester the three abbots of these three great houses refused to betray their trust. The real crime for which Richard Whiting died upon the hill there—it might be the Tor or it might be the hill of Avalon—was that he refused to betray the trust which had been put into his hands; and he held therefore that Richard Whiting died a martyr. After this the abbey lay several years waste and desolate until gradually dilapidated by several persons whose property it successively became. In the succeeding reign of Edward VI. it was granted to Edward, Duke of Somerset, and afterwards, in the reign of Elizabeth, to Sir Peter Carew. Since then there had been nothing to disturb the owners of the land. The stones of that venerable fabric had been taken away and used in the building of cottages and even in the

repairing of the roads, but in the hands of the present owner, Mr. Austin, he was happy to say it was not likely to suffer any further damage. Passing on to the eastern part of the church, Dr. Freeman said he had brought them to that spot not so much to speak of anything that is, but to remind them of something that was. They would now be standing under the central tower; they were, he might say, in the eastern limb, and there upon that spot, he should imagine, was the high altar. There, near or on the very spot probably where some of his hearers now stood, was the tomb of King Arthur. If they held with him that Arthur was a real person, and Glastonbury was the chief monastery of the British race at that time, it was not at all unlikely that it should have been the place of his burial. There must certainly have been some general opinion that Arthur was buried there, or the monks would have found somebody else and not Arthur. They did profess to find Arthur and his queen, and they put them in places of great honour before the high altar. It was said in legendary lore that the place was a place of perpetual summer, a place where it never rains or snows, but after the experience of the past six months they could hardly bring their minds to believe in that part of the legend. Still, be that as it may, Glastonbury would be ever memorable in history. Let them call up to themselves the east end of that church as it was in the days of its glory. Westminster and Winchester would hardly surpass it in the greatness of their historical associations. There, before the high altar, lay what claimed to be the tomb of Arthur and his queen. On each side lay two men about whom there was less doubt—two of the greatest champions of England—the two Edmunds, Edmund the Meek and the Doer of Great Deeds, and Edmund Ironsides, who fought the sixth battle in one year against Canute, who came after his murder to make what atonement he could to the fallen hero in the shape of costly gifts to his tomb; and there, behind the high altar, looked on here as a saint, and therefore enshrined in his own chapel, was the resting-place of Edgar the Peaceful, the Lord of Britain, the king who kept all England happy and peaceful. There was the group—the two warriors, and two champions of England, and the peaceful king who ruled in that age between the two. Their tombs stood there; they were now swept away, but his hearers could call them up in imagination. They could see with their own eyes the royal tombs gathering round the apse at Westminster; with the eye of imagination they could call up the no less venerable royal tombs which, till the hands of the destroyer came upon them, stood round, before and behind the high altar at Glastonbury.

THE CHAPEL OF HOLYROOD.

INTEREST in, or criticism of, the proposed restoration of the ancient chapel at Holyrood Palace is as yet largely in abeyance, for the reason of an expected pronouncement by the trustees of the late Lord Leven and Melville, after consultation with the Crown authorities and the designated architect. The magnitude of the task of restoring the whole of the magnificent abbey will be apparent to none more than to Mr. Thomas Ross, but it is understood that the reconstruction in contemplation by the testator refers only to completing the ruined and partly demolished walls and interior, "putting into repair and restoring the chapel at Holyrood Palace, so that it can be used as a chapel for the Order of the Thistle." It may be anticipated that the trustees and Crown authorities alike will seek to take the nation into their confidence regarding any restoration of the historic ruin as a habitable chapel, or even what is equally important, should it be decided upon, trying to arrest the progress of "Time's effacing fingers." The enlightened policy of the present Office of Works, at whose head is Mr. Oldreive, the distinguished place which Mr. Ross holds as an authority upon Scottish ecclesiastical architecture, together with the eminence of Lord Leven's executors, may be relied upon to stop short of any improper restoration.

It is understood that Mr. Ross has had plans prepared for the restoration of the abbey, and these have been submitted to Sir John Stirling-Maxwell and Lord Balcarras, the trustees mentioned in the bequest of 40,000*l.* Until the Royal sanction has been obtained, however, it is thought to be premature to publish the details of the restoration.

Inquiry among Edinburgh architects, says the *Glasgow Herald*, revealed the prevalence of considerable difference of opinion on the subject. The members of the profession do not, however, readily disclose their views. The position,

they feel, is a somewhat delicate one, as an expression of opinion against the feasibility of the scheme might be regarded as prejudicial to Mr. Ross, who is to be entrusted with the work should restoration be sanctioned. But so far as opinions could be gathered they were rather against the proposal to restore the chapel, and certainly against any attempt to carry out the work at the figure laid down by the late Lord Leven (40,000*l.*), while there was practical unanimity that it was not a project to be entered upon without the most exhaustive examination and inquiry.

An architect who is in a position to speak with authority said that, of course, until the trustees and the Crown authorities had come to an agreement the work of restoration could not be proceeded with, nor was it possible to anticipate what their decision might be. But it was permissible to point to one or two difficulties in the way of carrying out the wishes of Lord Leven. In the first place, he considered the bequest was totally inadequate. If the restoration was to be a thorough one, and was to be carried out as it should be, the cost would probably be three times 40,000*l.* The ruin was a mere fragment of the original building, the foundations of which extended east, north and south far into the gardens of the palace. Then the condition of the ruins is such as will demand the greatest care in any work of restoration. A great part of it is far out of plumb and leaning over, and a considerable portion may have to come down. The question, therefore, which arises at the outset is where the additional money is to come from, and if the Government or the public in a private way will assist. If the partial restoration was gone on with it would probably be unsatisfactory, and altogether this gentleman regarded the matter as a very complicated business. There would be, no doubt, every desire on the part of the Government officials to make the most of the legacy, but, as had been said, it was totally inadequate for the purpose for which it was given.

Another gentleman, whose position among Edinburgh architects gives his opinion some weight, said the scheme was not feasible, and in saying that he was looking at the matter both from a practical and a sentimental point of view. It was, he said, a crying shame that for a whole century nothing should have been done to prevent the building decaying into its present dilapidated condition. Now it was too late, and the sum mentioned was quite insufficient to restore it. All we could do was to preserve what remained as carefully as possible. The first thing that would probably be attempted in any restoration scheme would be to put a roof on the chapel, but that would mean pulling down a great deal of the work already existing, in order to make it sufficiently stable. But there was the other objection, that any restoration work would sweep away all the sentiment which attached to the ancient building. In its restored form we would have a building with or without merit, according to the skill with which the work was done, but to those who loved the place uninteresting. A warm sentiment gathered round the walls of the graves, and to encase the old walls in new stonework would rob it of all that made it what it was. It was a national memorial which commanded universal interest, and was not to be lightly tampered with.

Something of the same view, though not quite so categorical, was expressed by an eminent member of the profession in Edinburgh, and one who has himself been identified with some important restoration work. His feeling was that the scheme was one calling for the fullest investigation before being embarked on. It might be that the process of decay had proceeded to such a degree as to make any scheme of restoration impracticable. But, on the whole matter, he had the feeling that the project was almost too big for anybody to undertake.

On the other hand, a prominent and successful architect, who also has carried through some big restorations, stated quite confidentially his opinion that the scheme was practicable, and if the restorer approached his work in the proper sacred spirit, he had no doubt the best results would follow. Mr. Ross, with his experience, ought he said to be able to do the right thing, though he ventured the opinion that it was too big a work for one man, and expert assistance might be necessary.

A meeting of the Scottish Ecclesiological Society (Edinburgh district) was held on Saturday in the chapter-house of Restalrig Church. Mr. Thomas Ross described the chapter-house, which is at present in a deplorable condition.

Bishop Dowden, in moving a vote of thanks to Mr. Ross, alluded to the bequest by the Earl of Leven and Melville for the restoration of Holyrood Chapel. He thought it was

particularly satisfactory that the work was to be committed to the hands of so competent, so learned and so historic an architect as Mr. Ross. One could only hope that the King would be wise enough, and good enough, to give his assent.

The Rev. Dr. Sprott, in seconding the vote of thanks, said he was greatly rejoiced to see the announcement in the papers the other day. He regarded Holyrood as a national monument, and thought that all the Churches should be interested in its restoration. As to the purpose to which it might be applied, one could imagine various things, but he should not think that there would be anything in connection with the restoration to offend anybody in the country. He hoped the work would be carried out, and was greatly rejoiced to know that Mr. Ross, who knew every stone in the building, had been selected for the purpose.

Mr. Ross said:—I thank you, my Lord Bishop and Dr. Sprott, for the kind compliment you have paid me. I assure you that I appreciate it very much. I join with you in hoping that Holyrood may be restored, that the King will give his permission for it, and, if he does so, well, I will do the best I can for it. I think Holyrood can be restored. That does not seem to be the opinion of my professional brethren in Edinburgh. No names are mentioned. But it would appear to be their pretty unanimous opinion that Holyrood is past praying for. Well, that is not my opinion, and I have the opinion of a gentleman who has probably had more practical experience of the fabrics of large cathedrals than any other man in this country, or, at all events, equalled by few, that it can be restored. And that is my decided opinion. We are also informed that it will be necessary to take Holyrood down before it can be restored, or pretty much to take it all down. Well, I do not see that that is necessary. I think the walls are quite competent to bear what they once sustained, and in my opinion there is a good deal of error in regard to the reason why Holyrood came to its present condition. It would not be easy going into that without sections and without drawings, but I am quite confident that there is an error in regard to the alleged reason that brought about the ruin of Holyrood. I feel confident of that, and that the walls are quite competent of sustaining a stone roof. I also believe that that will add very greatly to its stability and strength, although it brings a weight on it. I suppose I need say no more, but just that I hope the work will go on.

Dr. Dowden: A question is suggested whether 40,000*l.* was enough to do it.

Mr. Ross: That was also taken up. They talk of Holyrood, what is standing, being a portion of the nave, and that the transepts and the chancel have entirely disappeared. Yes, 40,000*l.* will put the fabric wind and watertight, and probably something more, but it will not build the entirely vanished part.

Dr. Dowden: There is no proposal to that effect?

Mr. Ross: No.

Dr. Dowden: The primal object being a chapel for the chapter of the Knights of the Thistle, the rest of the building does not require to be considered.

Professor Cooper: The 40,000*l.* means simply the making it wind and watertight, and the furniture and decorations must come some other way?

Mr. Ross: Yes, they will have to be provided otherwise.

Professor Cooper: It has been said that you will destroy a beautiful ruin. I do not think it is beautiful in its present condition. It always strikes me as one of the most dismal and sad places to be seen at present. And while there is a sadness in some other churches, such as at Melrose and Dryburgh, there is also a great deal of beauty, though we cannot bring them to any use. But this is to restore a church which has been used long after the Reformation. It is disgraceful that there should not be a chapel royal in Scotland that the King and his family can use if they were living in the palace. It is a great blot upon us that we have not anything of the kind.

ECCLESIASTICAL DILAPIDATIONS.

AT the diocesan conference of Peterborough the report was submitted of the committee appointed in October 1904 to consider and report on ecclesiastical dilapidations, with special reference to any recent recommendations and suggestions of the Houses of Convocation, the Houses of Laymen, or the Representative Church Council. The committee having carefully considered the suggestions, adopted as the basis of their report the three resolutions which were moved by the Bishop of Oxford, seconded by

the Bishop of St. Albans, and carried in the Upper House on February 22, 1906, as principles upon which they considered that a large amount of practical agreement had been reached as to the direction which amendment of the existing law should take, merely adding a few words to make the meaning more explicit. They thought it wiser to avoid details as far as possible until the draft of a Bill which, by a further resolution, the Upper House directed its committee to prepare, has been submitted for consideration. The resolutions were as follows:—

1. That a periodical inspection of all ecclesiastical property subject to dilapidations should be compulsory, and that such inspection should be made at least every five years.

2. That an annual payment, estimated upon the basis of this periodical survey, be required to be made by all incumbents to some appointed body.

3. That diocesan surveyors be paid by salary and not by fees, such salary to be met by proportional yearly payments from each incumbent.

While considering, however, that the true solution of the difficulties which at present surrounded the question lay in some such alteration of the existing law, the committee could not dismiss from their minds the almost greater difficulties that stood in the way of speedy legislation. They thought it well, therefore, to consider what further improvements seemed possible under the existing law, which might tend to diminish the hardships and difficulties which must occur when buildings were allowed to fall into disrepair.

The following resolutions were to be understood as suggestions in case of undue delay in obtaining fresh legislation on the lines indicated above:—

1. That it is desirable that Sections 12, 22 and 23 of the Dilapidations Act, 1871, relating to the duties of the patron, the rural dean and the archdeacon, be more regularly acted upon.

2. That to this end it is desirable (a) that the attention of patrons should be called to these sections in the Act; (b) that the rural deans should be requested to report to the bishop, through the archdeacons, on the Church property in their deaneries, and that the archdeacons should make a general report to the bishop.

3. That in the opinion of this committee it is advisable that a consultative committee, consisting of members from each of the three archdeaconries, be elected by the Diocesan Conference, or nominated by the bishop, to advise the bishop in difficult cases when called upon by him to do so.

4. That it is desirable that the attention of the clergy should be called to the "Other Benefits Fund" of the Clergy Pensions Institution, which affords facilities for making annual contributions towards future liabilities for dilapidations.

PROFESSOR HERKOMER ON ART STUDIES.

AT the private view of the annual exhibition of the Southampton Art Society Professor Herkomer was present, and he was asked by the President to give a few words of advice to the members. Professor von Herkomer said he had not come prepared for any lecture, and did not think he was going to teach them much. He did not come there as a critic, but as a friend. Their Society was celebrating its coming of age, as the present was the twenty-first annual exhibition. Any society that could hold out twenty-one years had got some stamina, and it was a difficult thing to keep up an annual exhibition, whether it was a small one or a big one like the Royal Academy. Difficulties increased rather than decreased, but he saw signs that they were energetic, and if they looked around they could get professional artists who had had to do with Southampton, and who naturally had a soft spot in their hearts for the place, to send to their exhibition, though they must not forget, as in his case, to invite them. He would most willingly send on another occasion, and they should get together more of the works of those outsiders who formerly belonged to that place, and who would do what they could, he was sure, to give the exhibition a little éclat, if they wanted that. It was a curious thing, but the amateur—he did not use the word as a term of opprobrium—who had just skill enough to paint the scene that he loved in a tangible, somewhat artistic way was a very happy person. The amateur had no responsibility; his career was his own, and if he did not sell his work he could still pay his rent, pay for his living and pay for his children's

education. He could go from subject to subject, and paint what he liked and loved, irrespective of what anyone thought of it. That was a thing the professional was not quite capable of carrying out, he (the speaker) did not care who and what he was. The public saw that he was under the necessity to sell, however much he might love to paint, something that he could not dispose of. That was not to the advantage of the artist or to his happiness, but happy sketchers could sit down where they liked, make their sketch, go home and look at it before they dressed for dinner and after dinner and when they got up in the morning. They could put hours into it, and it always seemed better than it really was. Their President had told them of the advantage of seeing their works on the wall, but if they wanted to know real misery he would recommend them to the professional artist for the first hour or two on hanging day at the Royal Academy, and it was not until after lunch and refreshment that he congratulated himself that his work was not so bad as he thought it. The speaker regretted his inability to sketch, and said he was brought up in the school of Fred Walker, who was then as much beyond his age as some of the very advanced artists were nowadays. He was a pioneer in his way, and his idea was to make a picture of everything he touched. In painting a picture with a figure in it, the speaker said the figure should be painted first and the landscape should be copied afterwards, the whole thing being evolved together. He congratulated amateurs who had the skill to sketch, because they enlarged their lives, enlarged the pleasures of their lives and their seeing powers, and he hoped it enabled them to see merit in the poor professional all the better. Amateurs—it was a term he did not like, as personally he only knew good, bad and indifferent art, he did not care who had done it—had a charm that they could go on with it, and but for societies like their own they would have very limited possibilities of judging their art. It was well to have their works on a wall, as they looked different to what they did on an easel or in their own studios, and even in the Royal Academy they found that a picture which looked bad when leaning against the wall, the moment it got on the wall it was a different thing altogether. He was glad to see there that they had still a love for England, which was going out as fast as it possibly could. There was a tendency in modern art towards a terrible decadence, and among other things, much work that was sweet and lovable was condemned by a certain cult as namby-pamby. He had seen a collection of pictures lately which he would have taken to be a huge joke, and not to be regarded seriously, if he had not known that the painters had done better work before. He would ask those who lived in that most charmingly artistic town to paint Southampton and its surroundings. There were corners and places in Southampton of which anything could be made. He had been charmed, and it came back fresh to him when he came to see some of the people there. There was no necessity to go so far as Mr. Short's home at Lyndhurst, where he did admirable work, but within three miles of the town he would like to see them paint Southampton. It would be quite interesting, and it would make them look for things that now escaped their eyes. As far as the exhibition was concerned, he was surprised to find where so many did not profess to paint that there was such a very creditable show, and he would urge them to get all the outsiders they could to come in to make the exhibition worthy of being there.

EARLY GREEK PORTRAITS.

THE earliest portrait on record by any great painter was neither of hero, philosopher nor athlete, but of Elpinice, the daughter of Miltiades and the mistress of Polygnotus, who painted her portrait as Laodice, one of the daughters of Priam, in his famous picture representing the "Rape of Cassandra," in the Pæcile at Athens. This picture was executed about 463 B.C., when Elpinice must at least have been thirty-five years of age. Dionysius of Colophon was also a distinguished portrait-painter and celebrated for his excessive finish. Nicephorus Chumnus, the grammarian, describes Apelles and Lysippus as making and painting "zosas eikonas kai pnoes mones kai kineseos apoleipomenas," being likenesses only wanting breath and motion. For one of his portraits of Alexander he received twenty talents of gold (5,000*l.*), which was measured, not counted out to him. He also painted the portraits of Campaspe and Phryne in the character of Venus, taking the face from Campaspe and the nude figure from Phryne. Speaking of

Apelles, Pliny himself relates in his 36th book that "he painted portraits so exact to the life that one of those persons called Metoscopi, who divine events from the features of men, was enabled, on examining his portraits, to foretell the hour of the death of the person represented." And this monstrous story Pliny apparently accepts. At all events, he does not question it. Parrhasius, "the most insolent and arrogant of artists," says Pliny, "painted a portrait of himself and dedicated it in a public temple to Mercury, and though the Athenians had publicly proceeded against Phidias for so doing, they allowed it to Parrhasius, thus plainly showing that the dignity of sculpture was higher than that of painting."



THE FIRE AT THE MERCHANT VENTURERS' COLLEGE.

SIR,—Very inaccurate and misleading accounts of the recent fire at the Merchant Venturers' Technical College, Bristol, having been published by the local Press and also by several of the London newspapers, we shall be glad if you will kindly give publicity to the following facts:—

1. The floors to the whole of the front portion of the building between the great hall and Unity Street (referred to in the early reports of the fire as being of fireproof construction) were in reality entirely of pitch-pine beams and small wood-joists and ceiling fillets supported upon iron girders.

2. There was no fireproof separation between the great hall and the classrooms, &c., above it, these being also constructed with pitch-pine beams, wood-floor joists, &c., as above described.

3. It was only at the first-floor level that the concrete floor construction was used to any great extent, and in no instance has the fire extended below the fireproof portion of this floor.

4. The floors constructed with timber are entirely burnt out, with the exception of the first floor between the great hall and Unity Street, and this is greatly damaged by fire and falling materials. This floor was erroneously referred to in some of the early published reports of the fire as a fireproof floor.

5. The whole of the fireproof floors are constructed on the "arched concrete" principle and remain intact, and have not only resisted the fire, but also the severe strain of impact from the falling timbers, &c., of the upper floors and roof. Noteworthy instances of the reliability of this form of construction are to be found in the concrete floor over the end gallery of great hall and the side gallery to the hall itself. These floors would be, in the first instance, attacked by the fire from above and piled with falling debris, then as the wooden floors collapsed the soffits would in turn be subject to the fire raging below, and this severe ordeal they safely withstood and remain in place intact.

6. At the east end of the building a large flight of stone stairs is practically destroyed above the first floor, and was perhaps not badly described in the fire officials' report as having "exploded." As a contrast to this, a main flight of stairs at the west end of the building, constructed in concrete, and with stone finishings to treads and risers remains intact from top to bottom. In conclusion, we may say that this building, constructed as it is partly of combustible and partly of fire-resisting materials, forms a splendid object lesson, and affords an excellent testimonial to the efficiency of the latter method of construction.—Yours faithfully,

DENNETT & INGLE.

24 Queen Anne's Gate, London, S.W.:

October 16, 1906.

P.S.—We enclose herewith copy of our engineer's report made after a visit of inspection to the site with a well-known architect, and also cuttings from the original accounts in the Press and corrections of same, so far as they have at present been published.

[Copy.]

October 11, 1906.

Dear Sirs,—By courtesy of the architects to the Merchant Venturers' Society, and the Sun Fire Office, who are at present in charge of the building, I made a thorough examination of these premises recently partially destroyed by fire. I find that (with the exception of a small area on

the lower floor next Unity Street) the floors constructed of wood beams and wood joists supported by iron girders are entirely destroyed, although the girders themselves remain in position, with here and there portions of the charred timber attached to them. The whole of the concrete arching shown on your plans, and described in the specification as having been executed by you under contract in 1882-3, I find is all intact, and its efficiency appears to be in no way impaired. At the first-floor level, which is the highest floor in the building where concrete flooring was used to any great extent, I find that this fireproof separation has effectually answered its purpose, and all the valuable machinery beneath this floor appears to be quite intact, although it may possibly have suffered injury from water. The concrete floor of the great hall is covered with debris from the falling woodwork from floors and roof above, but it has successfully resisted both the heat and the impact from falling materials. The underside of this floor, which consists of a series of concrete arches, shows no sign of damage beyond stains in places where water has percolated through to the ceiling.

On the upper floors, where there are some isolated and comparatively small areas of concrete flooring adjacent to timber constructed floors, I find that the wooden portions are entirely burnt out, but the concrete portions still remain in place, and appear to have suffered no damage, although in these cases the concretework has been exposed to the fire from below as well as from above. A noteworthy instance is a portion of concrete flooring over the end gallery of main hall, which not only remains in place, but by diverting the course of the flames has actually preserved to a great extent a wooden-built gallery immediately beneath it. The side gallery to the great hall, also constructed in concrete, remains intact and supports a considerable quantity of debris; and here, again, although the fire was raging below as well as above, the wood panelling on the wall beneath the gallery remains in a good state of preservation. A large stone staircase at the east end of the great hall is practically destroyed above the first-floor level, but at the west end between the hall and Unity Street a flight of stairs the whole height of the building, constructed in concrete and having stone finishings to risers and treads, appears to have suffered no damage at all. The conclusion I have come to is that, had the fire originated in the basement or ground-floor storeys, the concrete arching would undoubtedly have been the means of isolating it; but starting as it did from the top and immediately above the wooden floors, there was nothing to check its progress until the concrete floor at the lower level was reached. Had the concrete floors been used throughout instead of to such a limited extent a fire of any magnitude would have been quite impossible, as an outbreak could have been easily restricted to that portion of any one floor upon which it might have occurred.

With regard to the statements in the local Press, I have in the absence of the editor of the *Western Daily Press* gone thoroughly into the matter with a member of the editorial staff. He expressed himself as satisfied that the report as to the concrete failures was proved by subsequent events to be incorrect, and he assured me that corrections should be published in early editions of their papers.—Yours faithfully, (Signed) Frank Wilshire (Assoc.M.Inst.C.E.). Messrs. Dennet & Ingle, 24 Queen Anne's Gate, Westminster, S.W.

PRESS NOTICES.

"THE DAILY TELEGRAPH," Wednesday, October 10, 1906.

Original Report.

"The upper floors of the doomed building were ablaze from end to end long before the resistance of the fireproof flooring gave way enough to involve the great hall. At length its vaulted roof became alight, and it suffered extensive damage, though the pinnacled walls—which are of great thickness and solidity—remained standing firm."

Tuesday, October 16, 1906.

Corrected Report.

"A surveyor's examination of the damage done by the destructive fire at the Merchant Venturers' Technical College, Bristol, shows there was no failure of any fireproof floors. It is pointed out by the contractors for the fireproofing work that 'it was only at the first-floor level that the concrete floor construction was adopted to any great extent, and the fire has not, in a single instance, extended below the fireproof portion of this floor. The building,' add Messrs. Denuett & Ingle, 'being constructed

partly of combustible materials and partly of fire-resisting materials, offers an excellent testimonial to the efficiency of the latter method of construction.'"

"THE WESTERN DAILY PRESS," Tuesday, October 9, 1906.

Original Report.

"A strange thing about the whole affair is that the floors were built on the fireproof principle. It was an uncanny sight to see these go before the fierceness of the fire. They seemed to crack, and then in no time burst into a red-hot glow. . . . Above the gallery the carved oak ceiling remained—a sample of that which had gone. The side gallery had outlasted the ordeal wonderfully well, but was piled with wreckage; below it the boards on which are inscribed many names prominent in the college history had also escaped destruction. The range of classrooms between the hall and Unity Street were in ruins. They had had concrete floors surfaced with wood blocks."

"THE WESTERN DAILY PRESS," Friday, October 12, 1906.

Corrected Report.

"We have been asked by a well-known architect to publish the following statement:—

"Some surprising statements in some recent issues of your paper, having reference to the fireproof and concrete floors at the above building, have led me to investigate and ascertain the facts. Amongst the statements I refer to are the following:—(1) In your issue of the 9th inst. you state that 'A strange thing about the whole affair is that the floors were built on the fireproof principle. It was an uncanny sight to see these go before the fierceness of the fire,' &c. &c. (2) In your issue of the 10th inst. you state 'That the range of classrooms between the hall and Unity Street were in ruins. They had had concrete floors surfaced with wood blocks,' &c., &c. (3) In a leading article in your issue of the same date you refer 'to the circumstance that the concrete floors and iron girders collapsed under the excessive heat,' &c., &c. (4) In your issue of to-day you refer to certain holes in the concrete floors. I have made a careful personal investigation of the state of the ruins, and find as follows:—(1) No concrete floors have collapsed, and, so far as I can see (and I was able to see almost the whole of the concrete flooring originally put in), the concrete floors are as good to-day as they were the day they were erected. (2) Wherever concrete floors were adopted the fire was arrested. A remarkable instance of this is the case of the gallery at the back of the great hall. The roof of the hall, being of wood, was entirely destroyed, but above the gallery was a piece of fireproof flooring. This floor is intact. A considerable portion of the ceiling underneath it remains; also the wood gallery underneath this ceiling, although it had the fire playing against it from the hall, had not been destroyed, as it would have been had there been no concrete floor above it. The side gallery, which is of concrete, also formed a complete protection from the falling debris, for even the wood panelling to the side of the hall below it has not been destroyed. No better instance than the present can be afforded of the value of properly constructed fireproof floors. It is only to be regretted that these were used to a comparatively limited extent throughout the building. (The row of classrooms you refer to in the quotation above had wood-joisted floors.) I wish to clearly explain my objects in writing to you thus. I was not architect for the building, and have no connection with it whatever, but from a professional point of view I am naturally interested in the subject of fireproof floor construction, and regard it as unfortunate that the public should have a wrong impression as to its practical value. Also I feel strongly that those who were responsible for the construction of the building should receive fair play, and I consider it is due to them that you should make an early correction of the statements to which I have referred above, and am quite certain that you will be only too happy to do this. I may mention that what I think perhaps misled your reporters may have been the fact that on one of the upper floors of the building a number of small pieces of broken concrete are lying. This concrete was no part of the fireproof floor construction, but fell because it was carried merely by wood-joists, which were destroyed."

"THE TIMES," Wednesday, October 10, 1906.

Original Report.

"The fire broke out in the top storey and soon spread to the second floor. The main portion of the building was of pitch-pine, and it burnt with such rapidity that within ten minutes the whole structure was in flames from end to end."

GENERAL.

Mr. G. F. Bodley, R.A., F.S.A., will on October 21 leave for Washington, by the invitation of the Dean and Chapter of the cathedral in that city, to prepare preliminary plans for a new cathedral. The cathedral will, it is stated, be one of the largest in the world, and is to cost between one and two millions sterling.

Messrs. H. Burke, of Toronto; **A. Chase**, of Montreal, and **D. Ewart**, chief architect of the Department of Public Works, have been appointed a jury to pass on the competitive plans for the new Canadian Government Buildings at Ottawa. Prizes of 8,000 dols., 4,000 dols., 2,000 dols. and 1,000 dols. have been offered in this competition, which is open to all Canadian architects.

A Copy of **Raphael's Cardellino Madonna and Child** was offered to St. John's Church, Windermere, on the condition that it should be hung in the church. At a vestry meeting last month it was decided to accept the picture and to apply to the Chancellor of the Diocese for a faculty. The application has since been withdrawn owing to some opposition.

The Cottage Hospital at Crieff, of which we published an illustration a few months back, was opened last week by **Mr. W. Younger**. The architect, **Mr. E. C. Maidman**, of Edinburgh, delivered an address, in the course of which he said that the extras only amounted to 12/.

A Report has been prepared by **Mr. C. Stewart** and **Mr. J. A. Ogg Allan**, architect to the Aberdeen School Board, on a proposed technical college for northern Scotland. The building would cost about 62,000/., while a Fisheries Institute would cost an additional 20,000/. The scheme comprises schools of architecture, engineering and artistic crafts.

Mr. F. W. Dixon, architect, of Manchester and Southport, has accepted the invitation of the Southport Town Council to act as mayor for the coming year.

The Architect for the new County Council schools on the Harwoods estates, Watford, has been requested to provide bath-rooms in the plans. Each of the departments will have a hot and cold-water bath.

At a Meeting of the Liverpool Corporation housing committee last Friday the chairman stated that the Chilean Government had recently sent over to this country to obtain plans of workmen's dwellings. The Chilean Government's representative in London consulted the Local Government Board in the matter, and was referred by them to Liverpool as being the best place from which to take an example. The Consul-General added, "I think this reflects great credit on the city." The Chilean Government intend applying all the moneys subscribed for the relief of victims of the recent earthquakes to the construction of model dwellings for poor people rendered homeless.

The Bishop of Manchester, in the course of his charge to the Bolton Rural Deanery, said:—"The clergyman's study is not the place where parish documents should be preserved. Every church ought to be furnished with a strong fireproof chest, large enough to hold a series of parish records, and I shall not in future sanction the plans of any church which do not show such a safe as part of the original fabric."

The Candidates for the membership of the French Academy of Fine Arts, rendered vacant by the death of **Jules Breton**, are the following painters:—**MM. Chartran**, **Commerre**, **Gervex**, **La Touche**, **Tony Robert-Fleury**, **Raphaël Colin** and **Toudouze**.

At **Westminster Abbey** on Saturday the 542nd anniversary of the opening of the new choir of Westminster Abbey, and of the translation of the remains of **Edward the Confessor** to their present resting-place, was celebrated.

Mr. F. Gorringe Killick, surveyor to the Finsbury Borough Council, has been the recipient of a presentation on behalf of the staff, to celebrate the completion by him of twenty-five years continuous service.

At a County Meeting at Winchester on Monday it was unanimously decided to organise a pageant in or near Winchester in 1908 in aid of the cathedral restoration. **Mr. F. R. Benson** outlined a scheme embracing a period from pagan times to the Civil War, and suggested St. Cross as the most suitable site. Fifteen hundred pounds has already been guaranteed.

M. Henri Bouchot, the director of the department of engravings in the Bibliothèque Nationale, Paris, died a few days ago. In addition to special and descriptive catalogues, he wrote volumes on Callot, Clouet and other artists.

The Westminster Library Committee have instructed **Mr. J. Murray**, architect, to report on the suitability of **Caxton Hall** to serve as a central reference library. It is also desired to transfer to it the branch library in **Great Smith Street**.

An Exhibition of Paintings by Russian artists in the **Grand Palais, Paris**, was opened on Monday by **M. Fallières**.

The Royal Society of British Artists on Monday elected **Mr. Louis Grier** and **Mr. Edwin Noble** as members. There were sixty-six candidates.

A Bronze Statue erected in the **Elder Park, Govan**, by the inhabitants to the memory of the late **Mrs. John Elder, LL.D.**, who was a life-long benefactress to the community, has been unveiled. It is the work of **Mr. A. McFarlane Shannan, A.R.S.A.** It shows the lady in a sitting posture in a meditative mood and wearing the academic robes of a Doctor of Laws. It stands upon a pedestal of dark grey Scotch granite.

Mr. Colson, in a report on **St. Mary's Church, Cowes**, expressed the opinion that the church is in a serious condition, and that something must speedily be done to avoid disaster. He recommended the shoring of the galleries till permanent work could be done. In a further letter the architect recommended the closing of the galleries. The vicar says that the galleries have been closed in accordance with the advice given, but he believes the church is in a safer condition than it was years ago. What he fears is not that the church will suddenly collapse, but that perhaps a piece of brick might fall upon some one during a service and cause a panic. It has been decided to call in the opinion of another architect.

At the Autumn Meeting of the Association of Municipal Corporations, which will be held in London on Friday, the Lord Mayor of Manchester will submit resolutions to the following effect:—(1) "That Parliamentary powers should be conferred on Town Councils and other local authorities to enable them to control, by means of town extension building plans, the laying-out of all land within the boundaries of the towns, or which may hereafter be incorporated." (2) "That it is desirable that some central authority should be empowered to confer with local authorities in regard to the plans for contemplated building upon the areas between contiguous towns." He will also move:—"That the proceedings of the conference held in Manchester on October 11, 1906, meet with the approval and concurrence of this Association, and that the same be referred to the Council with a view to their taking action."

In the Manchester Municipal School of Art the number of individual students enrolled for the session 1905-6 was 883 (472 men and 411 women), including 185 elementary school teachers attending the new course of drawing on Saturday mornings. Of the enrolments 410 are day and 473 evening students. In the preceding session the numbers were respectively 221 day and 446 evening students. The extension of the school on the plot of land at the south-west corner in **Ormond Street** has now been completed, making better provision for drawing from the life and in architecture. The annexe will shortly be opened by the Lord Mayor.

A Competition was recently organised in South Africa to obtain designs for a memorial to the men of Rand regiments who fell during the late war. The selection committee, the technical advisers of which were **Messrs. Medley and Watson**, nominated by the Transvaal Institute of Architects, set apart six of the designs sent in for the memorial, but could not recommend the adoption of any of the designs submitted owing to the estimated cost for the completion of the work being in excess of the limits laid down in the competition. It was recommended, however, that the authors of three of the designs should be asked to justify their estimates, and in the event of their being able to do this to prepare more elaborate drawings and submit designs in detail. Should they fail to do so it was suggested that the competition should again be thrown open according to the stipulations to be drawn up under professional advice.

Messrs. Simpson & Wilson, of Glasgow, have been appointed engineers for the works of preservation of the **Auld Brig, Ayr**. An archæological expert will aid them.

The Alloa Municipal Buildings were partly destroyed by fire on Monday night.

The Opening Meeting of the session of the Auctioneers Institute will be held at 34 Russell Square on Wednesday, October 31, at 7.30, when the president, **Mr. Henry D. Buckland**, will deliver the inaugural address.

The Architect.

THE WEEK.

It is not often that there are imitators of Mr. CARNEGIE in the towns which he has enriched with libraries. It is therefore imperative to put on record an instance where a rival has been discovered. Mr. CARNEGIE promised to give the town of Worthing 5,000*l.* for the erection of a free library, and when it was found that the estimated cost was 5,500*l.* he increased his gift to that extent. When that fact was announced, an anonymous benefactor offered, through a firm of local solicitors, to provide the whole cost of erecting an art gallery and museum for the town upon the following conditions:—"That the plans and estimates for the building were approved by the donor; that the building should be erected simultaneously with the free library, and that it should never be opened on Sundays." It is needless to say that the Town Council gladly accepted the offer. The condition by which the gallery must be closed on Sundays will not be approved by all visitors to the watering-place. There, as elsewhere, rain appears to be under no command about ceasing on Sundays, and it would be an advantage to be able to look at pictures and collections in a museum rather than to be imprisoned in confined lodgings.

We referred last week to the proposals of the Building Act committee of the London County Council relating to an alteration of the Tribunal of Appeal and the remuneration by salary of district surveyors. A later report of the committee supplies more information. In 1904 it was resolved that provision should be made in the next Bill for increasing the number of members of the Tribunal of Appeal from three to five, for one member to be appointed by the Council, but not to be a member of the Council, and for the fifth to be a barrister of not less than ten years' standing, to be chosen by the other four, and to act as chairman of the Tribunal; also "that no architect or surveyor practising in London shall be eligible for membership of the Tribunal, and that the powers of the Tribunal shall be restricted to the limitations of the section under which the appeal is made." The part of the Bill containing the proposals was, however, withdrawn. The Building Act committee have, since the recent decision respecting the general line of buildings, come to the conclusion "that the interests of the general public cannot be considered to be sufficiently safeguarded by a Tribunal consisting of three members, two of whom are appointed by the professional bodies whose interests are closely connected with those of the owners of land and property, and this objection is intensified when, as is now the case, the persons appointed by the professional bodies are architects and surveyors in active practice." Several proposals have been considered by the committee, one being that all appeals should go to a county court judge or judge of the High Court sitting with two professional assessors or advisers, or should be settled by arbitration. The committee hope the Council will deal with the subject without delay. It is also recommended that legislation concerning the payment by salaries of district surveyors should be sought as soon as possible.

THE Congested Districts Board for Ireland are about to appoint several clerks of works and land surveyors in connection with the rearrangement of estates and the execution of land improvement works. Selected candidates for the position of clerk of works will have to go through an examination. But no one will be nominated who has not engineering qualifications, except those

who can show that they have had practical experience in land surveying, mapping, levelling and execution of land improvement works. Those who are selected after examination possessing engineering qualifications, and who have been for at least three years engaged at the practice of their profession, will be offered salaries commencing at 150*l.*, rising by annual increments of 6*l.* to 180*l.*, with allowance for subsistence when absent on duty outside a ten-mile radius from headquarters, with a bicycle allowance of 30*s.* per month. Candidates may also be selected after examination without engineering qualifications, but who have had practical experience in land surveying, &c., as above, and those who have engineering qualifications, but who have not been engaged for three years in the practice of their profession, will be offered salaries commencing at 120*l.*, rising by annual increments of 6*l.* to 150*l.*, with a subsistence allowance when absent from headquarters, and a bicycle allowance. The age of candidates is not to exceed forty-five years. The land surveyors are to be competent for fieldwork and for mapping accurately and neatly as well as computing areas. A limited number of applicants will be selected for examination, and if they pass will be offered a salary commencing at 120*l.*, with annual increments of 10*l.* to 180*l.*, together with specified allowances. A limited number of candidates who have not had experience in fieldwork, but who from their examination show that they possess sufficient theoretical knowledge to be readily trained as surveyors, will be offered salaries commencing at 90*l.*, rising by annual increments of 6*l.* to 120*l.* All applications to be sent prior to the 30th inst., and surveyors' applications should be accompanied by specimens of draughtsmanship.

WHEN we find an ancient city like Coventry is forced to build a row of shops on the ground storey of the proposed municipal buildings in order to meet an outlay of 30,000*l.*, the builders of the Capitol at Harrisburg, in the State of Pennsylvania, must be envied, for the expenditure has been about 13,000,000 dols. The sum granted to meet the cost was 4,000,000 dols. But when American buildings are in progress a vast number of improvements appear to be required. The wainscoting, wooden mantels, &c., have amounted to 890,000 dols., the marble mantels 278,000 dols., the parquet flooring 140,000 dols., and an eighth floor cost 303,693 dols. In fact, the extra floor has cost double the sum required for the proposed Coventry town hall. The architect has received 235,000 dols., and there is still a sum of 104,585 dols. owing to him. Mr. ABBEY, R.A., is to receive 222,887 dols. for mural art painting. The cheapest work connected with the building has been the sculptor's, for he will have to give thirty-two colossal figures and groups for 100,000 dols.

THERE is such a supply of technical ability in the market, we suppose public bodies consider they have a right to take advantage of it by paying for it on terms which a few years ago would be considered absurd. Among the properties possessed by the Glasgow Corporation is one known as the Riddrie estate. It is proposed to utilise the land as sites for small self-contained dwellings, having from three to five apartments. For the laying out of the estate the Corporation offered a premium of 50*l.* It is quite possible that with so modest a temptation several clever men would enter into the contest. But would it be worthy of so important a city as Glasgow to seek for skilled labour on such terms? It was proposed to increase the reward by offering 100*l.* as a first premium. But that was considered to be too much extravagance, and eventually the premiums were fixed at 75*l.*, 50*l.* and 25*l.* It is to be hoped the names of the unsuccessful competitors will not be known, for the failure to carry off a prize of 25*l.* would not enhance a man's reputation in Glasgow.

MANCHESTER CATHEDRAL.*

IF considered historically there is a vast difference between St. Davids Cathedral, which we have represented by numerous plates, and Manchester Cathedral, which we begin to illustrate. One goes back to the sixth century, and some would say to a still earlier period, while the church at Manchester is no older than the fifteenth century, and was not constituted a cathedral until 1847. The district of St. Davids has been little altered during 1,000 years. There are so few inhabitants, an episcopal residence is not to be found near the cathedral. The city of Manchester of to-day is unlike the town of sixty years ago, and we need hardly add bears no resemblance to the Manchester of 1422, when a royal license was given to found a collegiate church.

It is remarkable that St. Davids, although so remote, should occupy a more important position in the Church history of England than Manchester. The Romans do not appear to have ventured as far as that part of southern Wales which became known as Menevia. Manchester, on the contrary, was a Roman station, and the early Roman missionary PAULINUS visited the district. Saxons and Danes fought and lived there. In course of time it was sufficiently recognised to be entered in Domesday Book. There it is recorded that King EDWARD held Salford and Radeclive. It is added:—"The church of Saint Mary and the church of Saint Michael held in Mamecestre I. carucate of land free from all customs but the geld." It is generally supposed that the cathedral stands on the site of the ancient church of St. Mary. But the whereabouts of the church of St. Michael cannot be ascertained. The manor was given by WILLIAM I. to ROGER DE POICTIERS. Afterwards it was granted to the GRESLIES, and subsequently the DE LA WARRES and the WESTS possessed it. In 1373 THOMAS DE LA WARRE, who was a priest, became the heir to the manor. In 1422 he was able, with the assent of the parishioners, to obtain a license from the king to found a collegiate church. The members were to consist of one warden, eight fellows, four clerks and six choristers. The subject of such institutions has not been sufficiently investigated. A collegium, apparently, was not under such strict rules as a monastery. It is possible that the members devoted themselves to theological studies and to the education of candidates for the priesthood. According to tradition St. Mary's Church was a structure of timber, and in that case the collegiate church which we now see must have appeared to the people as the beginning of a new era. More recent investigations have, however, shown that there were three stone churches on the site, one of which may have been erected in the eighth century. Manchester then formed a parish in the diocese of Coventry and Lichfield, and afterwards it became part of the diocese of Chester. If we can believe the statement of FULLER, the college and church were founded in return for a permission to marry, which THOMAS DE LA WARRE obtained from the Pope.

The founder would no doubt pay for the erection of the building. The church was, however, remarkable for the number of its chantries, and we may therefore suppose that the STANLEYS, TRAFFORDS, RADCLIFFES, and other families in the neighbouring districts also contributed towards its erection. The first warden appointed was JOHN HUNTINGDON, who held office for thirty-seven years. He was buried in a vault which he had constructed beneath the high altar. Above the vault was placed a stone slab, in which a monumental brass was inserted representing the warden in vestments. From his mouth appeared a scroll with the words "Domine dilexi decorem domus tue." It is therefore supposed that HUNTINGDON directed the erection of the church, or of the greater part of the building. The second warden was JOHN BOTH, who was deprived of his office in 1465

by EDWARD IV. as a punishment for the part he took in the Wars of the Roses. He was succeeded by RALPH LANGLEY, JAMES STANLEY I. and JAMES STANLEY II. During the tenure of the last several additions were made to the building. In the course of the sixteenth century the manor passed from the DE LA WARRES to the WESTS. GEORGE WEST, a son of Sir THOMAS WEST, was warden until 1535. That was an ominous year, for HENRY VIII. then assumed the position of Head of the Church of England. GEORGE COLLYER was the next warden. But although he would not acknowledge the royal supremacy, he was allowed to retain his office.

In the first year of the reign of EDWARD VI. an Act was passed by which the Manchester College was dissolved. The private chantries were suppressed and inventories taken of all the property belonging to such institutions. On the accession of Queen MARY the college was refounded, the number of fellows and clerks being the same as at first. After MARY came ELIZABETH, who went through the formality of again refounding the college. The standard of theology required for a warden could not have been very high, for the queen appointed JOHN DEE, the astrologer, to the office and he held it during nine years. He was succeeded by RICHARD MURRAY, who also gained notoriety and who had to run away from Manchester in 1636. Amidst such varied officials it was scarcely to be expected that the church or college would receive much care. The buildings were allowed to become dilapidated.

In the contest between the King and Parliament, Lancashire was the scene of many important events. Manchester was on the side of reform. RICHARD HEYRICK was the warden of the college, and being a man of strong will he was able to induce the inhabitants to resist all efforts to gain Manchester for the Royalists. The execution of CHARLES brought him no advantage, for the college was again dissolved. Then he endeavoured with no less enthusiasm to aid in the Restoration. In 1661 the return of CHARLES was celebrated. A body of 360 men in "great gallantie and rich scarffes" went to the collegiate church for a thanksgiving service. Forty boys preceded them "all cloathed in white stufes, plumes of feathers in their hats, blew scarffes, armed with little swords hanging in black belts and short pikes shouldered." The redoubtable Warden HEYRICK delivered a discourse, and the congregation then adjourned to the conduits, which flowed with claret instead of water for the benefit of the king's lieges. In 1688 Manchester had 500 ratepayers, and, according to MACAULAY, "that wonderful emporium, which in population and wealth far surpasses capitals so much renowned as Berlin, Madrid and Lisbon, was then a mean and ill-built market town, containing under 6,000 people." Civil war is not favourable to the preservation of buildings. The college which was attached to the church was so much neglected that HUMPHRY CHETHAM was able to obtain possession of it and to turn it into a library which still exists.

It is not necessary to enumerate the wardens who ruled over the institution during succeeding years. Like most bodies of a similar kind it was difficult to deal with the finances of the collegium. When it was proposed to make Manchester the centre of a new diocese much depended on the revenue which would be available. The Warden and Fellows refused to prepare a return, and the Ecclesiastical Commissioners had to assume that the income was 4,500*l.* The Church Commissioners recommended:—"That the new bishopric of Manchester be forthwith founded and endowed out of the revenues at the disposal of the Ecclesiastical Commissioners for England applicable to episcopal purposes; and that the diocese of Manchester consist of such parts of the deaneries of Kendal and Kirkby-Lonsdale as are in the county of Lancaster, and of the deaneries of Amounderness, Blackburn, Manchester and Leyland and the parish of Leigh, in the deanery of Warrington, all in the same county." Dr. PRINCE LEE, the headmaster of King Edward's Grammar

* See Illustration.

School, Birmingham, was selected to be the first bishop.

It was the custom of the founders of monastic institutions to seek sites near rivers. The collegiate church of Manchester is in such a position. The Irwell of to-day is not pleasant to look upon, for it seems to be nothing more than an outlet for dyeworks. But in the fifteenth century it may have resembled an ordinary stream. Whatever were the advantages of the place in those days, the site is not adapted for the display of the cathedral of such a city as Manchester. If in laying out the neighbouring streets some attention had been given to the cathedral as a central object, the defects of the site might be minimised. But the building will have to remain as we see it. The style of the time was adopted, for the old church builders wisely avoided imitation of those of preceding periods. When Gothic architecture was revived the Perpendicular style was treated as if it were an unauthorised experiment, and the cathedral of Manchester, in common with many other examples of Late Gothic, was ignored when good people were praising the spirituality of the builders of the earlier pointed styles. In our time we have grown more tolerant, and we can see in the Manchester building an interesting example both of design and planning.

As we have said, the cathedral is remarkable for the number and size of its chapels. There is a lady chapel behind the altar, besides the Derby chapel dedicated to St. JOHN THE BAPTIST, the Jesus chantry, Hulme's chantry, St. Nicholas's chantry, St. George's chantry and St. James's chantry. There is also a chapter-house. It is not impossible that other parts were also intended for private chapels. There is no plan of the building as it originally was laid out, and it is not easy to determine how many alterations were made between 1453 and 1847. Since the church became a cathedral several additions have been allowed. The west, north and south porches are all modern works. A small chapel has been erected as a memorial of Bishop FRASER, and a baptistery, besides several additions to the interior fittings, including an organ case designed by the late Sir GILBERT SCOTT, and the reredos which was designed by Mr. BASIL CHAMPNEYS. The western tower has been rebuilt under the direction of Mr. JOHN HOLDEN; and Mr. CROWTHER, who was connected for many years with the cathedral, reconstructed the greater part of the nave. The result is that the interior of the church presents a series of views to the visitor which under the dim light from the outside city differ from the cold correctness witnessed in so many English cathedrals.

AN OBJECT LESSON IN BUILDING.*

ACCORDING to a Scottish proverb, "a man who builds by the wayside has many masters." It was a fragment of ancient wisdom which much impressed THOMAS CARLYLE, who, as the son of a working mason, knew something about construction. Expressed in more modern words, it means that the firm who erects framed buildings is sure to have a large number of critics every day. In the cities of the United States many opportunities for scrutiny and judging are afforded. But it cannot be said we are familiar with the experiments in London. Hence it is that passers-by have taken so much interest in the new offices of the *Morning Post* in the Strand, which the Waring-White Building Company have in hand.

People who are not acquainted with the history of construction may declare in the dogmatic way which characterises men who judge without evidence that the framework is a mere American device, and is wanting in the qualities which from time immemorial have belonged to English building. It may be granted that frame, skeleton or cage construction has of late

years obtained extraordinary favour in America, and that American architects, engineers and contractors have welcomed the system because it enables them to erect the new variety of buildings which are adapted to the circumstances of the time, allowing a large number of people to be accommodated on a limited area of land in streets, as well as displaying expedition in construction combined with safety at a rate which is without precedent. But while granting so much it cannot be denied that framed construction had its origin in England, and the most remarkable buildings we see in New York or Chicago are only masterly developments of a system which a century ago was utilised for the erection of cotton mills in Lancashire.

BOULTON and WATT, whose names are connected with the steam-engine, produced cast-iron columns and beams which were used as early as 1801 for a mill measuring 140 feet in length, 42 feet in width and seven storeys high. Each of the floors had an area of 648 square yards. There were three iron beams used in spanning the width of 42 feet; they rested on two rows of columns, and the girders were 9 feet apart. The ends rested on the walls, and therefore the arrangement could not be considered as forming an independent skeleton or cage such as we see in the illustration. Various improvements in the character of the girders and the elements of the iron were introduced, in the hope of obtaining greater tensile strength. But it was not until wrought-iron was substituted for cast-iron—about 1844, or ten years before the first beam was rolled in the United States—that opportunities were fully afforded for the progress of which the latest exemplifications are seen in American office buildings.

FAIRBAIRN, to whom so much is owing, must have had an independent cage before his mental vision, for he says:—"In every building, whether intended for a factory which contains machinery, a magazine, a warehouse for sustaining heavy weights, or for a public edifice, one important consideration presents itself, namely, a direct combination of all the parts." As was not unusual at the time, he referred to nature for confirmation of his views about obtaining the greatest possible strength with the least expenditure of material. FAIRBAIRN was accustomed to erect mills which had to sustain not only machinery in motion, but the impact of falling weights. It was therefore allowable for him to regard the walls as an essential part of the system. In some of his later mills, however, he introduced tie-rods in the walls which were keyed to the end of each beam, in order to bind the whole in one mass. But the value of a direct combination of all the parts of a structure independently of ordinary walling was exemplified in the most emphatic manner in the Hyde Park Exhibition of 1851 and in the Crystal Palace at Sydenham. Both demonstrated the stability of skeleton construction for a variety of purposes, although cast-iron, rather than wrought-iron or steel, had to be employed in them. One of those structures was removed before the length of its endurance could be tested, but the other has survived after fifty years' wear and tear. While it stands before us it is absurd for anyone to have a prejudice against frame construction on the supposition that it is an American "notion."

It is impossible for builders in the habit of passing along the Strand not to be struck with some of the peculiarities which are to be witnessed in the framing of the offices of the *Morning Post*. There is little or none of the scaffolding and other temporary aids for building which the Americans aptly call "false-work." Under the new system the scaffolder's occupation is gone. The steel framing is erected without difficulty, and it is quickly utilised not only as a flooring for workmen, but to support the large cranes which enable materials to be hoisted and placed in or near the positions for which they are required. There is no mystery or concealment by hoardings, and the ubiquitous "man in the street" cannot fail to note every stage

* See Illustration.

of progress, as it is directed by a masterly organisation. He can infer from the varying depths of the horizontal beams where the heaviest loads will have to be borne, and by degrees realises the position of the staircases as well as of the different rooms. If he were allowed admission to the premises, he could also observe the care taken in uniting the different parts of the framework. If it were exposed to the power of some extraordinary storm or other unusual strain, he would find that the elements of the skeleton were as capable to resist the force as any railway bridge over a road or river. Our illustration is sufficient to show by the sizes of the different parts that provision has been made to withstand all contingencies likely to affect such a building. The continuity of the uprights through the principal floors is one guarantee of strength, and evidently great care has been taken to distribute the loads equably.

The exterior walls in every metropolitan building have to comply with the regulations of the official by-laws. At one time in the United States the walls were designed to carry a great part of the weight of the steelwork, just as in the old Lancashire mills. But in the latest examples the metal columns, or, as they should be called, the upright beams, really support the weight, and the exterior masonry becomes, as it were, an envelope protecting the interior, or, as RUSKIN would say, a veil. By this arrangement, not only ornamental masonry can be seen without any fear that it will suffer by fractures or settlements through loads, but brickwork and terra-cotta are used in America of a finer character than was formerly considered desirable. If, as RUSKIN says, "a wall surface is to an architect simply what a white canvas is to a painter," then it ought to be secured against alterations of the surface, and this can be done most effectually when it is relieved of duties which can be as well or better performed by materials of a different kind.

American authorities have been very exacting about the construction of floors in framed buildings. Many of the architects of the United States consider that the strength demanded and the tests which have to be applied are beyond ordinary requirements. For the offices of the *Morning Post* Messrs. MEWES & DAVIS have adopted the widely established Columbian system. Although it has been employed in large buildings in England it may not be superfluous to say that the standard Columbian floor consists of a flat slab of concrete reinforced with patent steel-ribbed bars, laid parallel in and completely embedded by the concrete, and extending from support to support. Floors can be constructed in spans up to 20 feet, the size and spacing of the bars and thickness of the concrete required being regulated by the span of the floor and the weight per foot super which has to be carried. The two methods of floor construction most commonly employed in large buildings are the "panelled construction" and "double construction." In the "panelled system" the floors are constructed between and carried by rolled steel joists or girders. The method of construction is as follows:—The necessary centring is first erected between the girders carrying the span of floor, the Columbian bars being suspended between the girders by patent steel stirrups hung over the top flanges of the girders, the length of the leg of the stirrup being regulated so as to allow at least $\frac{3}{4}$ -inch thickness of concrete under the bars. The concrete, which is composed of best Portland cement, crushed furnace clinkers or other aggregate, is then filled in to the requisite thickness and tamped in position; the surface of the floors can be prepared to take any desired finish. The girders are completely encased on sides with solid concrete, and the underside protected by patent concrete slabs secured to bottom flanges of girders with concealed anchors.

In the "double construction" which is used for the offices of the *Morning Post*, the floor is formed the same as in panelled construction, but instead of the joists projecting below the ceiling line, a separate ceiling

is constructed by laying 1-inch bars on the bottom flange of joists and embedding them in $2\frac{1}{2}$ inches thickness of concrete.

As the offices proceed many other interesting features will arise. We have only noticed those which may be considered as almost preliminary. It must, however, strike observers that to do so much within so limited an area in a short time and without any interruption of the traffic testifies to the excellence of the system under which the works are conducted. By having the parts prepared elsewhere and by delivering them neither sooner nor later than was absolutely necessary, confusion has been avoided; the operations of the men were not impeded by materials which were dumped in their way and could not easily be removed. In that manner, as in others, the offices afford a lesson to builders which in London especially was long desired.

HEXHAM ABBEY.

ON the petition of the Rector of Hexham and his church-wardens for leave to erect a nave at Hexham Abbey Church, an inquiry was held before Mr. A. B. Kempe, the Chancellor. Mr. E. W. Hanson appeared for the petitioners and Mr. L. C. Lockhart for the objectors.

The petitioners claimed that the growth of the work of the church made an addition necessary, and that the addition should take the form of a nave. They had decided, on the advice of advisory architects, that its style of architecture should be Decorated.

The following objections were lodged:—

1. Hexham Abbey Church, now the parish church of Hexham, is a great national monument, and should not be altered or added to unless the propriety of the proposed alteration or addition is beyond question.
2. A nave in the design proposed falls far short of being worthy of the present building, and instead of adding to its grandeur and dignity, will detract from them.
3. It is unnecessary to enlarge the church for the purposes of the parish church. There is in the present building space available for sittings more than double those actually used. If enlarged, the building will be too large and unsuitable for the purposes of a parish church.
4. The present scheme has not been fully published either to the parishioners or to the public at large. The report has been issued by the promoters and no adequate opportunity afforded of forming deliberate judgment upon it.
5. The plans referred to in the citation are insufficient to convey a proper idea of the intended building or its effect in conjunction with the existing building. No report on them by the architects has been published, nor have the instructions to the architects been disclosed.
6. No sufficient information as to the finances has been given to the parishioners. The terms of the gift of 15,000*l.* by the late Mr. Thomas Spencer (which it is assumed is now represented by the 17,000*l.* mentioned in the citation) have not been published or any particulars as to its investment or accumulations to the parishioners.
7. Part of the ground proposed to be built upon does not belong to the church, and it has not been shown how that ground and necessary liberties over and affecting adjacent land are proposed to be acquired.
8. Other part of the ground proposed to be built upon is part of a closed burial-ground or churchyard. As the proposed building is not only objectionable but unnecessary, the proposed removal of human remains to make way for it cannot be justified.

At the close of the first day's sitting the Chancellor intimated that he must give the addition, and said the only point for him now to decide was whether the plans submitted were worthy of the abbey.

Mr. Hanson said that Mr. Lockhart had put the promoters of the nave to all the trouble he possibly could, and at the last moment he had not dared to go into the witness-box, and did not produce a single person out of the 8,000 inhabitants of Hexham to support the captious objection, so that his (Mr. Hanson's) task became extremely simple. At the vestry meeting Mr. Lockhart sought to have the question delayed *sine die*, which meant that it would be extremely difficult for it to be taken up again. He (Mr. Hanson) had shown that need for increased accommodation was overwhelming, and that the best way to carry it out was to build a nave. Mr. Lockhart had brought no evidence to show that the nave would not be a glorious and worthy addition to the abbey, or that the promoters had not done everything

that care and forethought could suggest; or that the proposed nave was wrong in size or could be improved in detail. He simply wanted the work delayed until something more worthy could be produced; he simply said, "Because I say so, let it be adjourned *sine die*." Mr. Lockhart stood absolutely alone; he was not backed up by anybody. He had put the committee and the funds to considerable expense, and he asked that Mr. Lockhart should be condemned in such costs as his opposition had incurred.

Mr. Lockhart said that he and those associated with him thought they had taken the only course which anybody who cared in the least for the future of their grand old abbey and for its condition as the parish church could have taken. He suggested that the question of building a nave should be deferred until the funds were ample to justify them in doing it in the most worthy manner possible; they were not justified in going forward with such a scheme as that which was submitted. It was proposed to erect a nave upon lines very inferior to the scheme as it ought to be. It was said that if no nave was made and the choir was to remain as it was, increased accommodation could not be provided until the rood-screen was removed and the space for sitting extended westward. The idea of removing the rood-screen was a very simple idea. For temporary purposes—purposes which might last for a considerable time—the removal of the rood-screen would supply the need. The committee wanted the design to be Early English, and so instructed Mr. Temple Moore. The matter was referred to arbitration really—to three advisory architects, one of whom was the representative of Mr. Moore, whose preference was for Decorated. He did not insinuate that Mr. Scott, advisory architect, was an advocate for Mr. Temple Moore; Mr. Scott was a perfectly honourable gentleman. The committee, having expressed a preference for an Early English style, asked the architects to advise them as to the best style of architecture to be adopted. The architects did not like Mr. Moore's Early English design, and two of them preferred Mr. Hodges's Perpendicular; and they agreed it would be best not to lay down any style, but to choose a good architect and leave it to him. Mr. Moore himself preferred the Decorated. Mr. Moore submitted his plans, in the Decorated style, to the architects, and certain modifications were suggested. If plans had been presented showing an Early English design they would not have had this difficulty.

The Chancellor: You suggest that the nave should be Early English?

Mr. Lockhart: I do.

The Chancellor: Why?

Mr. Lockhart: Because it would harmonise with the existing building.

The Chancellor: Are you a professional architect?

Mr. Lockhart said he was not, but he had thought a good deal about these matters. Mr. Lockhart was proceeding to suggest that certain details in the design were wrong, when the Chancellor said Mr. Lockhart had not asked the architects about them. If two authorities disagreed there was a conflict in view, but Mr. Lockhart's expression was merely criticism. He would assume that Mr. Lockhart had not asked the questions because he took it that the architects would have said that the details were right.

Mr. Lockhart assented.

The Chancellor, in giving judgment, said he must take it that Mr. Lockhart was the only gentleman who objected, since he alone had filed objections, and none of the others had appeared. Dealing with the question before the Vestry, he said the Vestry had to decide the question whether or not there should be a nave, and the meeting had decided that there should be. There did not seem to be any object to be served by sending back the designs to the Vestry, or by issuing a fresh citation calling upon the parishioners to show cause why improvements should not have been made in the original plans. He had the designs finally approved by the architect and by the advisory architects, and he was in a position to deal with the matter. He had a concurrence of authority in favour of the design; the Vestry had approved of the principle of building a nave; the funds were in hand for the express purpose; and the trustees of the fund had approved of the design, and when the citation was issued only one gentleman (Mr. Lockhart) appeared in opposition. He had also evidence that the church was not sufficiently large for the requirements of the growing town of Hexham. The abbey church was a great national monument, and they must not forget that, or that the public had an interest in it. But he was at a loss to see that the

authorities had not done all they possibly could to meet the matter in that light. It was not proposed to disfigure or alter the existing building; it was only proposed to add a nave, which was needed in order that the people might gather and worship. The architects were satisfied that the design was worthy. How could he possibly, in the absence of any evidence to the contrary, do anything but accept what they said? Anything that had been said as to the unsuitability of the arrangements was only Mr. Lockhart's opinion. If he accepted Mr. Lockhart's view, he must say that the whole thing must be discussed over again, and that the question must be thoroughly threshed out as to whether the design should not be Early English. What right had he to do that? He must accept the evidence of the architects that the design was right. As to the question of funds, it was a common experience that, once a faculty was obtained and the work begun, funds were forthcoming. Before the faculty could be issued, he would have to be satisfied that the land, legally speaking, was in a proper position. That could be done in Chambers. He decreed that the faculty should be issued as modified by the plans approved by the architects, and that the actual faculty should not be issued until the point about the land was settled.

The Chancellor ordered that the costs, so far as the registrar should find them to have been increased by the opposition should be paid by Mr. Lockhart.

THE CHAPEL OF HOLYROOD.

ANY discussion of this subject must, of course, proceed upon the understanding, writes Professor Baldwin Brown in the *Glasgow Herald*, that the decision on the question at issue is by no means in the hands of the public. The decision rests with the Crown, and the most satisfactory feature of the present situation is that the Crown will be advised in this matter by gentlemen whose taste and piety and knowledge of ancient work mark them out as especially qualified for the delicate task before them. If members of the public are expressing their opinions on the subject, this is surely justifiable in view of the importance of the building under discussion, and of the fact that it offers, as it were, a test case, on which the whole question of the proper treatment of our Mediæval buildings can be argued.

The idea of "restoration" naturally appeals to the public, because the word seems to promise the recovery of a work of beauty and interest that has been lost. People will even speak of the new work of the restorer being a facsimile of the old. This is a delusion against which those in charge of old fabrics have often been warned. The new work may bear a certain specious resemblance in general lines to the old, but old work cannot be reproduced. Materials, processes, appliances, tools, the training and the habits of workmen are in modern times unlike what they were of old, and still more dissimilar is the present relation of designer to craftsman to that prevailing in Mediæval days. The result is that the whole spirit of the work of the two periods must necessarily be different. So far from being a facsimile of the old, the new work generally differs from it just in those qualities of freedom of treatment and beauty of surface which make old work most precious. Readers of Ruskin and of William Morris should be familiar with this doctrine, which has been preached with effect both at home and abroad for the last thirty years. As the writer just mentioned has said, "The life of the whole, that spirit which is given only by the hand and eye of the workman, can never be recalled. Another spirit may be given by another time, and it is then a new building; but the spirit of the dead workman cannot be summoned up and commanded to direct other hands and other thoughts." This is coming to be so well understood that not long ago Dr. Clemen, of Bonn, the official conservator-in-chief of monuments for the Rhineland, who has more fine Mediæval buildings under his care than any other man in Europe, stated that he and his colleagues were agreed that restoration work must everywhere be confined within narrower and narrower limits, and were coming to occupy the same position as the English anti-restorationists, whose prophet, as everyone knows, was the late William Morris.

New architectural work should give over masquerading as old and frankly confess itself for what it is. This is surely more honourable for the artist himself, as it allows him to express his own individuality instead of confining himself to a slavish copying of the past. Such new work

should be kept quite apart from the old; while for this last there is nothing to be done but to take the most studied care in its preservation, so as to maintain what has actually come down to us as far as may be for future generations. This aim of preservation is often alleged as a reason for setting the restorer to work, but if in the process we have destroyed more than we preserve, where is the gain? In the case of work of exceptional delicacy and beauty a covering may be needed, but it is best to make this look simply and frankly what it is and not to give it a sham artistic aspect. In this present case of Holyrood the part that shows most sign of recent decay is the west front, and this would not be protected by roofing in the nave.

There is a possibility of fanaticism in anti-restoration, and it is well to admit that no absolute hard and fast rule can be laid down. The juxtaposition of new work with old, though in principle it is to be avoided, may sometimes be rendered necessary when there is a clamant demand on the ancient structure for accommodation which in its ruined or truncated condition it cannot meet. Schemes of proposed restoration where this demand does not exist, as was the case at Iona, should be rigidly suppressed. At Holyrood suitable use would no doubt be found for a restored chapel royal. It would be a palace chapel, and a chapel for the Knights of the Thistle, but these considerations are not strong enough to overcome the objections to embarking on the necessarily perilous course of a restoration of the existing nave.

The remains of the once spacious abbey church are exiguous enough, but still present many features, like the lower part of the west front, of great interest and beauty. In the walls and buttresses different periods of work are represented, but the whole is well worthy of the care in preservation which is now bestowed upon it. How much of this walling is strong enough to support a new stone vault is a question more easily asked than answered. One of the evils of restoration, as experience has taught us, is the fact that though we are told at first that all the old work will be left intact, it is found in the end that much of it has had to be replaced by masonry of greater strength, and too often the old work has on its surface been "renewed" to make it harmonise with what is freshly built. The interior of the ruin is at present a place of no particular charm. For one thing it is a graveyard, and for another it is blocked up at the end by a comparatively ugly and modern wall and window. Such as it is, however, it is what time and its successive owners have handed down to us, and as it is it should as far as possible be preserved.

The present lines are not written from the point of view of any special knowledge of the conditions and possibilities which those responsible for advising on the ultimate decision will have before them. A conceivable solution of the problem seems, however, to offer itself in the following direction. The chapel royal had once a choir, doubtless of Norman architecture, as well as transepts. Would it not come within the technical description of a "restoration" of the edifice to build a new choir or a new chapel on the site of the choir, which would allow the modern designer to work with that artistic freedom we desire for him, while as a matter of common sense he conformed to the Mediæval character and associations of the building? Such a chapel might be entered from the present nave through a vestibule that would give the nave a more fitting termination than it has at present, and it could be suitably used for all the purposes contemplated for the restored nave, the vision of which floats so alluringly before the eyes of many who have written and spoken on this interesting theme. The position suggested for the new chapel is, of course, wholly suitable. It was once occupied by part of the original structure, and it holds all the associations and memories of the place.

In conclusion, one cannot help reflecting that to-day in Scotland there must be considerably more than 100,000*l.* in legacies and subscriptions being laid out or in readiness to be spent on schemes of restoration to which there are the serious objections indicated above. What would not this sum of money accomplish were it wisely expended on the rescue and preservation and care of ancient monuments all over the country. Now that the Office of Works is more awake than it used to be to its responsibilities in this matter, and now that it has increased legal powers under the Monuments Act of 1900, the pious donor or testator would be doing the best possible service to the monuments of his fatherland if he would entrust his money to the First Commissioner to be expended in rational and tasteful conservation.

SELBY ABBEY.

THE great fire which burst forth at Selby Abbey soon after midnight on Friday night has caused an irreparable loss. How it arose has yet to be determined. The church was for a long period neglected, but by great exertions a sum was raised which was sufficient to pay for a restoration under the late Sir Gilbert Scott. If the inhabitants of the parish approved of a rate for repairs, much injury could have been prevented. In 1889 there was another appeal by the present President of the Royal Academy for donations to uphold the building. These circumstances should be known, for they may help to explain the indifference of which the destruction of the abbey is the result. They will also suggest that the raising of 50,000*l.* will be difficult if only local aid is counted on. The *Sheffield Daily Telegraph* gives the evidence of some of the spectators of the conflagration as follows:—

Practically nothing but the walls has been left by the fire. The registers were happily thought of in time, and a few unimportant things were carried out. There was great excitement for the rescue of the font cover.

It was thought that the fire would confine itself to the east end in which it had broken out. The great square Norman tower, now all black from the fire, divides the church in two. People hoped the tower would bar the progress of the flames in the roof. But nothing could stop them. They roared and rushed everywhere like fiends which delighted in their work of destruction.

Says an eye-witness:—"How awful the interior looked in its bloody haze. Lurid lines were creeping, now running, along the roof towards us. The ceiling was falling. Down came the burning red-hot planks with a crash. Steam, smoke and fire—what a sight.

"Someone said:—'The font; let's save the font.' They could not uproot the old Saxon font, but they strained all their energies to save the cover suspended over it. A policeman mounted a ladder and tried to cut through the wire supporting it. His knife was not strong enough. Someone fetched a big pair of scissors, but they were no better, and back went the policeman to hack through the wire with his knife. Another man hurried away to a hotel and returned with some wire-cutters. With these the wire was soon cut through, and so the font cover was saved. This is characteristic of efforts that were made throughout the night; but church fittings are not so easily moved, and workers were overawed by the terrible spectacle of the burning abbey."

Said one man who was early on the scene:—"The flames roared through the building as they would through a great funnel. Everything went like tinder. Nothing could stop it. Great oak beams burnt as freely as matches. It was a magnificent as well as an awful sight. The lead roof glowed like a furnace as it melted. Everything seemed to favour the fire. It was a beautifully clear starlight night, frosty, with a fairly strong wind blowing and carrying the flames right along the roof. When the whole place was ablaze it was the sight of a lifetime."

The fire broke out about midnight in the Latham chapel, in which only a few weeks ago a new four-manual organ had been erected at a cost of 1,200*l.* The cause of the fire is a mystery, but it is assumed that the organ had something to do with it. The apparatus for blowing the organ (a Kinetic blower with gas-engine) had not been working very well, and men had been engaged upon it on Friday. They left the church, apparently perfectly secure, about ten o'clock at night. Two hours later the fire was discovered by the organist, who saw the flames through the windows from his house. The organ was burnt to a cinder.

Fire brigades were summoned from Leeds and York to help the Selby brigade. They arrived with every possible speed, so much so that one of the Leeds horses fell dead as soon as it reached the river bank, where the engines took up positions. The brigades worked their hardest throughout the night. The members were often exposed to great danger from falling beams as they tried to arrest the progress of the flames. But they were no match for the fire. Their jets of water hissed in the fire, but the flames swept on until every vestige of roof had gone.

It was the work of the brigades, however, which saved some of the beautiful stained-glass windows and the ancient oak doors. The magnificent west window has hardly been damaged at all, and even the east window does not appear to be so much injured as might have been expected. Some of the glass in this window was placed there in the early part of the fourteenth century.

But the beautiful old screen, the magnificent choir stall

and the reredos have been completely consumed. It is only about twelve years ago that the choir was restored at a cost of about 14,000*l.*, under the direction of Mr. J. Oldrid Scott. Thirty years earlier that gentleman's father, the late Sir Gilbert Scott, carried out the restoration of the nave.

There were eight bells in the tower. Some of them partially melted owing to the intense heat. Three of them fell to the floor of the church with a crash as the flames ate their way through the great oak beams on which they were hung. Others came down later in the day.

The scorched clock stopped at seven minutes past two. It worked steadily on for two hours, ringing out the quarters as they passed, until the flames climbed up to its lofty home and silenced it for ever. It was provided only a few years ago at a cost of 400*l.*

On the Sunday the usual morning service was held in Dr. Jonathan Hutchinson's Educational Museum. The vicar (Rev. Maurice Parkin) announced that he had received numerous letters and telegrams of sympathy, including messages from the Archbishop of York and the Bishop of Sheffield. In many of the messages the loss was spoken of as being irreparable, but he rejoiced to say that their loss was not irreparable. The old part of the abbey, the massive stonework, stood as firmly and securely at this moment as it ever stood. The abbey could be restored, and would be restored if God spared them to do the work. He hoped they would begin at once the restoration of at least the nave, so that within reasonable time he hoped they might find themselves back worshipping in the abbey. "The fire, I don't believe, has done any serious damage to the nave," he continued; "certainly not to the fabric. The middle roof has gone, but the side roof remains, but it is a matter for work of proceeding with the nave at once. The sacristy and the scriptorium over it are untouched by fire. The registers and all the documents belonging to the parish were perfectly safe and were not destroyed. The east window, I don't believe, has suffered beyond repair. I have been looking this morning, and in spite of the weather which has got into the building during the past night, the mullions of the east window are all secure, and it seems as if the east window might very well be spared to us, and that really is the glory of the abbey. So that which is spared to us is the very old and very ancient part of the abbey, which is so dear and sacred to us all as being the foundation of religion in this place." The abbey was insured for 10,000*l.*, and the new organ for 1,000*l.*

At nearly all the places of worship in the town sympathetic reference was made to the great catastrophe.

ELY CATHEDRAL.

IN the course of the ceremonial celebration of the octocentenary at Ely, the Dean read a commemoration of ancient and modern benefactors as follows:—Now let us thankfully commemorate before Almighty God all our pious founders and benefactors, by whose noble liberality the glory of God has been advanced and this place has become a special home of Christian faith and worship. And here, first, we must name Etheldreda, daughter of Anna, king of the East Angles, and wife of Egfrith, king of Northumbria, who founded a religious house here about A.D. 673, became its first abbess, and bestowed on it the inheritance which she received from her father and the dowry which she derived from her first husband Tondbert, the Prince of the South Gyrvi. Next we would commemorate King Edgar, who, acting under the advice and influence of St. Dunstan and of Æthelwold, Bishop of Winchester, granted afresh by his royal charter the possessions and privileges given by St. Etheldreda, which had been alienated and lost to the Church for 100 years, and conferred other marks of his favour and devotion. Let us name also the Bishop Æthelwold, by whose labours and liberality, in conjunction with the Abbot Brihtnoth, the monastery was restored and newly constituted under the Benedictine rule. During the latter years of the Saxon kingdom, we must commemorate a long series of benefactors, among whom we may especially name Wolstan of Dalham, Godwin Lord of Hoo, Earl Brihtnoth, Athelstan and Alfwyn, Bishops of Elmham, and lastly King Edward the Confessor, who, as related in the ancient chronicles (Lib. Eliens. ii. 91), having as an infant been presented by his father and mother on the altar of this church, and as a child having spent some time in the cloister school, when he came to the throne endowed the monastery with various gifts. Hence at the beginning of the twelfth century, when

the Norman church commenced by Abbot Simeon was sufficiently complete to be consecrated in 1106 under its last abbot, and when three years later the bishopric was founded, its first Bishop Herve was able to endow the see of Ely out of the revenues of the monastery and yet leave maintenance for the prior and monks in their common life of prayer and service of charity towards the poor. Our Norman and Plantagenet sovereigns sustained both the see and monastery by charters and gifts; the earlier bishops, Nigel, Longchamp and Eustace, by their liberal aid strengthened the prior and convent to fulfil the design of St. Etheldreda's foundation, and were zealously followed in their good work by many of their successors in the episcopate. In this connection," he continued, "we would especially name Dean Peacock, formerly Lowndean professor of astronomy in the University of Cambridge, through whose energy and under whose guidance the work was begun and a large part of it accomplished; Dean Goodwin, afterwards Bishop of Carlisle, under whom it was continued; and Dean Merivale, author of the 'History of the Romans,' under whom it was completed; Bishop Sparke, Bishop Turton, Canons Selwyn and Edward Sparke, and Francis Hastings, late Duke of Bedford, who made munificent gifts; Henry Styleman le Strange and Thomas Gambier Parry, who freely devoted their skill in the decoration of the roof. Of those still living who took part in the work we may not speak."

MODERN PAINTING.

A LECTURE was given by Professor von Herkomer at Eccles town hall on "The Painter; his status and relation to the public." Speaking of the effect of a sudden success in the work of the young painter, he said the chief danger was that it would mean a slavish following of fashion. Fashion was a foundling of unknown parentage and ought to have been left on the doorstep to perish. It was the cause of the artificial glamour which surrounded the successful artist. When you come near Raphael's Madonna in the Dresden Gallery you are supposed to be in the presence of something supernatural; you must worship and almost pray. To get too close to the work and see how the blessed thing is done is paramount to an act of infamy; to say to your companion "Poor painting" lifts the worshipping gazers from their chairs. Raphael supplied Madonnas just as Millais supplied pictures of little girls with mobcaps—because there was a demand for them. But Millais's ambition, shown in his earlier work, was not to supply the demand of the public, but to overthrow the conventional art then in fashion. Millais was undoubtedly one of the greatest painters of the nineteenth century, his pre-Raphaelite work having put fresh arterial blood into the art of this country. Later his ambition succumbed, perhaps, to the demands of fashion. In recent years there had been a great fashion in everything that was impressionist. Yet there were signs that the pendulum was swinging back. The recently opened exhibition of Holman Hunt's works was attracting large crowds of art lovers, and anything less modern than Holman Hunt's painting could not be imagined. It proved that, after all, there was in the public a kernel which was true, and which always came out right. As to the Royal Academy, Professor Herkomer said he had never been rejected or badly hung. But the general standard was not what it is now. One often wonders what one would have done if fate had put older artists into the present age for a start. He believed he would have done something. But what? He followed a pioneer—Fred Walker. From Fred Walker to Sargent—what a contrast. The two represent the very antithesis of art. Probably he would have been just as enthusiastic a follower of Sargent as he was of Walker. Referring finally to the value of an established name, the lecturer, after describing how pictures were selected for the Royal Academy, said many a man got his work hung because his name was known. Architects compete anonymously for public buildings. How would painters look if they had to send their pictures to the Academy in a different name every year? There would be more surprises than there are; the upshot would be nothing less than murder.

The Manchester Society of Architects have elected as Fellows James Barritt Broadbent, John Cubbon, James Henry Sellers and Alfred Ernest Woodhouse.

NOTES AND COMMENTS.

If the decision given in the New York Court of Appeals is upheld it will be useless henceforth to shirk responsibility for the insufficiency or inaccuracy of plans or specifications. The judges laid down the principle that "where the amount of work to be performed and materials to be furnished under and by a contract depend upon conditions that cannot be ascertained by inspection, and bidders are not required and given an opportunity to make such investigations as are necessary to satisfy themselves as to the amount of work to be done and materials to be furnished, and the contract, plans and specifications include representations as to existing conditions which are inserted for the purpose of enabling contractors to determine what bid to make for the proposed work and materials, a recovery may be had as for a breach of contract for the damages caused if it shall turn out that the representations were erroneous." The discreditable case in which Messrs. PEARSON were plaintiffs and the Corporation of Dublin defendants would have had a different result if the judges of the Irish Court of Appeal recognised that, although a contractor is advised to inform himself of the conditions of the work and to test the accuracy of the representations, such a course is impossible without an outlay and a loss of time which would entail expenses for which there was no valid return.

ACCORDING to the *Liverpool Courier* there is much commotion among local artists about the annual exhibition which is to be opened to the public on Monday. The committee of selection have, it appears, adopted a standard of excellence on a very high level. Instead of judging the pictures on their merits as examples of their authors' work, they condemned or praised according as they fell away from or approached to a particular style of art which has been aptly described as "forward." Among the practising members of the Academy there are only a few who have adopted the "advanced" methods of painting, the majority following art on Academic lines. The astonishing result of the application of the new standard is that the work of a great number of the members has been excluded. Among the sufferers are many painters who have been regarded locally as masters of their craft, and the committee's decision that their works are unworthy of a place in the Academy's exhibition will come as a surprise to many persons besides themselves. It has hitherto been generally understood that the Academy's exhibitions reflected contemporary Liverpool art, and in this spirit it was regarded; but if, as it is currently reported, the committee are relying for the principal exhibits on the works of Associates who have no connection with Liverpool, then the character of the display will have been entirely changed, and the Academy's exhibition will become merely a supplement to the autumn exhibition.

AN interesting pamphlet on the District Surveyors' Association has been prepared by Mr. HENRY LOVE-GROVE, the honorary secretary. The title of "district surveyor" was given by the Act of 1844. The first meeting of the surveyors was held at the London Coffee House, Ludgate Hill, and in December 1845 it was decided to hold quarterly meetings. The incidents between that time and the present year are narrated. A list of the district surveyors in 1854 is given, and it is remarked "that of all these names not one survives, and that they were architects of repute like THOMAS HENRY WYATT, EDWARD NORTON CLIFTON, with RICHARD CROMWELL CARPENTER, one of the pioneers of the Gothic revival and a church architect of large experience; also EDMUND WOODTHORPE, EDWARD L'ANSON, HENRY BAKER, GEORGE GODWIN (so long the editor of the *Builder*) and many more 'giants in the land.'" It is amusing to learn that CHARLES JAMES MATHEWS, the lightest of comedians, was through his father's influence appointed a surveyor. He relates the circum-

stance as follows:—"Bow and Bethnal Green were vacant. I offered myself, was successful, and found myself staggering under the honour of being publicly recognised as surveyor of Bow. I had cards printed, 'District Surveyor, Cutthroat Lane, Bow.'" Mr. LOVE-GROVE calls attention to the esteem in which the district surveyors have been held, and the possibility of the office falling into the hands of men with less experience. He concludes by saying:—"The withdrawal of private practice to take an appointment of varying income is not attractive, and should the surveyor be able to avoid the Bankruptcy Court through loss of income, he has nothing to look forward to in his old age but the workhouse; hence the serious falling off in the number of candidates offering themselves for the examinations held by the Royal Institute of British Architects during the last ten years."

THE President of the Board of Trade has appointed the following gentlemen as a committee to make inquiries and to report with reference to the participation of this country in great international exhibitions:—Sir A. E. BATEMAN, K.C.M.G., chairman; Mr. A. WILSON FOX, C.B.; Mr. C. A. HARRIS, C.B., C.M.G.; Mr. ALGERNON LAW; Sir JAMES KITSON, Bart., M.P.; Mr. MALCOLM RAMSAY, C.B.; Sir SWIRE SMITH; Mr. S. J. WARING. Mr. U. F. WINTOUR, of the Board of Trade, will act as secretary to the committee. The terms of reference to the committee are:—"To inquire and report as to the nature and extent of the benefit accruing to British arts, industries and trade from the participation of this country in great international exhibitions; whether the results have been such as to warrant His Majesty's Government in giving financial support to similar exhibitions in future, and, if so, what steps, if any, are desirable in order to secure the *maximum* advantage from any public money expended on this object."

ILLUSTRATIONS.

OFFICES OF THE LIVERPOOL, LONDON AND GLOBE INSURANCE COMPANY, CORNHILL, E.C.

A YEAR ago we published illustrations of the interior of the new building at the junction of Cornhill and Lombard Street. As all the parts of the exterior are now visible, we give a view of it. The building was erected by Messrs. COLLS & SONS from the designs of Mr. J. MACVICAR ANDERSON. The offices form a conspicuous object in the busiest part of London, and suggest the importance of the company for whom they were erected. The church in the background is St. Mary Woolnoth, which was designed by HAWKSMOOR, and has been more than once threatened with destruction. Beneath it now runs an electric railway.

CATHEDRAL SERIES.—MANCHESTER: FROM SOUTH-EAST.

NEW OFFICES FOR "THE MORNING POST," STRAND.

THE new building in the Strand and Aldwych which is in course of erection for the proprietors of the *Morning Post* will be of fireproof construction, similar to that of the Ritz Hotel, Piccadilly, of which a view appeared last week. White Norwegian granite is used for elevations. The roofwork and dome will be executed in copper. In planning the building the basement was assigned to the printing machines. The ground floor will be occupied by the advertisement hall and publisher's department; the first floor will be arranged to accommodate the managers and reporters; the second and third will be let as offices, while the fourth and fifth floors will remain for compositors and foundry. The architects are Messrs. MÈWES & DAVIS. The contractors are the Waring-White Building Company. The fireproof floors will be on the system of the Columbian Fireproof Company. The granite contractors are Messrs. A. & F. MANUELLE.

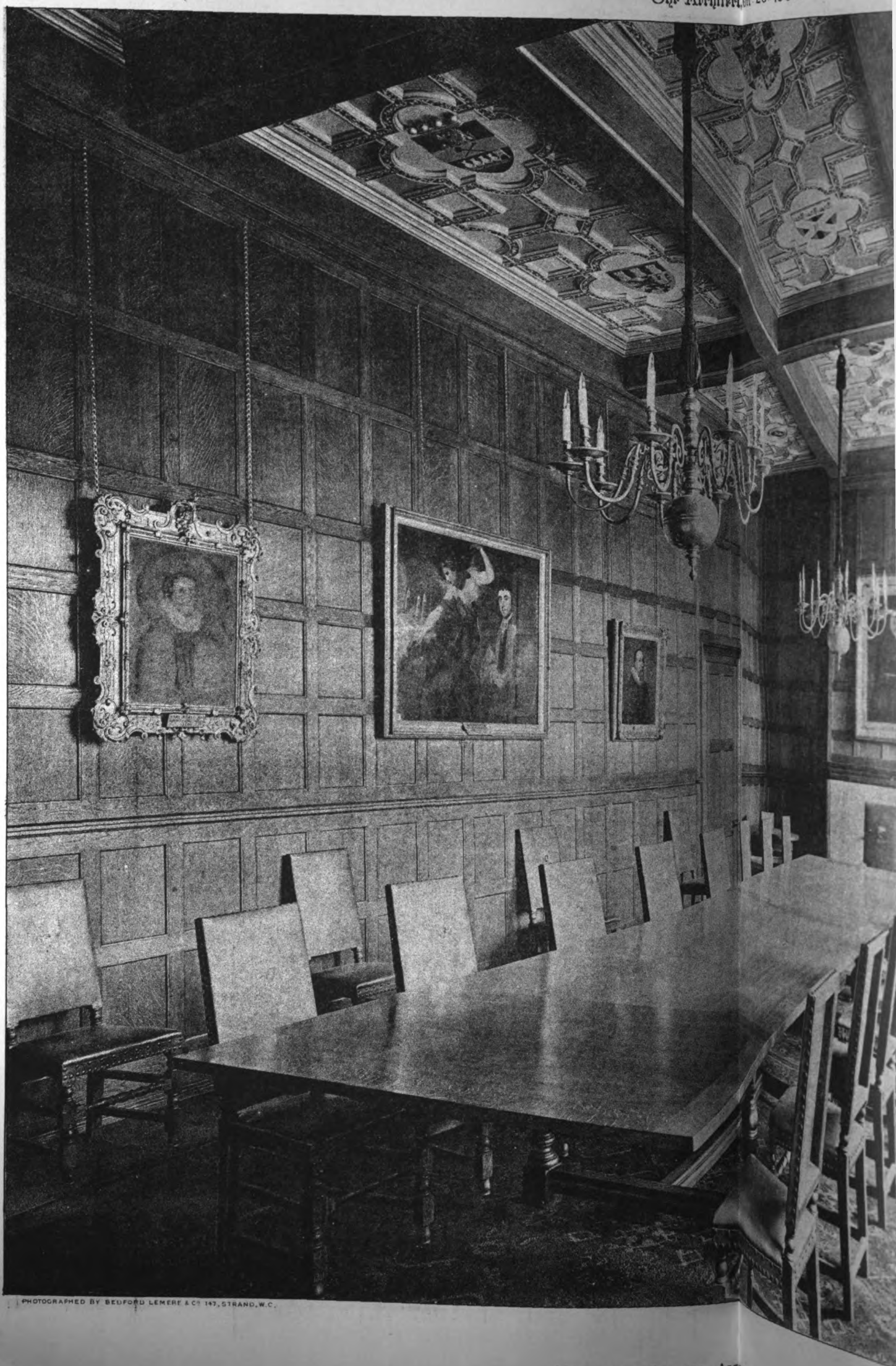
MARISCHAL COLLEGE, ABERDEEN: THE COURT-ROOM.

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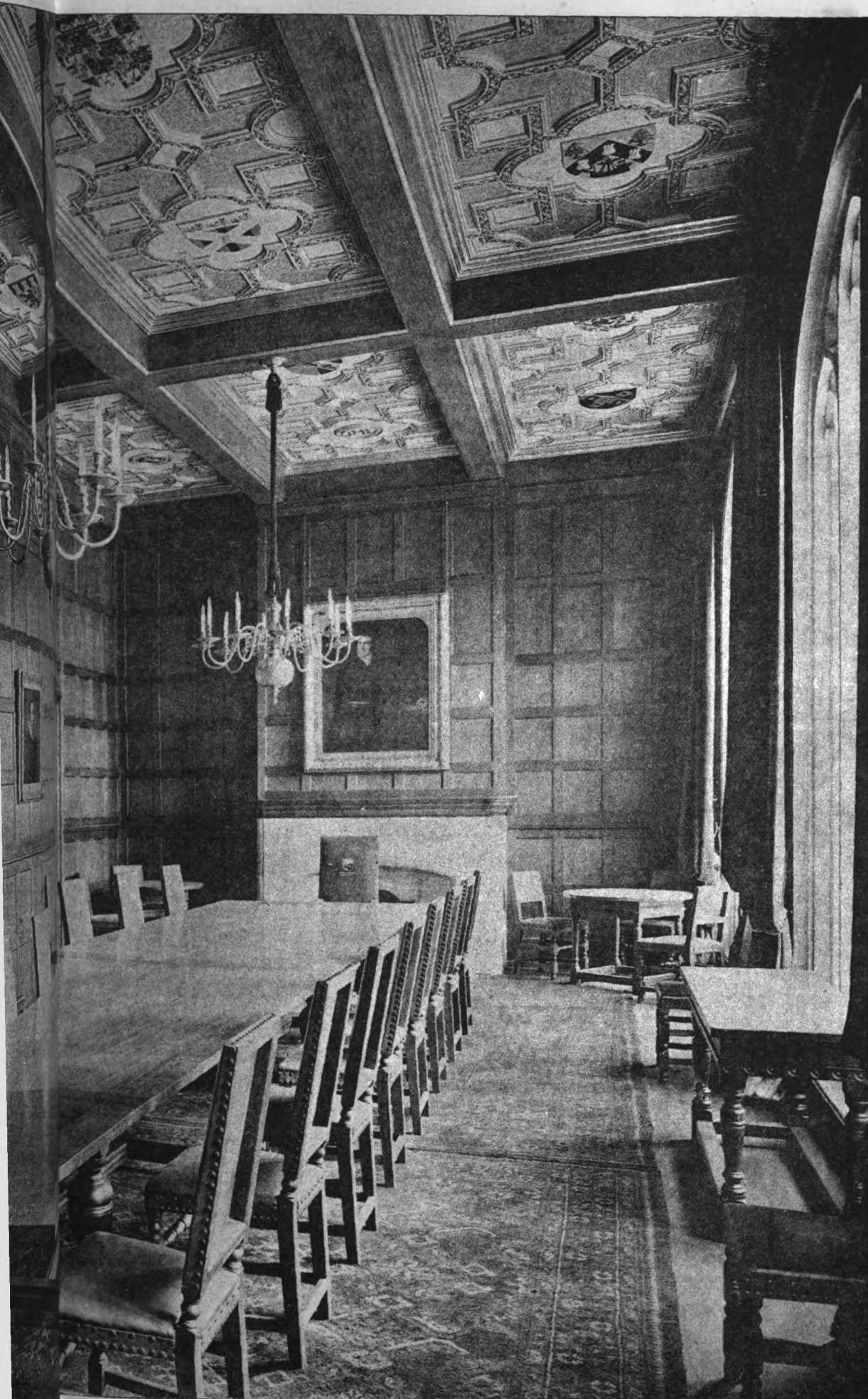
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MARISCHAL COLLEGE, ABERDEEN: THE COURT ROOM.
Messrs. A. MARSHALL MACKENZIE, ARS. & SON, Architects.

Oct 26th 1906.

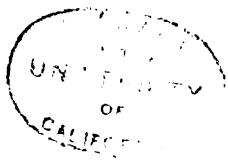


INK-PHOTO, SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

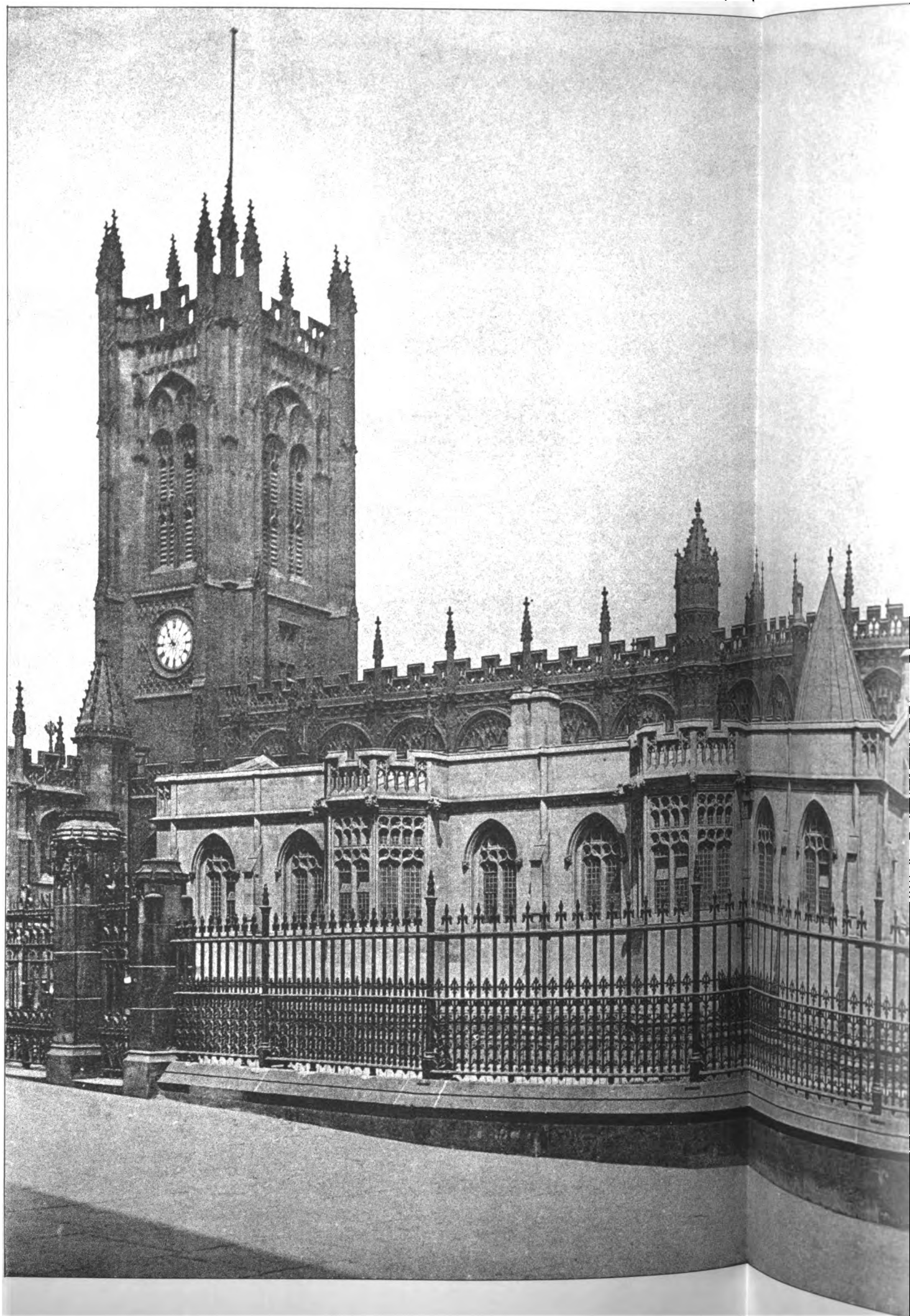
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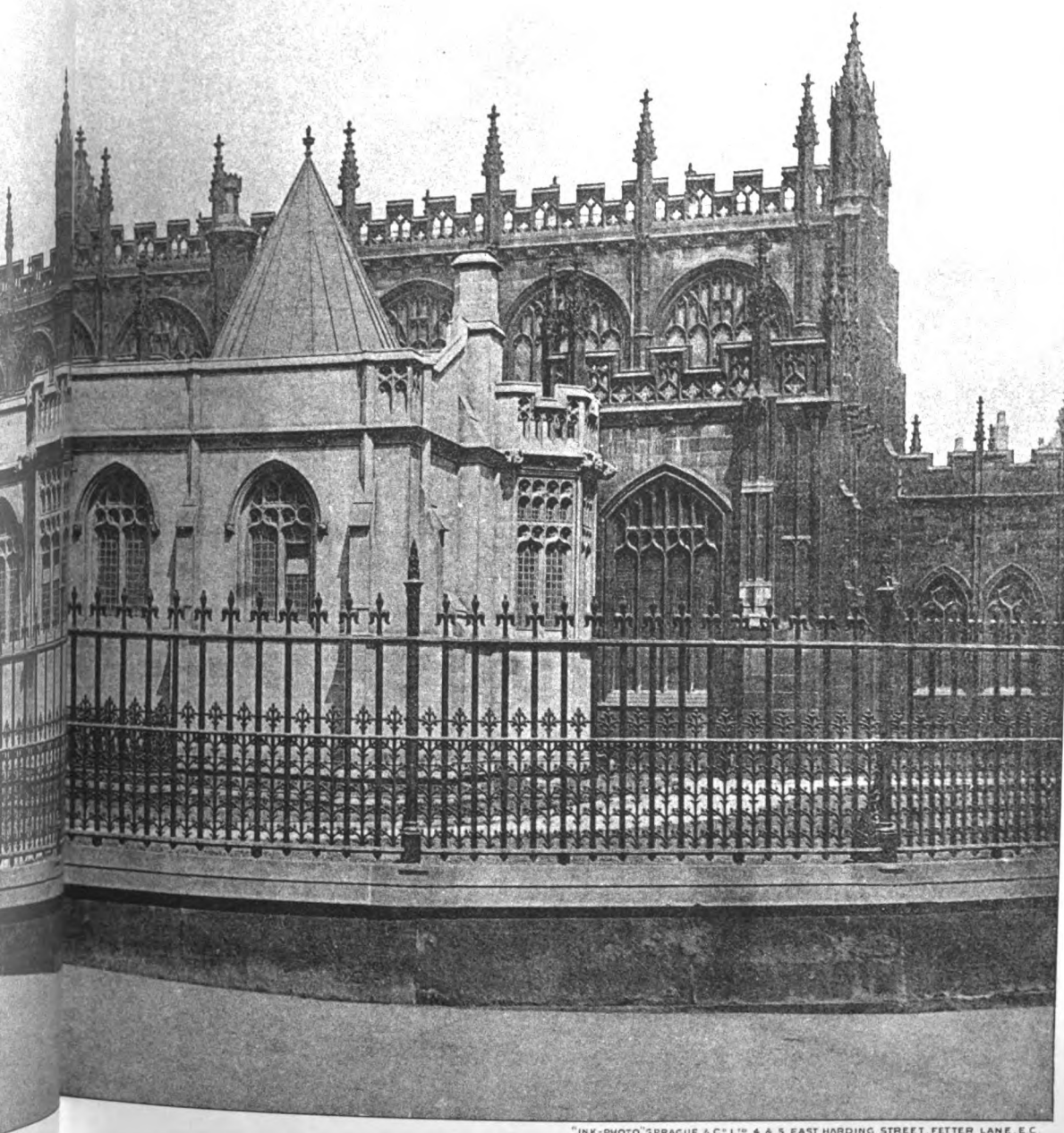






CATHEDRAL SERIES, No. 581. — MANCHESTER: FROM SOUTH-EAST.

Sept 26th 1906.

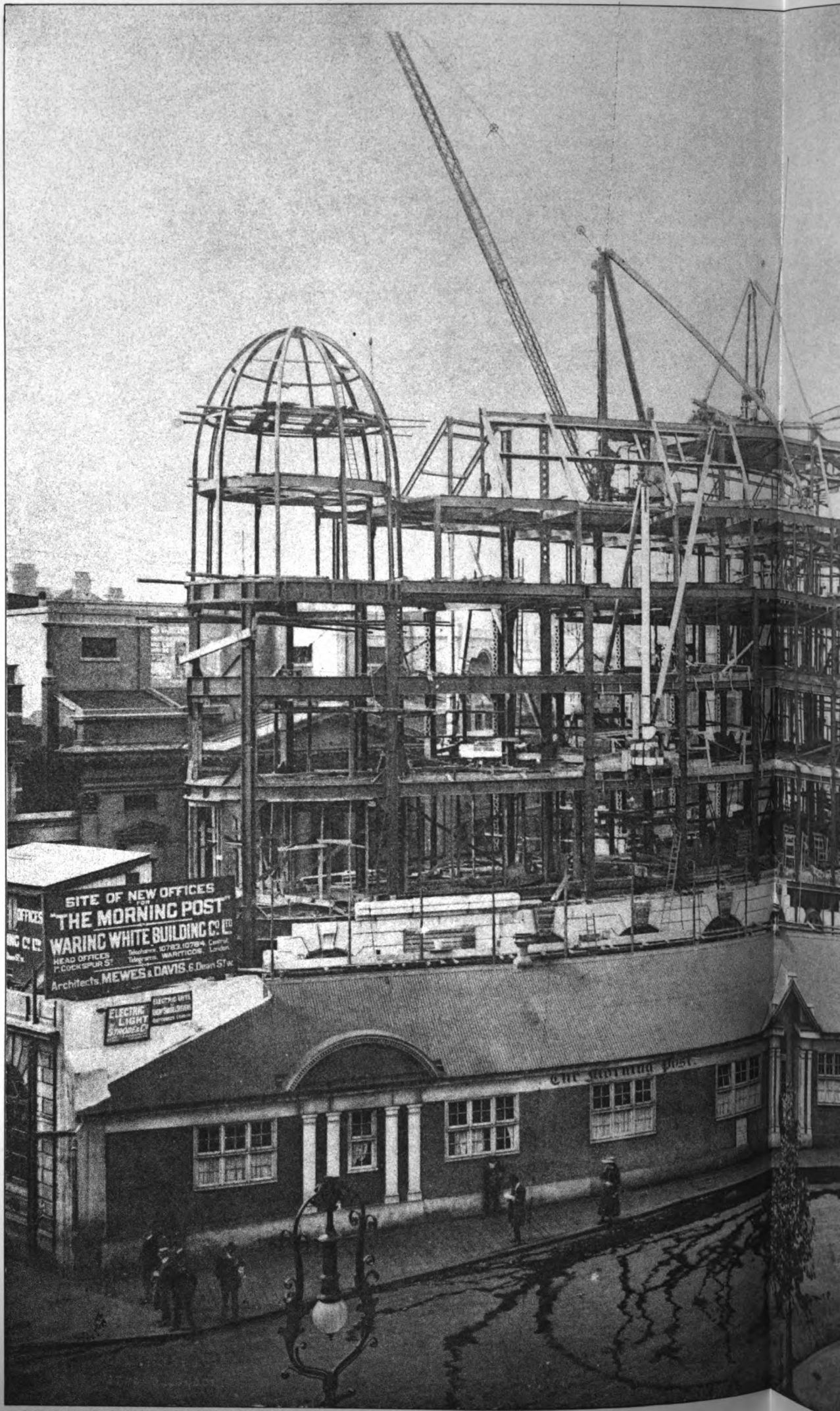


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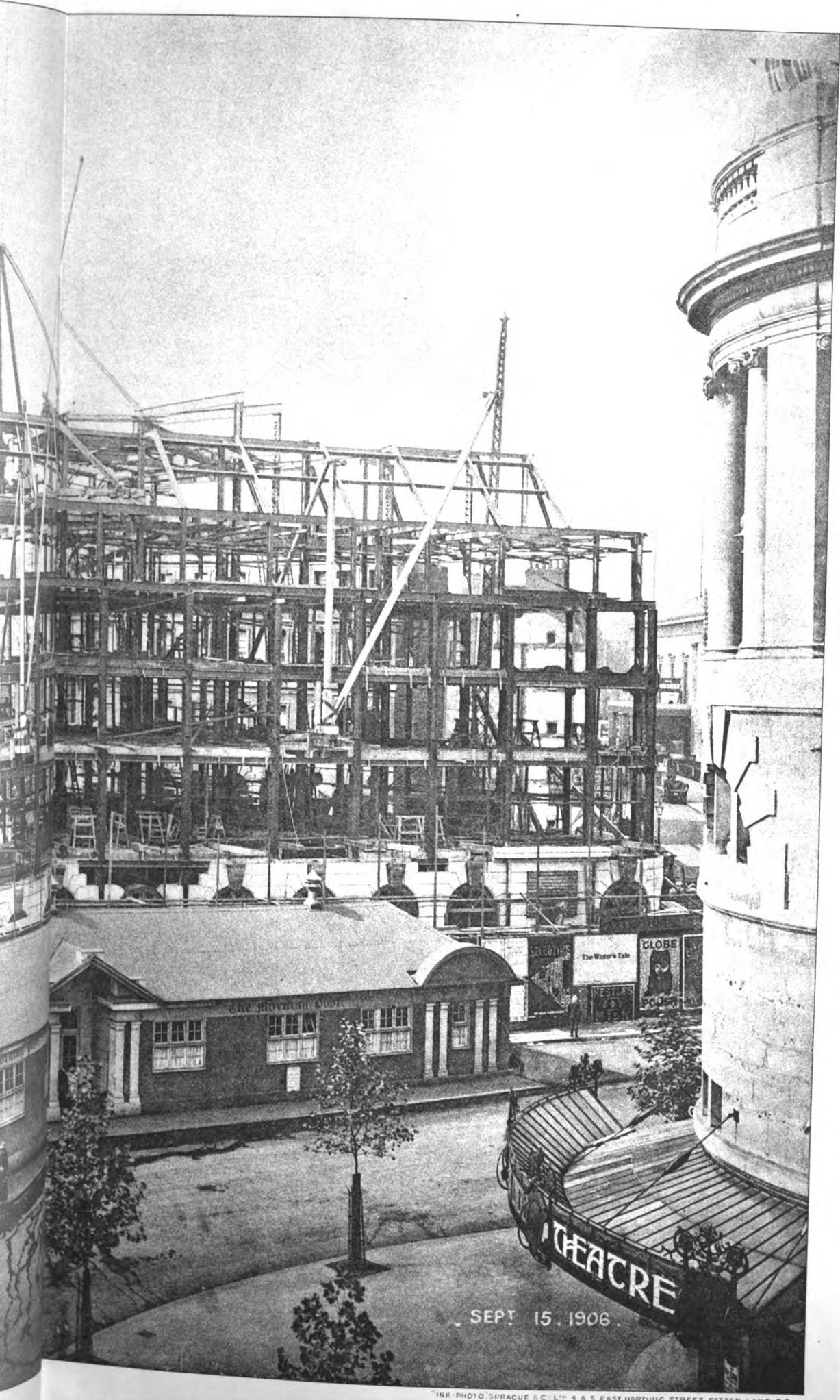




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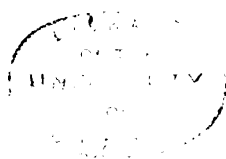
NEW OFFICES FOR "THE MORNING POST,"
Messrs. MEWES & DAVIS, Architects.

Oct 26th 1906



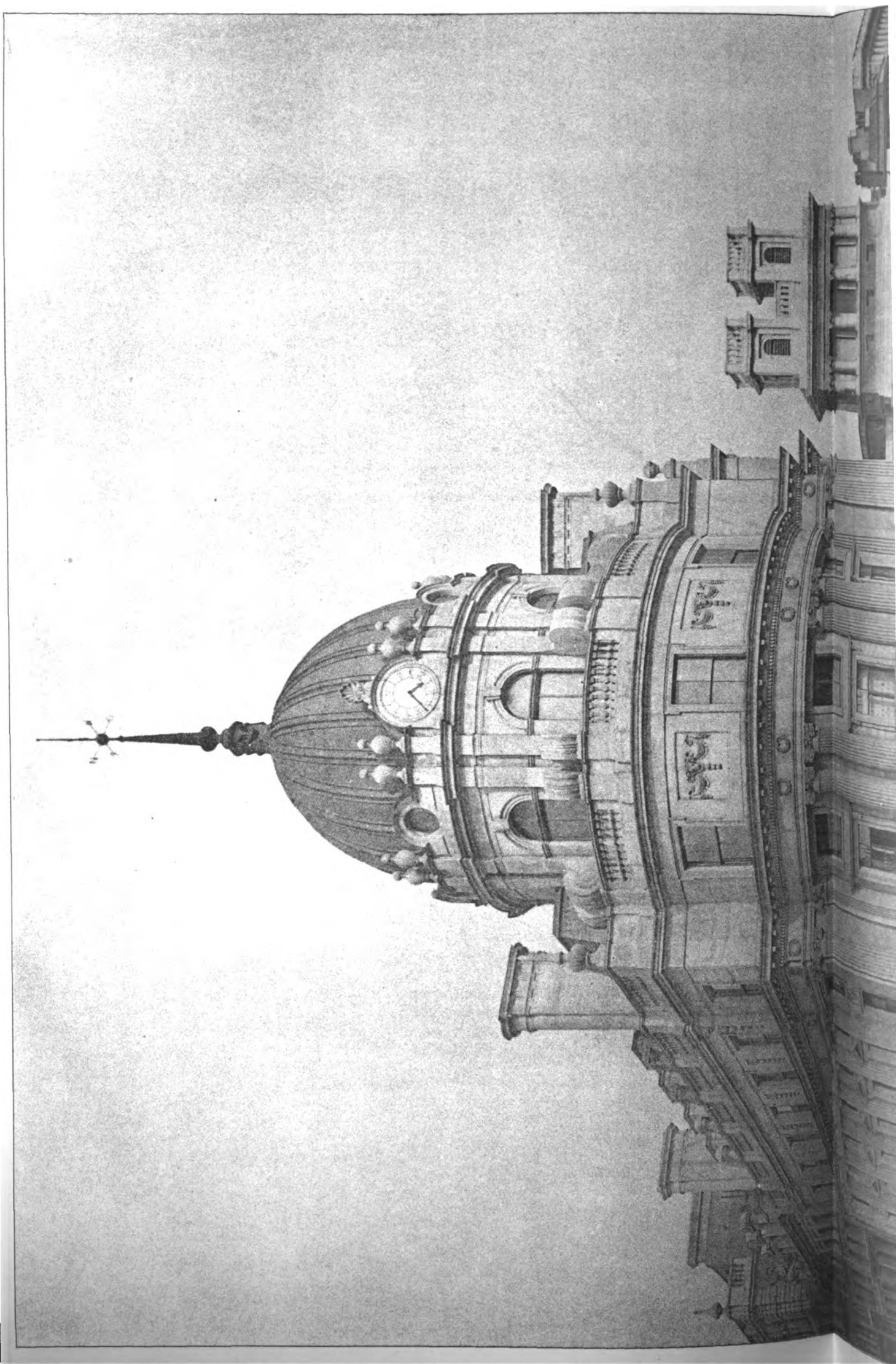
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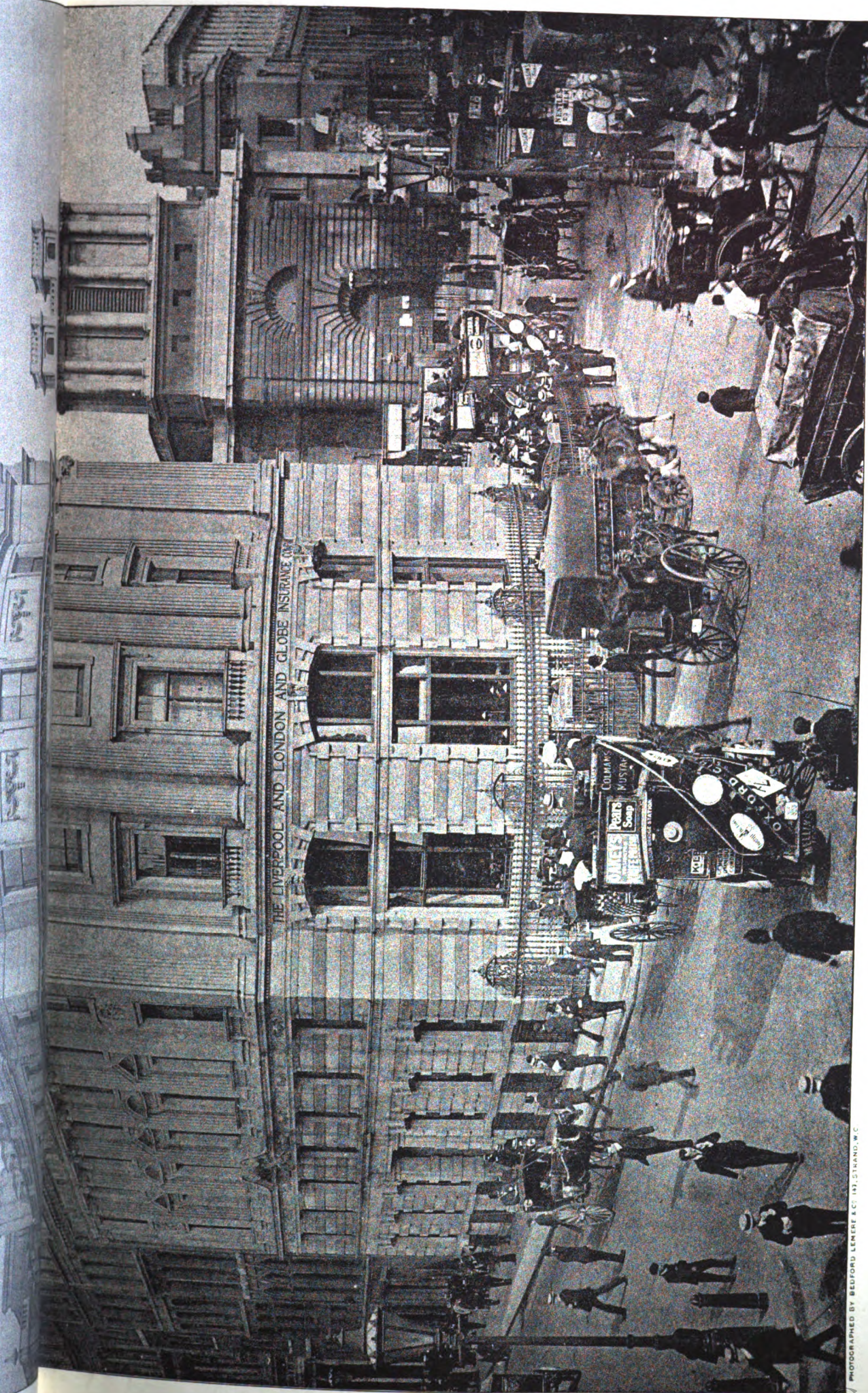
MORNING POST, STRAND.
W. OFFICE & DAVIS, Architects.





Capitol Architect, Oct'r 26th 1906.

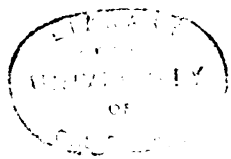




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OFFICES OF THE LIVERPOOL, LONDON AND GLOBE INSURANCE COMPANY. CORNHILL, E.C.
J. MACVICAR ANDERSON, F.R.I.B.A., Architect.



THE ARCHITECTURAL ASSOCIATION.

THE second meeting of the Association for the current session was held on Friday evening last at Tufton Street, Westminster, Mr. R. S. Balfour, president, in the chair.

The following gentlemen were elected members:—Messrs. L. H. Glencross, H. J. Wilson, T. E. Legg, A. R. Gunn, C. C. Durston, E. H. Hawkins, A. W. Stelfox, J. Doré, jun., T. Spencer, C. E. Skerry, T. A. Lodge, jun., W. J. Pywell, L. E. Monteuis, T. S. Linton, F. Scott, G. A. Fortescue, F. A. Silk, H. J. Benians, G. R. Hall, J. R. B. Smith, A. G. Hodgkins, E. A. R. Rahbula, D. W. Ditchburn, B. de Carle Jackson, R. G. Kirkley, T. H. McConnell, Fred Harrild, B. W. H. Scott, F. H. Swindells, H. J. L. Barefoot, F. S. Hulbert, D. C. Langford, R. A. Abbott, C. A. Farey, C. G. Clifton, R. Davies, G. W. Bacon, R. A. Cram, H. F. Saunders, S. A. Neave, A. G. Warnham Tickle, A. R. Powys, H. H. S. Willey, S. Warwick, N. W. Hick, F. R. Barry, jun., H. E. Moore, H. G. Courtney, F. D. Sowerby, M. J. Tapper, H. W. Cotman, R. E. Eiloart, A. E. Beswick, R. J. Wyllie, A. T. Hinde, R. E. V. Knights, C. F. Butt, F. Dowdeswell, L. M. Parr, G. G. Wornum, A. Cooper, B. Watson, A. F. Spencer, H. W. Mann, W. W. J. Calthrop, W. H. Jones, A. J. Hazlegrove, F. R. Priest, W. Dann, W. D. Cathcart, H. A. Thomerson, J. M. Pritchard, H. V. Stephenson, J. E. Bownass, W. J. Durnford, D. G. Preston, R. Cromie and W. E. Müllerhausen.

Report and Balance Sheet, Session 1905-6.

Mr. FRANCIS HOOPER, as treasurer for the year 1905-6, proposed the adoption of the accounts and balance sheet for the past session. The income and expenditure account, he said, contained few items which demanded comment. The contribution to the International Congress of Architects, he felt, would be approved as a small but fitting recognition of their gratitude to the R.I.B.A. for the valued and timely support of the evening school work and of their generous contribution to the premises fund. The smallness of the item under the head of legal expenses was testimony to the generous manner in which Mr. Jamieson had conducted his work during the session. The increased cost of the "Journal" under its new management was scarcely one to be begrudged. The five years during which he had had the honour of being treasurer was marked by an increase of membership from 1,392 to 1,665, of members' subscriptions from 1,048*l.* to 1,406*l.*, of entrance fees from new members 243*l.* to 294*l.*, whilst arrears of subscription had fallen from 158*l.* to 100*l.* As the President had reminded them in his address, the premises fund still required 767*l.* to free them from their obligations, which at the outset amounted to 8,332*l.* The speaker said he had fervently hoped that the debt would have been wiped out during his tenure of office, so that his friend and successor, Mr. Hare, could have devoted himself to the improvement of the library, reading-room and school equipment, which increasing popularity urgently demanded. He reminded them, however, that more than that sum had been spent upon the repairs and rehanging of the museum casts, together with the payment of a pension to the respected curator of the museum, those outgoings being incumbent upon them under the agreement with the Council of the Royal Architectural Museum. In conclusion, Mr. Hooper expressed his hearty appreciation of the vote of thanks passed to him at the concluding meeting of last session.

Mr. A. KEEN formally seconded the motion, which was accepted unanimously.

Mr. ALAN POTTER read the following paper, illustrated by lantern slides, on

The Architecture of the Roman Empire.

In reading this paper to-night, he said, I am very conscious of my unworthiness to speak here at all, and more especially on such a broad and uncertain subject as the Architecture of the Roman Empire, and I ask the indulgence of those many members who have a more personal acquaintance with the subject than I have. From them I hope to learn much in the after-discussion, and in the meantime I trust they will not be hopelessly bored by my restatement of old facts. I have no intention of discussing the origin of Roman architecture, or the contrivances of Roman construction; but I have collected the facts and theories of experts and, as far as possible, have marshalled them in a chronological order, as it is in the historical aspect that I intend to present them to you to-night.

The Roman Empire became, as you know, an empire in fact through the energies of Julius Cæsar and the generals

of the Republic. It was not till after Augustus had been three years the sole ruler of the Roman world that he accepted from the Senate the title of Emperor. His policy was one of peace; to confine the Empire within its natural boundaries, which were the Atlantic on the west, the Rhine and Danube on the north, the Euphrates on the east and the deserts of Africa to the south; and only in two instances was this policy set aside by his successors in the occupation of Britain and the conquest of Dacia. It is in the neighbourhood of Rome that we find the chief remains of the Augustan era.

The Forum Julium.

The Forum Julium, the first of the Imperial fora, was founded by Julius Cæsar, but not completed till after his death; situated north of the Forum Romanum it formed the close of the Temple of Venus Genetrix, an octostyle temple of Corinthian design. North-east of this, backing up against the Quirinal Hill, Augustus built the Temple of Mars Ultor, vowed to the God who avenged the murder of his uncle Julius. As it could be seen from three sides only, the fourth side or back has no colonnade, but terminates in an apse; and its wall arrangement ought to be considered in conjunction with the forum of Augustus, at one end of which it stood, the chief feature of which forum was the two hemicycles, one each side of the temple, a very favourite device of the Romans in after years. Canina restores these without the colonnade running across as a screen, giving thereby an effect of spaciousness where it is required. Three columns on the east side of the temple and remains of the hemicycle walls are all that is now left.

The Basilica Julia.

The Basilica Julia, used as a law court, in which four tribunals sat, was also founded by Julius and completed by Augustus. Its plan was that of a large oblong court, open in the centre, surrounded by a double colonnade of piers in two storeys. The most complete portion is the west corner, with brick piers and a suggestion of vaulting. One of the piers of the façade facing the forum has been built up from fragments, and gives one some idea of the design. To the east of this stands the octostyle peripteral Temple of Castor, rebuilt at this time by Tiberius on a podium of concrete and marble 22 feet high, which was decorated by pilasters, placed under the columns above. Two circular buildings, the Temple of Mater Matuta at Rome, and the Temple of Vesta at Tivoli, are interesting to compare; the former, in the low-lying ground of the Forum Boarium, has a peristyle of twenty Corinthian columns of the very light proportion of 11½ diameters; whereas in the latter, perched on the edge of a precipice, the columns are only 9½ diameters.

The Temple of Minerva at Assisi.

The Temple of Minerva at Assisi is the only instance in Italy where the steps to the entrance are carried back between the columns, which are here raised on pedestals. Continuing on the Via Flaminia there is the arch erected at Rimini by Augustus in B.C. 27 to commemorate the restoration of that road, where he also built a bridge over the river, constructed in five arches with slightly sloping approaches at each end, contrary to the usual Roman custom of carrying the road through level. The little tetra-style Corinthian temple at Pola in Istria seems also to be of this period, as well as the triumphal arch at Susa in Piedmont.

The Palaces on the Palatine.

Returning to Rome we read that Augustus, before he became emperor, lived in the house of Hortensius on the Palatine, "a simple and modest house with pavements of rubblework and simply whitewashed walls," and that it was not till after the battle of Actium that he contemplated building the palace which was dedicated in January, B.C. 26. In A.D. 2 this was burnt down, but rebuilt in a more magnificent manner, but on the same plan. Tiberius, his successor, continued these buildings, and added a new wing near the north-west corner of the hill, overlooking the Velabrum. Caligula afterwards built another palace between this wing and the Forum Romanum, the remains of which are now visible from the forum, and through the sub-structures of which one passes on the way up the Palatine. On the east side of these buildings was the semi-underground passage, the crypto-porticus, where he was murdered by the officer of the guard in January, A.D. 41, while returning from the theatre. He was succeeded by Claudius, who made no alteration or addition to these palaces, but is more famous for his huge hydraulic enterprises.

The Hydraulic Enterprises of Claudius.

The Aqua Claudia was built during his reign (38-52 A.D.) to bring water from the Alban Hills, forty miles away, and was raised high enough to supply the highest hills in Rome. The Anio Novus, a channel built on the top of this aqueduct, was fifty miles long. He also built, in opposition to the council of Government engineers, a large harbour two miles west of Ostia, enclosed by two jetties each 800 yards long, the area of which was 800,000 square yards with a varying depth of 15 to 18 feet, necessitating the removal of 112,000,000 cubic feet of sand. Nero proposed connecting this harbour to Rome by a canal, but the scheme was never carried out. His ambition was to lay out Rome on modern lines, but he found himself checked on every hand by the owners of private property and the numerous small temples and shrines absolutely inviolable in the eyes of the people.

Nero's Rebuilding of Rome.

After arranging a new plan with his architects, Severus and Celer, and having provided temporary accommodation for the people, he set fire to the city, as the easiest way of getting out of his difficulties, and succeeded so well that he reduced ten wards of the city to ruins out of fourteen, without a single life being lost. Hasty rebuilding was forbidden, as all frontage lines had to be approved, the new streets being planned at right angles to each other, as far as the lay of the land would allow. The height of the houses was restricted to double the width of the street, and each had to have a portico across the front.

Nero's Golden House.

Of this land of ruins he appropriated for his own palace an area of about a square mile, where he built the Golden House, in the grounds of which there were sulphur and sea-water baths, a huge lake with harbours and docks for the imperial galleys, besides colonnades 3,000 feet long, zoological and botanical gardens, not to mention streams, woods, vineyards and farms. Otho, on the day of his election, signed an order for 250,000*l.* to complete these buildings; but, after his murder, Vespasian, the first Flavian emperor, of low birth and more parsimonious character, at once began to give back this land to the people. He and Titus founded the Coliseum on the very spot of Nero's lake, and the latter afterwards built his baths on the foundations of the Golden House itself. I will not weary you with a description of that famous amphitheatre, and will only mention that the authorities seem now to have entirely abandoned the idea of an awning being carried by the masts which rested on the external row of corbels in the top-most storey, and believe them merely to have been used for banners.

Baths of Titus.

The Baths of Titus are of the usual plan: a main block of buildings containing the baths proper enclosed within an outer court, part of which was set aside for games and part for promenades and gardens. In the centre of this block was the tepidarium, and on the same axis were the caldarium on the one side and the swimming bath on the other, the other sides being occupied by open courtyards surrounded by colonnades. The swimming bath here was more than twice the size of others of later date and enclosed on three sides by colonnades. The Arch of Titus, erected on the Via Sacra to commemorate the final subjection of the Jews in A.D. 82, is particularly interesting on account of the representation of the ornaments of the Temple at Jerusalem as carried in the triumph of Titus. It was Titus and his brother Domitian who filled in the gorge between the palaces of Caligula and Tiberius and the House of Augustus, and built over it the Flavian Palace, which is the finest group of all the Palatine buildings, chiefly composed of banqueting-halls and reception-rooms, with the Imperial basilica at the north-east corner. Domitian also rebuilt the Augustan palace and added the stadium on the west side of it; the walls of the latter still remain, and some small fragments of the encasing marble.

The Forum of Nerva.

When Nerva was placed on the throne by the assassins of Domitian, he was already an old man, and his forum and the Temple of Minerva within it were nearly completed. It was situated between the fora of Augustus and Vespasian, a long, narrow rectangle in shape, with the Temple of Minerva at the northern extremity. The enclosing walls are decorated with detached Corinthian columns of Greek marble, the entablature and attic of the

wall being broken out over them; only two of these columns now remain, but at the beginning of the seventeenth century a great part of the portico of the temple was also standing.

The Forum of Trajan.

On the further side of the Augustan Forum was built the Forum of Trajan, from the designs of the architect Apollodorus, together with the Ulpian Basilica and Trajan's Column and Temple. The forum proper was nearly square in plan with a colonnade running round three sides, flanked by two large hemicycles of shops and offices and approached from the east by a gateway having one central archway with three Corinthian columns on each side. The basilica was a large hall enclosed on all four sides by a double aisle, beyond which at each end was an apse, used as a law court and probably screened off from the rest of the building. On the far side of the basilica stood the Column of Trajan, the sculptures of which represent his campaigns against the Dacians, enclosed by a small courtyard between the Greek and Latin libraries and facing the octostyle temple of Corinthian design dedicated to Trajan, but probably built by Hadrian at a later date.

The Harbour of Ancona.

In order to facilitate the embarkation of troops to the East, Trajan built the harbour of Ancona on the east coast of Italy, to commemorate or adorn which the Ancona Arch was built. He also continued the work of Claudius at Ostia, building inside the Claudian harbour a huge hexagonal dock 18 feet deep, some 390,000 square yards in extent, with nearly 6,500 feet of quay. It was to this harbour that the fleet of despatch boats plied and here was situated the central post office for provincial letters. The harbour of Civita Vecchia was also built at this time, and still remains among the best and safest harbours of the Mediterranean. Trajan's reign was also responsible for the bridge across the Tagus at Alcantara in Spain, erected by a few Lusitanian communities and consisting of six arches 650 feet long in all, the two central arches having a span of 110 feet and a height of 210 feet, the material being granite laid without mortar. Of the same date probably is the Segovia aqueduct with its 320 arches and the Tarragona aqueduct, 1,000 feet long with thirty-nine arches. The arch at St. Remi in France seems to be of this date and is similar to the Arch of Titus, except that it has sculptured trophies instead of niches between the columns. In Africa the triple arch at Timgad, dedicated to Trajan, the son of Nerva, is especially interesting, in that on each side of the lesser archways there are detached columns with the entablature broken out over them, surmounted by broken segmental pediments, and that over these archways are niches flanked by small columns of coloured marble with diminutive entablature complete. At Beneventum, in Italy, the Senate in 114 built an arch in expectation of the emperor's triumphal return from the East, where he was adding many new provinces to the empire; but in 116 he died there.

The Buildings of Hadrian.

The first act of Hadrian his successor was the restitution of these provinces; and his whole reign seems to have been a perpetual journey, as he visited in person every province of the empire from Scotland to Egypt. He was keenly interested in the arts, and is responsible for the design of the Temple of Venus and Rome built between the Forum and the Coliseum. It consists of two tunnel vaulted shrines each with its own portico and apse, set back to back and surrounded by a colonnade raised above the courtyard on a podium of steps; this courtyard was further enclosed by a colonnade and wall, the latter being left open opposite the porticoes. All that now remains of this temple above ground is just sufficient of the cellæ to show the type of vaulting. The great vaulted rotunda known as the Pantheon was also built by Hadrian, though previously considered to belong to Republican times. The interior is lighted by a single circular opening at the apex of the dome, which gives a window area of not quite 4 per cent. of the floor space. The portico on the south side was constructed of materials taken from the Temple of Agrippa previously standing to the north of the rotunda. At Nîmes, in the south of France, there is a perfect temple of this date, pseudoperipteral in plan and of the Corinthian order, having a deep portico at the entrance. I have not been able to discover the exact method of lighting the interior, but presume it to be top-lighted, as it could hardly be used as a museum, as it now is, if the only light came through the doorway.

The Two Antonines.

Hadrian adopted as his successor the senator Titus Antoninus, on the condition that he in his turn adopted Marcus Aurelius, then a youth of seventeen. These men, generally known as the Antonines, governed the Roman world in peace for forty-two years. Unlike his predecessor, Antoninus Pius spent all his life in Italy, his longest journeys being from his palace in Rome to his country villa. Gibbon calls the period between the death of Domitian and the accession of Commodus one of the most happy and prosperous in the history of the human race; and certainly it was so if the practice of architecture is any guide. I have mentioned some of the buildings erected by Trajan and Hadrian throughout the world, and there is no doubt that private citizens were not far behind the royal example.

Herodes Atticus.

An Athenian citizen, named Julius Atticus, on the discovery of a vast treasure under his house, spent most of it in building; his son Herodes, prefect of the Free Cities of Asia, had obtained from Trajan 100,000*l.* for the construction of an aqueduct to the town of Troas, but unfortunately, the cost exceeding the estimate by more than 100 per cent., there seems to have been a likelihood of trouble, but for the generosity of his father who asked to be permitted to make good the difference. Herodes Atticus, besides building the Odeion at Athens, also erected a theatre at Corinth, a stadium at Delphi; baths at Thermopylæ and an aqueduct at Canusium in Italy. The best-known building of the reign of Antoninus Pius is the Temple of Faustina, a hexastyle temple of white marble with a portico of cipollino columns. Canina restores it enclosed by a courtyard, though later authorities omit this, and carry the Via Sacra across at the foot of the steps. Gibbon supposes the dedication to be to the younger Faustina, the daughter of Antonine, who married Marcus, and blames that emperor for the deification of his unfaithful wife. The Syrian towns at this time were tremendously wealthy, and vied with each other in the display of architecture; at Palmyra, 140 miles north-east of Damascus, there are the most numerous remains, but all the large towns, such as Antioch, Gerasa and Damascus were laid out in a similar manner. The most remarkable features perhaps were the colonnaded streets carefully set out with architectural intent. One at Palmyra, over 3,000 feet long, consists of a central roadway 37 feet wide open to the sky and flanked by Corinthian columns 31 feet high, with side walks 16 feet wide, which were covered with terrace roofs extending over the adjoining shops and offices; at one part of this street, where a similar avenue crosses it at right angles, there are four pedestals, on each of which stood four Corinthian columns carrying a square entablature. At the eastern end of the street is a triple-arched gateway masking the junction with another street which leads away to the right in the direction of the Temple of the Sun. It is of ingenious design, being triangular in plan, so as to have one front at right angles to each street, with a coffered tunnel vault over the central opening. At least this is what Cassas shows in his perspective drawing, although he omits it in his plan. As the great pilaster of the gateway is panelled, against which the pilaster of the colonnade abuts, the arch would seem to have been in existence before the colonnade was thought of.

Temple of the Sun, Palmyra.

The Temple of the Sun, to which the second street leads, was enclosed in a huge courtyard more than 700 feet square, having the entrance on the west side and surrounded by a double Corinthian colonnade. The temple itself, octostyle peripteral, stood a little to the east of the centre of this court, and had its entrance in the flanking colonnade opposite the courtyard entrance. At Damascus the courtyard was over 1,000 feet square, and the portico of the propylæa is the only part that remains, and here the centre intercolumniation, being wider than the others, is spanned by an arch instead of by a flat architrave. At Baalbec, near Mount Libanus, the Temple of the Sun had a colonnaded forecourt about 500 feet square, entered on the east side from a smaller colonnaded hexagonal court with a propylæa consisting of a portico between two towers. This portico, Mr. Spiers suggests, was similar to the propylæa at Damascus and had a central archway, an arrangement also occurring in the temple at Atil, which was built by Antoninus Pius, and is dated 151 A.D.

The Triple Temple at Steilla.

In Africa, of this date, there is the triple temple at Steilla also standing within a colonnaded enclosure 200 feet

square, entered from the south-east by a triple-arched gateway. Each of the three temples is tetrastyle pseudo-peripteral; the centre one of the Composite order being slightly larger with half-columns on the side, whereas the two smaller have pilasters and are Corinthian in design. Belonging to the next reign is the Temple of the Capital at Dougga, in Africa, likewise tetrastyle, built of a fine limestone as hard as marble and dedicated to Marcus Aurelius and Lucius Verus. An arch at Marcouna, dedicated to the same emperor, is of the one-arched type, and has two pilasters and a detached column on each side of the opening. The arch at Orange is also attributed to Marcus Aurelius, erected to commemorate his victories in Germany and on the Danube, and it is designed to obtain effect rather by the grouping of masses than by the display of the orders.

The Reign of Commodus.

The reign of Commodus, the son of Marcus, quickly undid the results of the good government of his predecessors. After an attempted assassination he revenged himself by executing the noblest members of the senate and their friends, a pastime he varied by fighting as a gladiator in the amphitheatre. The only building I have discovered belonging to his reign is an arch at Lambessa, of very simple design. In 193 he was murdered by his domestics, who set on the throne Pertinax, one of the few remaining friends of Marcus, but after a reign of only eighty-six days he was killed by the Pretorian guards, who objected to his reforming energy after the license they had enjoyed under Commodus. They then offered the empire for sale, and accepted the offer of the highest bidder, one Didius Julianus, who gave a sum of 200*l.* to each soldier.

Septimius Severus seizes Rome.

At this the three provincial armies each declared their own general emperor, and it was the leader of the Pannonian army, Septimius Severus, who by a rapid march seized Rome, banished the Pretorians, defeated his rivals, and by a just and vigorous rule temporarily revived the era of prosperity. He restored Domitian's stadium on the Palatine, and built further west a new palace, the façade of which faced the Appian Way and consisted of seven colonnaded storeys 210 feet in height, three of which still remained in the sixteenth century. The arch erected at the west end of the forum to commemorate his Parthian victories is well known, and the Arch of Janus and that erected by the silversmiths are hardly worthy of special mention. He died at York in 211 after an unsuccessful campaign against the Scotch, and it was there that the quarrelsome brothers Geta and Caracalla assumed the purple; a quarrel which was settled within the twelve-month by the murder of Geta. The Baths of Caracalla testify to the luxury of this emperor, being the most extensive in the empire. The central block alone had an area of 270,000 square feet, and in plan was similar to the Baths of Titus except that the swimming bath here was greatly reduced, being rather smaller even than the tepidarium. The enclosure of the grounds was over 1,000 feet square, in the two hemicycles of which were lecture theatres and libraries. In Africa, at Djemila, there is an arch dedicated to Caracalla, his mother Domna, and the divine Severus, his father. In design it is a single arch between two pairs of detached Corinthian columns, over each of which the entablature is broken out. At Sebessa there is a four-sided arch with the same dedication, each side of which is similar to the arch at Djemila. It is from now onwards that we continually hear of the great Temple of the Sun at Emessa, in Syria, of which there are no particulars, and I have wondered whether it has been confused with the temple at Baalbec, which has already been mentioned, especially as they are both situated close to the foot of Mount Libanus. It was in Syria that Caracalla was murdered while on a pilgrimage to the Temple of the Moon at Carrhoe. At Zana there is an arch dedicated to Macrinus, his successor, who reigned little more than a year, till he was defeated by the Syrian army, who had set up the boy Heliogabalus, the son of Caracalla's wife. During the next fifty years there were no less than fourteen emperors, who followed each other in quick succession at the will of the all-powerful armies.

Amphitheatre at Verona.

It was during this half-century that the amphitheatre at Verona was probably built, the interior of which is so well preserved, although the exterior wall has disappeared with the exception of four bays; unlike its contemporary at Pola, where the interior is entirely gutted, leaving the exterior wall intact. Here a slight deviation is made from

the usual plan, there being four projections on the diagonal lines, which contained staircases.

The Thousandth Anniversary of the Foundation of Rome.

Mr. Alexander Graham, in his book "Roman Africa," suggests that the amphitheatre at Thrysdus was built under the third Gordian, and it is possible that the great festivities at the thousandth anniversary of the foundation of Rome, commemorated in the reign of Philip, gave the necessary stimulant for these buildings in an otherwise non-architectural age. After the reign of Valerian, who died a captive in Persia, the men of Palmyra, led by Odenathus, twice defeated Sapor, the Persian king, the former being made joint emperor by Gallienus. His wife, Zenobia, after his death, ruled over the whole of Syria and Egypt—an arrangement which satisfied Claudius II., who had his hands full fighting the Goths; but as soon as Aurelian came to the throne in 270 he laid siege to Palmyra, brought Zenobia captive to Rome, after which she retired into private life at Tivoli. No doubt, influenced by the buildings he had seen in the East, he erected on the Quirinal at Rome a large Corinthian temple dedicated to the Sun, which had a portico of twelve columns, and was enclosed in a courtyard similar to the Syrian examples. The little circular temple at Baalbec is supposed to be of this date, and possibly also the Temple of Jupiter. His successor, Probus, is credited with building temples, bridges, porticoes and palaces in Egypt, as he attempted to keep the army in order by thus occupying them in times of peace. At Tebessa there is a little tetrastyle pseudoperipteral temple built about this time, where the architrave frieze is divided into sections by small projecting panels over the columns, each panel being separately carved, as is similarly done in the attic above the small cornice.

Accession of Diocletian.

After the short reign of Carus, and Carinus and Numerian, Diocletian was proclaimed emperor on September 17, 284, who, with his associates, Maximian, Galerius and Constantius, re-established order and tranquillity throughout the empire. Of the baths he built in Rome there are considerable remains, the tepidarium or central hall being preserved as the nave of Santa Maria degli Angeli, the Christian dedication possibly resulting from the fact that Christians alone were employed in the building. The emperor himself spent only two months of his reign actually in Rome, but occupied most of his spare time building the city of Nicomedia, in Bithynia, situated on the verge of Europe and Asia, and to such an extent did he enrich it that it was only surpassed by the magnificence of Antioch, Alexandria and Rome. In 306 he abdicated and retired to the coast of Dalmatia, near the city of Salona, where he had built himself a palace. In plan it was nearly square, and covered 9½ acres. The royal apartments extended the whole width of the south side, and were entered from the north, through a circular, top-lighted vestibule, from an arcaded approach which extended as far as the intersection of the streets leading from the three gateways. To the west of these arcades stood the small tetrastyle Temple of Æsculapius, and to the east the domed Temple of Jupiter, circular in plan internally, though octagonal without, with a low peristyle and portico. The north, or Golden Gateway, has a large semicircular relieving arch, over a lintel arch enriched with carving, which is flanked by two small niches, above the whole being an ornamental wall arcade carried on brackets. The other gateways are similar in design, but not so rich. It is instructive to see what a Mediæval designer made of the same forms, a good illustration being the door to Sant Guisto at Lucca. The finest feature of the whole palace was the colonnade on the south side facing the sea, but, even as they were in Robert Adam's time, the remains are disappointing.

Emperor Constantine.

After the retirement of Diocletian the empire fell again into great disorder, at one time there being no less than six emperors; but eventually, after the defeat of Maxentius, Constantine became sole ruler. The basilica built to the west of the forum at Rome by these two emperors was practically a copy of the tepidarium of Caracalla's Baths, with an apse at the eastern end, and deep barrel-vaulted recesses between the eight main piers and their buttressing walls, these latter being pierced by arches, so as almost to form continuous aisles. At the Coliseum end, opposite the apse, there was a projecting vestibule, and it was not until a later date that the south entrance was made and another apse built opposite it. The Arch of Constantine is too well

known to need remark, except perhaps to say that most of the sculpture belongs to an earlier date, ruthlessly taken from the buildings of Hadrian and Marcus Aurelius.

Building of Constantinople.

For Constantine, born on the banks of the Danube, and raised to the throne by the army of Britain, Rome had little attraction, and it was his great ambition to perpetuate his memory by building a new capital further east. When he came to the actual building of Constantinople he soon found that the skill and number of his architects were not equal to the carrying out of his ideas; so much so that he founded schools of architecture in all the provinces of the empire, and by offering prizes and rewards encouraged capable men to make themselves known. The immediate result at Byzantium was a number of elaborate buildings, hurriedly erected on narrow streets, to adorn which he ordered that the ancient buildings of the empire should be robbed of their carvings and statues. I will merely add, in conclusion, Gibbon's list of buildings erected in Constantinople within a hundred years of its foundation; it includes a huge elliptical forum, a hippodrome over 300 yards long, a circus, 2 theatres, 8 public and 150 private baths, 52 porticoes, 5 granaries and 8 aqueducts, besides 14 churches, 14 palaces and 4,388 houses, which were, on account of their size or beauty, worthy of special mention. No remains of the buildings now exist, but we can imagine the size and magnificence of the city a little from the list of structures given by Gibbon as being executed in the first century from its foundation by Constantine.

The chief thing to be learnt from Roman work, besides the use of Classic details in many ways not dreamed of by the Greeks, is the habit of designing buildings with due consideration of their surroundings and the neighbouring structures. Thus in laying out the large area covered by the Imperial fora at Rome, where each forum is of different design and date, the existing buildings were always kept in mind and worked up to when additions were made. We are, perhaps, apt to consider a building or a monument too much as a whole in itself, whereas the Romans considered one building merely as an item in a general scheme. The Column of Trajan now stands alone, but originally it was backed up by buildings of the same scale, set out on a symmetrical plan, the very opposite to our Nelson Column or City Monument. In designing a temple the enclosure was arranged in keeping with it, with a proper approach, and was not allowed to grow up anyhow, of any shape or colour. But then, of course, architecture was popular, and added to the fame of a sovereign, whereas now such is obtained more by social reforms or the active development of fresh fields for commerce.

Mr. H. STANNUS, in proposing a vote of thanks to the author of the paper, congratulated him on the able way in which he had put together such an interesting history of Roman art. The speaker said he felt as Mr. Potter went through the paper, illustrating it with the contemporary buildings raised by the various emperors, that they were being treated to Roman history in a form in which it had not been dealt with before, and yet so succinct and complete that it would be of use to all of them as students. Mr. Potter had made the grand tour, but owing to shortness of time, and not because he despised the ability to sketch and measure, he had taken with him a camera. They saw around the walls a tithe of the views photographed. Some of them would have required two days to draw, whereas with the camera a record was obtained in 20 minutes. There was one remark, the speaker said, which closed the paper, they could not lay too much to heart, and that was the designing of buildings with due consideration of their surroundings. They might not have opportunities for building such great works as the Romans, but they could all make their work suitable to its surroundings. It was not given to many of them to build imperially, but they could think imperially, and the more imperially they thought the greater would be their delight in their work.

Mr. A. KEEN seconded the vote of thanks, and said he wished the paper had made more reference to Roman work existing in the north of Africa. He had seen in an American magazine an illustrated article which described the Roman remains in North Africa. The illustrations showed large towns with not a single modern building in them and the remains were complete in form in every way. He hoped on another occasion Mr. Potter would give them an account of that part of Roman work.

The PRESIDENT said, in hearing the history of Roman architecture, he was reminded of what a friend had said to him when he was about to visit Rome for the first time.

"Always remember," said the friend, "there is nothing in Rome except what you take there." It was the same with every place, and the paper they had heard that evening contained valuable knowledge for those who would visit Rome. Mr. POTTER briefly replied, and the meeting terminated.

EXETER CATHEDRAL.

IN a letter to the *Times* the Dean of Exeter replies to Mr. Thackeray Turner's letter respecting recent work at the cathedral. He says:—

It does not appear that Mr. Turner has taken the trouble to personally visit the work which he condemns apparently without having seen it; he relies on second-hand information, and so his statements about the great west window are inaccurate, as is known to every one on the spot.

Upon examination this magnificent window was found to be in a perilously ruinous condition, partly from the ravages of time, exposure to weather and natural decay, partly from the rude treatment which it had undergone when Peckitt's glass was put in about 1770; a broad and deep second glass line had been cut, greatly weakening the stonework. If left to itself the whole window would in a short time have fallen in; its condition was very serious. The work was undertaken after grave deliberation and under the best advice, and not one single inch of old work that was capable of preservation was not preserved, and not one inch of unnecessary new stonework was inserted—the result being that we have preserved with the most jealous care this magnificent window from becoming a complete ruin without having altered a single feature. Mr. Turner grounds his second charges on the anonymous representations of a casual tourist. Mr. Turner knows nothing of the real condition of the fabric and stonework; that is known only by those who are in daily anxiety on the spot, carefully, conscientiously, unceasingly doing their best to preserve the noble sanctuary entrusted to their charge. Here again the most careful deliberation and counsel have preceded actions. Not one inch of preservable old work has not been preserved, and no new work undertaken which has not been most carefully considered and found to be necessary for the security of the whole. If we followed the advice of Mr. Turner, advising from a distance and in personal ignorance of the real state of the fabric and stonework, we might, it is true, succeed in handing over to him or to his successors an interesting ruin; but our object is higher than this, and the anonymous comments of casual tourists will not move us. We are doing our very best so to deal with our cathedral as to leave behind us in its unaltered beauty at once a noble witness of the architecture of the past, not as an interesting ruin but as a sanctuary for the service of our successors and the glory of our God. Mr. Turner would prefer a ruin from which all traces of the past shall have crumbled away and nothing but dust and featureless disfigurement remain.

In reply Mr. Turner writes:—

I can assure the Dean that it is not an "amusement" to me to make "public accusations." My letter was clearly written on behalf of this Society, and was submitted to my committee before it was sent.

I do not wish to contradict the Dean, but, nevertheless, I hope I may be allowed to say that I know the west front of his cathedral church very well indeed, and have visited it repeatedly, and been greatly distressed to see the unnecessary modernisation which has been, and I fear is, in progress. I still venture to believe my statement that "the stonework of the large west window was rebuilt." This statement does not deny that any of the old stones were put back.

The Dean says, "Mr. Turner grounds his second charges on the anonymous representations of a casual tourist;" but the Dean commits the same fault, if fault it be, for he does not give the name or names of his advisers, simply saying that the work was done "under the best advice." I thought my letter made it clear that a gentleman was sent down on purpose to report, although some members of my committee, as well as I, had seen the work. As a matter of fact, the architect from whose report I quoted is a well-known leading authority. He says, after his careful examination, that "the great window . . . is now new;" and this is certainly the impression it gives.

No one for a moment believes that the Dean has wilfully destroyed any work which could have been saved. The earnestness of the latter part of his letter shows this. But a Dean does not rise from being a curate to his high posi-

tion through his knowledge of building; and therefore it is not unreasonable that those who have such special knowledge should receive his assurance of what stone could or could not be saved as inconclusive.

I am quite sure that if the Dean had seen the stonework in the chapter-house at Westminster Abbey, which Professor Church succeeded in preserving, and which crumbled at a touch of the hand, he would have said it could not be saved.

The Dean says, "Mr. Turner would prefer a ruin from which all traces of the past shall have crumbled away." This statement is, indeed, hard to bear when the best part of my life has been spent in trying to preserve ancient buildings. The Dean clearly cannot have read what is said on page 17 of the Society's publication, "Notes on the Repair of Ancient Buildings," and I really hope in justice he will think fit to withdraw the statement. It is impossible that the Dean can have failed to see the ancient town hall of Exeter, and to know that it was repaired by the Society. Can he say that we have left it a ruin?

THE TEMPLE AT COS.

A LECTURE on the Temple of Health recently discovered at Cos was delivered in Sheffield by Dr. Richard Caton. It was said that no student of Greek can think of Cos without thinking of Hippocrates, its great physician, and much of the lecture dealt with that distinguished man, to whose earnestness and activity Pliny and Strabo testified. He was the intimate friend, the equal, of philosophers, poets, warriors, statesmen and all the most distinguished men of his time, amongst them Euripides, Pindar, Socrates, Plato, Xenophon and Pericles. He was one of the most remarkable figures in history, and for a long time the Greeks believed that he had carried medical knowledge to the highest possible point. With the aid of many lantern illustrations from photographs, Dr. Caton gave a detailed description of the health temple of Cos as it appeared in the times of Hippocrates, showing that the institution was to some extent like a modern hydro. The temple was discovered partly through the efforts of two English archaeologists, Messrs. Paton and Hicks, who found two springs which were identified with those mentioned in the writings of the physician. Cos was a great training centre of physicians. There were dormitories (arranged to secure the free ingress of fresh air) for many people, and there was provided continual mental interest for the sick in the way of sculptures, paintings, music and books. The sick never omitted to sacrifice cocks to the god of healing and to feed the sacred serpents with sacrificial cakes. The serpents were harmless and roamed over the whole island, creating intense pleasure if they climbed on to a patient's couch and licked him. It was significant that Hippocrates rarely, if ever, mentioned the serpents, though he made pious references to the gods in his writings. He put his faith in fresh air, gymnastic exercises, massage, copious draughts of pure water and a careful diet.

TINTERN ABBEY.

THE report of the Commissioners of Woods, Forests and Land Revenues says that by the operations of this year the view of the abbey has been very materially improved by the clearing away of a large quantity of soil and rubbish from the west end of the building. The work in connection with the resetting of the centre mullion and what remained of the tracery of the great east window has been satisfactorily completed, including the protection of the gable over and walls adjoining, and the scaffolds have been removed. In the south transept a scaffold has been erected and an examination made of the upper part of the staircase at the south-west angle and of the south wall and gable adjoining, where the coping and springer to the same hung over in a dangerous manner; the wall, which had broken away, has been reset to a sufficient height to support the springer and coping and render them secure. The tops of the walls, where exposed to the weather, have been made sound and protected, and the open joints of the masonry pointed. This was an important and a very necessary work, requiring a considerable amount of material and involving much labour and time owing to the great height from the ground. Considerable repair has been carried out in connection with the passage above the arcades, the floors have been made good

to exclude water from the walls and arches beneath, and some large openings which weakened the walls have been built up. Much work yet remains to be done, especially in connection with the eastern arch of the tower, and with the north transept and stair.

RHIND LECTURES.

FOR this year's course of Rhind Lectures in connection with the Society of Antiquaries of Scotland, the Rev. A. H. Sayce, M.A., LL.D., Professor of Assyriology in the University of Oxford, was selected. In his opening lecture of the course on Monday upon "The Archaeology of the Cuneiform Inscriptions," Professor Sayce said the decipherment of the cuneiform inscriptions was the archaeological romance of the nineteenth century. It started with a guess made by a Latinist who knew no Oriental languages, but that guess was founded on scientific method and had scientific reasons behind it. The cuneiform inscriptions were first observed on the monuments of Persia. There they were always found in three parallel columns, each column representing a different form of cuneiform script. An examination of them showed that the three transcripts embodied the same text in three different languages, and it was reasonable to suppose that the first was in the language of the Persian kings themselves. This was also the simplest of the three forms of writing; the words in it were divided by an oblique wedge, and as only forty-two characters were employed it was clear that they must be alphabetic letters. In all the inscriptions there was always the same word found near the beginning; it was therefore concluded that this word signified King. Now came Grotefend's guess. The word for King was accompanied by two other words which varied according to the monuments on which they were inscribed, but the second of these words was always accompanied by the first. Grotefend conjectured that the names of Darius and Xerxes were represented by the two words in question, and that when the two occurred together they represented "Xerxes, son of Darius." With this clue in his hand, he gave conjectural values to the characters comprising the names, which were verified by his finding the same character in the two names where, if his theory were right, the same letter ought to occur. His memoir, describing his discoveries, was read before the Academy of Göttingen in 1802, but the Oriental philologists were unable to understand Grotefend's method and the memoir remained unprinted.

A generation had to pass before his discovery was again taken up by other scholars, notably Burnouf and Lassen in Europe, and Rawlinson in Persia. Rawlinson copied the great inscription of Behistun at the risk of his life, and thereby obtained fresh and important material, the result being that the Persian cuneiform texts were finally deciphered and translated in 1849. Meanwhile Nineveh had been excavated by Botta and Layard, and the inscriptions found there showed that the second transcript of the Persian inscriptions was in the Assyrian or Babylonian language. This was now attacked with the help of the proper names in the Persian transcript, and a Semitic language came to light. The decipherment of the Assyrian cuneiform, however, was a very difficult affair, since the characters were very numerous, and owing to their pictographic origin each had more than one phonetic value. Great assistance was derived from the lexical and philological tablets in the library of Nineveh discovered by Rassaus. It was found that the cuneiform script, like Babylonian culture generally, had been derived from an older people, the Sumerians, who were the earliest inhabitants of Babylonia, and spoke an agglutinative language. Another agglutinative language was that of Elam, with its capital Susa, in which the third manuscript of the Persian cuneiform texts proved to be written. Numerous inscriptions in the old language of Elam had recently been found by the French and were at present in course of being deciphered. Another previously unknown language was discovered in the cuneiform inscriptions of Armenia, which were deciphered by the lecturer in 1882. These inscriptions had revealed the existence of a powerful kingdom on the shores of Lake Van before the present Armenians entered the country. Other languages written in cuneiform characters had also come to light, the latest found being that of the Hittites in Cappadocia. Grotefend's guess had thus been like a grain of mustard seed which had grown into an overspreading tree.

LIGHT IN DARK ROOMS.*

IT has long been recognised that light is one of the essentials of health, and as we are not yet able to obtain a perfect substitute for daylight at a sufficiently cheap rate, properly lighted rooms must be taken to mean those that are sufficiently lit with daylight.

Light is necessary to health, because it directly promotes the vital processes which are necessary to life; because dark rooms mean dirty rooms; because light, especially sunlight, is antiseptic to the germs of disease, and notably to tubercle bacilli; rooms artificially lit with gas, the usual alternative to daylight, are still unhealthy, though modern improvements have diminished the unhealthiness.

And yet there is no definite provision in the Public Health Acts for insuring that dwelling and work-rooms are properly lighted. The provisions for underground rooms separately occupied require a window of a certain size, and doubtless the Acts had in view daylight as well as ventilation, but light is not mentioned in the Public Health Act, 1875, or in the Public Health (London) Act, 1891. The only way in which dark rooms can be dealt with is by declaring them to be a nuisance or injurious to health. The Borough Council of Woolwich has obtained a conviction in a case where a front basement room was proved to be dark, this being the only nuisance complained of. The room was not separately occupied or used for sleeping; it was lighted by a window looking into a small area, having over it a grating through which alone light could be obtained, and it was proved that large print could not be read in the middle of the room on a clear day an hour before sunset. The medical officers of health of Greenwich and of Woolwich gave evidence both of the room being dark, and their opinion that light was essential to health. For the defence it was shown that the tenants had occupied the room for over twenty years and were still alive. An order was made to abate the nuisance with 23s. costs. Additional light was provided by increasing the width and height of the window and the width of the area, and replacing the grating with one in which the bars were at right angles instead of parallel to the front of the house.

The principal causes of darkness are:—Insufficient size of windows; windows wrongly placed, e.g. in a corner; room underground with area of insufficient width, or covered over; street too narrow to give a sufficient angle of light; back additions; trees obstructing the light.

It is not proposed to discuss all these heads fully, but simply to mention a few instances of how light has been supplied in my own borough. During the past five years windows have been provided or enlarged, or additional light provided, at several hundred houses.

One very simple mode of obtaining light is the use of whitewash for the surface of areas, adjoining and opposite walls and interior surfaces. The whitewash needs renewing once a year. For areas whitewashing is a temporary expedient; coating with glazed bricks is preferable and often of great utility if the area is sloped at the right angle.

One of the simplest and cheapest means of improving light is the use of highly refractive glass, such as Muranese and, better still, prismatic glass. Muranese glass has a raised pattern, and prismatic glass is fluted in straight lines; both have one plain surface, which should be outside, and the ribs of fluted glass horizontal. This kind of glass has the advantages of refracting the light so that it does not all fall on the floor near the window, and of making curtains and blinds unnecessary for purposes of privacy. The use of such glass for increasing the light of offices and work-shops is well known, but it is not likely to be used for dark living-rooms unless at the instance of the sanitary authority.

When a forecourt exists it is possible in some cases to increase the light of basements by sloping off the area at a larger angle and tiling its surface. When there is no forecourt and the area is necessarily covered with a grating the nature of the grating is of importance. The bars should be narrow but deep, and they should be set at right angles to the house wall, and not parallel as usually found.

But in many dark basements very little light can be obtained unless the window can be raised in height. In most windows the larger part of the light enters near the

* A paper by Sidney Davies, M.A., M.D. Oxon, medical officer of health, Woolwich, published in the Journal of the Sanitary Institute.

top, and this is especially the case in underground rooms. Often the height of the window cannot be raised without encroaching on the floor of the room above. In three cases in Woolwich this difficulty has been overcome by cutting away the rafters, fixing a trimmer and constructing a bulk-head in the room above. The result was very satisfactory in each case. In other houses when the height of the basement room was under 7 feet the floor has been lowered 12 inches or 18 inches, and this has increased the lighting of the floor and furniture.

In cases where a basement has consisted of an underground room in front and a room above ground-level behind, the party-wall between the rooms has been removed for the greater part, the two rooms thrown into one, and a large, well-lit room obtained.

In cases, however, where it was attempted to gain additional light for a dark room by constructing a glazed window in the upper part of the party-wall, the result has been unsatisfactory, as might have been foreseen.

To lighten the room to the greatest advantage, the window needs to reach to the top, and to be nearly in the middle of the wall. In one case a room with a good-sized window was badly lighted owing to a high wall a few feet off, which almost wholly prevented direct rays of light entering the room. But the window did not reach to within 18 inches of the ceiling, and by raising it 12 inches light was enabled to enter direct from the sky, and the light was doubled. In other cases rooms have been dark owing to the window being in a corner, or at one side of the wall; in such cases a small additional window has been constructed.

When trees appertaining to the house obstruct the light the remedy is obvious; if, however, the trees are on the property of another owner, the matter is more difficult, but a representation to the owner has frequently had the desired effect. In one case the front rooms of half a street were dark, owing to high ground opposite on which were a number of overhanging trees, the ground appertaining to army barracks. A representation was made to the commandant, and after a little delay all the obnoxious trees were cut down, with very marked improvement to the houses.

The use of outside reflectors, as in city offices, has not so far been found practical for living-rooms.

Second in importance to the lighting of living-rooms is that of staircases and passages, though here the primary object of a window is usually ventilation. A passage and staircase without a window has been held in London police courts to be a nuisance, where the house was occupied by more than one family, but a prosecution would probably fail in any other case. Little difficulty has been found for the most part in Woolwich in making a moderate sized window on a dark staircase.

The cost of putting a small window in an external wall to light a staircase is not much, the district surveyor's fees being frequently the most serious part. When there is no exterior wall a skylight can sometimes be made, but this is less satisfactory, as it is difficult to clean and to keep out rain, and the cost is greater. Failing a window, glass panels in bedroom doors are useful to a small extent, but the chief substitute for a window as regards light is a light-coloured paper or other wall surface frequently renewed.

The above refers only to old houses. It might be thought that at this hour of the hygienic day it would be unheard of for a house to be built in which there was a living-room not well lighted. But even the stringent provisions of the London Building Act do not prevent such cases.

One of the commonest means of defeating the Act is the erection of back additions of such extent as to shut off most of the light from the back rooms of the main part of the house; in addition to shutting off light they necessitate the windows being squeezed to one side of the room, so that a large part of it is always in shade. When the yard between two adjoining back additions is covered with a glass roof (allowed in the London Building Act under the title of a conservatory), not only is most of the light, but also the air, excluded from the rooms. New houses on old sites may still be built without sufficient provision of light, and new houses may be built so as to shut out light from existing ones.

The London County Council has proposed amendments to the Building Act which will remove some of the difficulties pointed out above; but it appears that the only satisfactory way of insuring that the dwelling-rooms of new houses are sufficiently provided with daylight is to enact that no new house shall be occupied unless each

habitable room is certified to be properly lighted by daylight.

With old houses what is wanted is a further definition of nuisance as "any dwelling-room not provided with proper means of lighting by daylight."

But let not any sanitary reformer wait for legislation. The prospect of obtaining any useful sanitary measures or amendments seems remote indeed, and meanwhile I can only express the hope that all sanitary authorities may make as good use of the existing Public Health Acts as the Woolwich Borough Council has done.

TESSERAÆ

Harp Alley and Its Wares.

THE state of the arts in the days of Thornhill and Hogarth's time would, in our days of exhibitions, be considered at a very low ebb; when the only encouragement, or rather the only means of employment to be procured was in sign-painting, the place of show and sale was found in Harp Alley, Shoe Lane, near Fleet Street, where from end to end of that place, the works of the candidates for public favour and employ were to be found—a sort of Noah's Ark, in which animals of every hue, kind and colour might be seen, from the pencil of Catton, varied by the still-life of Keyse, whose legs of mutton, with every kind of butcher's meat, would be no less admired for their excellence as works of art in the present than in their former day. Here, too, might be seen the compositions of Hayman as a ticket porter and gentleman—"The Salutation," "A Grave Digger," &c. It must be remembered, however, that sign-painting, though it may appear contemptible in the eye of modern practice, was the staple traffic for the sale of art, and what the tradesmen of our time expend in their ample glass windows and shop fronts was in those days expended on the painted sign, which, with its massive carved frame and ornamented ironwork, cost in many instances from 100*l.* to 150*l.* It may also be observed that the style of painting required for this sort of art a firm pencil and a decided touch, together with an effect which might tell at a distance—no bad foundation for skilful execution in art. As these signs for the most part were swung by their projecting support from the houses to the middle of the streets, and the lives of His Majesty's liege subjects were often perilled by these suspended pictures, a Bill was brought into Parliament by Lord Bute to prevent the danger which hung like the sword of Damocles over the heads of the unwary passengers. This was in some sort at that time considered the death-blow to art, and parents no longer thought of placing their sons in a profession that was fast falling into decay.

Rembrandt's Axioms.

Men of great and original genius who, like Rembrandt, have little of what is ordinarily called education, and who seem wayward in their tastes and habits, are sometimes looked upon as inspired idiots. But in the mind of such a man the immense amount of knowledge accumulated by close and silent observation, knowledge of a kind not to be communicated by words, is something wholly inconceivable to the learned merely in books; and if their reading has opened to them a world from which he is shut out, he also lives in a world of his own, equally interesting, the wisdom and enjoyment of which his pencil is constantly employed in communicating to all who have eyes for the sublime aspects of nature, and hearts fitted to receive such impressions through their eyes. The very few sayings recorded of Rembrandt are remarkable for their mother-wit and sound sense. "On one occasion," says his pupil Hoogstraten, "when I was very troublesome to my master Rembrandt by asking him too many questions respecting the causes of things, he replied very judiciously:—'Try to put well in practice what you already know; in so doing you will in good time discover the hidden things which you now inquire about.'" "A picture," he said, "is finished when the painter has done with it." And when the works of his latest and best practice in execution were examined too closely, and probably criticised as unfinished, he said his pictures "were not intended to be smelt, but looked at." He felt the restraint of what is considered superior society, and either avoided or stole from it on the first occasion, and when asked his reason, replied, "If I wish to relax from study, it is not honour, but liberty and ease that I seek."



The Destruction of Selby Abbey.

SIR,—Every Yorkshire historian and antiquary—as, indeed, almost thousands upon thousands of the laity—has read with the deepest distress of the lamentable catastrophe at Selby. That this historic pile has been reduced to ruins is the bitter regret of the whole community. Will you, therefore, give me the courtesy of your columns to say that the proprietors of *Yorkshire Notes and Queries* have decided to open a fund towards the cost of rebuilding this ancient fabric, and that any sum remitted for this almost national purpose will be thankfully and promptly acknowledged?

CHAS. F. FORSHAW, LL.D., F.R.Hist.S.,
Editor *Yorkshire Notes and Queries*.

Bradford: October 21.

"The Lady of Shalott."

SIR,—A wish has been expressed in many quarters that the nation should become possessed of an example of the work of Mr. Holman Hunt. It has been ascertained that the last great work of the painter, "The Lady of Shalott," can be obtained for 7,000 guineas. The picture is now on view at the Leicester Galleries, Leicester Square.

"The last, and in some respects the most triumphant, of Holman Hunt's works," it has been the artist's main labour at intervals for the past fifteen years.

It is the completed realisation of an early conception and the culmination of an ideal of faithful art service; and though, owing to failing eyesight, in the last year of work upon the canvas Mr. Holman Hunt was assisted by a friend, no line, tone, tint or portion of the design, to the least detail, was determined by any but himself. It is a picture that the artist is content to be judged and remembered by.

A committee has been formed for the carrying out of this object, including the names of the Rev. H. M. Butler, Master of Trinity, Cambridge; the Earl of Carlisle, S. P. Cockerell, I. Gollancz, Anthony Hope, Walter Crane, T. G. Jackson, R.A., the Bishop of Ripon, Sir William B. Richmond, R.A., Canon Rawnsley, Archdeacon Sinclair, T. H. Warren, Vice-Chancellor of Oxford; the Rev. H. G. Woods, Master of the Temple, and they will be glad to add to their number the names of those who are interested in this proposal.

Among the sums already promised is one of 250*l.* given conditionally that nine others will promise a like amount. The Master of the Temple is hon. treasurer of the fund, and subscriptions will be gratefully received by him.

A subscription list, through the kindness of Messrs. Ernest Brown & Phillips, is also open at the Leicester Galleries, Leicester Square.—Yours, &c.,

H. G. WOODS,

Hon. Treasurer, Temple, E.C.

H. D. RAWNSLEY,

Hon. Secretary, Crosthwaite Vicarage,

Keswick.

October 20, 1906.

GENERAL.

A Memorial to the late Marquis of Salisbury, subscribed by the county of Herts, was unveiled on Saturday at Hatfield. The bronze statue is placed immediately outside the entrance gates of Hatfield House. The Marquis is represented seated in an Elizabethan chair holding a scroll and wearing the robes of the Chancellor of the University of Oxford and the collar of the Order of the Garter. The carved pedestal is of Portland stone and shows the Cecil family arms on the front. Mr. G. Frampton, R.A., is the sculptor.

M. Ferdinand Chaigneau, known as the last painter of the Barbizon school, has died at the age of seventy-six in the village of Barbizon.

Mr. Robert Surtees, formerly city engineer of Ottawa, died in Toronto on September 29. He was born in England seventy-one years ago. He was appointed city engineer of Ottawa in 1875 and held the place for a quarter of a century, becoming one of the best known city officials in the Dominion. On leaving the city service he became the engineer of the Ottawa Improvement Commission.

A Deputation from the Royal Irish Academy waited upon the Chief Secretary last week to lay before him a statement as to the urgent need of a complete printed catalogue of the Irish manuscripts in the library of the Academy.

The Coventry City Council on Tuesday agreed "That, subject to the sanction of the Local Government Board being obtained to the provision of shops in connection with the buildings and to a loan of the necessary amount, the erection of municipal offices and shops in Earl Street and St. Mary's Street be proceeded with at an estimated cost, exclusive of site and furniture, not exceeding 30,000*l.*, and that the matter be remitted to the committee, with authority to take all necessary steps for carrying the recommendation into effect."

At the Annual Meeting of the British School at Athens, at Burlington House, on October 30, Professor R. C. Bosanquet will read a paper on "Recent Excavations at Ancient Sparta."

Mr. Mervyn Macartney has been appointed by the Dean and Chapter of St. Paul's as their consulting architect, in the place of Mr. Somers Clarke, who has resigned.

The Winchester Cathedral Restoration Fund had last week reached the total of 23,000*l.* out of a minimum of 30,000*l.* It is hoped to inaugurate a permanent fund for future repairs.

Messrs. Bennett & Bennett, engineers, Southampton, have been awarded the prize of 100*l.* for the best drainage scheme for Emsworth offered by the local authority. Messrs. Stringfellow, of Emsworth, and A. S. Stallard, of Havant, jointly won the second prize. Mr. Strachans, of London, acted as assessor.

The Second Autumn Exhibition of "The Society of Twenty-five English Painters" will open to the public at Messrs. Dowdeswell's galleries, 160 New Bond Street, on Friday, November 2.

The Foundation-stone was laid on Saturday of the mission hall, St. Mark's Church, Portobello. The building is to be erected from the designs of Mr. C. H. Maidman, architect, Edinburgh.

The King's Memorial Baths erected at Newcastle-under-Lyme as a memorial of the coronation of King Edward VII., who is the lord of the manor of the borough, were opened on Monday. The baths have cost nearly 14,000*l.* They contain a plunge bath 100 feet by 35 feet, a smaller plunge bath mainly for children, Turkish baths, Russian vapour baths, &c. The building has been erected by Mr. S. Walton, jun., Newcastle-under-Lyme, to the design of Mr. J. B. Langley, architect, Manchester.

Mr. E. E. Ford, of the Borough Surveyor's Office, Swindon, has been appointed assistant borough surveyor of Doncaster. There were 228 applications for the post, for which the salary is 80*l.*, rising to 100*l.*

The Magistrates of Birmingham at a meeting passed a resolution calling "the attention of the watch committee to the inadequate ventilation of the great hall of these courts, and to their ventilation generally, and requests that means should be at once taken to bring about some improvement."

A Memorial consisting of a bronze medallion on grey marble is to be placed in Madeley Church, Shropshire, in memory of Sir Wyke Bayliss, who was born at Madeley. Captain Adrian Jones, the sculptor, will design the tablet.

The Executive Committee of the Association of Municipal Corporations, at a meeting held at the Westminster Palace Hotel on Friday last, decided to interview Mr. H. Gladstone, the Home Secretary, in reference to the High Court's decision in the Hythe Burial Board case, in which an adjoining landowner was held to have the right to prohibit the interment of the dead in a public cemetery within 100 yards of his land. Mr. Gladstone is to be asked to secure an amendment of the law, which as it stands would prevent many of the cemeteries in this country being used if the adjacent landowners raised an objection.

Childwickbury, St. Albans, the seat of the late Sir Blundell Maple, is to be offered for sale. The estate includes the manor of Childwick, which dates back to the Saxon kings, when it was part of the domains of the monks of St. Albans. The manor remained in the hands of the Church until the Dissolution, when it was granted by the Crown to Sir William Cavendish, who surrendered it subsequently to Edward VI. in return for lands in Derbyshire. Shortly afterwards it passed into the hands of John Rowse, who, with his descendants, retained it for over a hundred years. The mansion-house was built during the reign of James II.

The Architect.

THE WEEK.

THE death of Mr. JOHN THOMAS MICKLETHWAITE on Sunday last, in his sixty-third year, deprives English Gothic of one of its most ardent students. While so many have to follow other styles, he contrived to be faithful to it alone. As a pupil of Sir GILBERT SCOTT he upheld the traditions of the Spring Gardens office. Eight years ago he was appointed to the charge of Westminster Abbey, and there was no architect better qualified for that important office. The descriptions he wrote are evidence of the careful study he had made of all parts of the Abbey. He had also studied Mediæval life, especially as it was followed in monasteries. He recognised the change which had taken place from the earlier rule. And without a knowledge of such change, he said, it was impossible to understand the development of monastic buildings; but having that knowledge, "we may see the meaning of much which the mere moulding-monger despises, and, when he can, destroys, to 'restore' the earlier design, but which tells us of the life of those who inhabited the building, and how it was slowly altered as time went on, and refinement or laxity—which you will—increased." It will be evident from these words that Mr. MICKLETHWAITE perceived a connection between architecture and Mediæval life. He was recognised as an authority in the Society of Antiquaries on much else besides building. He read several papers before it and other societies. As an architect his practice was not extensive. He contributed only two designs to Academy exhibitions, viz. Hospital at Wakefield and the Church of St. Hilda, Leeds, with a design for a Church-house at Westminster in connection with Mr. SOMERS CLARKE.

THE late Mr. FRANK McCLEAN, on his death, bequeathed a large sum of money to the University of Cambridge for scientific purposes. He was a son of Mr. McCLEAN, who was well known as a railway engineer and was at one time president of the Institution. Although recognised as a student of science, Mr. FRANK McCLEAN had also other tastes, and in addition he was a collector of Greek coins, which is one of the most fascinating of pursuits for a man with money to spare. His brother, Mr. JOHN R. McCLEAN, M.A., of Trinity College, Cambridge, having resolved to increase the collection, has been fortunate in realising his desire, which was that it should become complementary to the LEAKE collection in the Fitzwilliam Museum. He has now presented the collection of Greek coins, exceeding 5,000 in number, to the museum, which will henceforth, in consequence, occupy a place in the front rank among English numismatic repositories. Many of them are unpublished coins, and a large number are not represented in the collection at the British Museum. The thanks of the University will be given to Mr. McCLEAN for his munificence at the next congregation.

IN the *Durham Advertiser* Mr. J. W. FAWCETT has done much to rescue the names of some of the worthies of the county from oblivion. In the last number his subject is WILLIAM ROBINSON, who was closely connected with English architecture in the eighteenth century. He was the oldest of the three sons of WILLIAM ROBINSON, of Kepyver and Gilesgate, Durham, and was born at Kepyver about 1720. He received his education at the parish school of St. Giles, studied for an architect in the city and went to London while a young man. On January 30, 1746, he was appointed clerk of the works to Greenwich Hospital, when he

superintended in 1763 the building of the infirmary designed by JAMES STUART. Between the years 1750 and 1775 he assisted WALPOLE in executing the latter's plan for Strawberry Hill. Simultaneously he was clerk of the works at St. James, Whitehall, and Westminster, and surveyor to the London Board of Customs, for whom he designed, between 1770 and 1775, the Excise Office in Old Broad Street. In 1771 he became Secretary to the Board of Works, an office which he held until his death. He made a design for rebuilding the Savoy, but this was superseded on his death by Sir WILLIAM CHAMBERS's plan for Somerset House. He died of gout at his residence in Scotland Yard, London, on October 10, 1775, and was buried in the chapel at Greenwich Hospital.

THE uncertainty of the law has been exemplified in a remarkable way in the case of *KINE v. JOLLY*, which was decided in the House of Lords on Thursday of last week. The earlier stages of the action are recorded in *The Architect*. Mrs. KINE applied for an injunction against a builder in December 1903 to prevent him from obstructing the light and air to her house at Acton. The injunction was granted. But the order for demolition was withheld until the appeal was heard. Prior to the rehearing judgment was given in the case of *COLLS v. Home and Colonial Stores*. With this decision before them the Court of Appeal remitted the case to Mr. Justice KEKEWICH, in order to decide whether the loss of light was of an extent to entitle the plaintiff to damages. His Lordship decided in the affirmative, and an order was accordingly made that such part of the house should be taken down as affected the light of the morning-room and hall. The defendant again appealed, and a majority of the Court came to the conclusion that the order to take down ought not to have been made. But an inquiry was ordered as to the extent of the damage which plaintiff had suffered. The builder brought the case to the House of Lords. The appeal was heard by the Lord Chancellor, Lord JAMES OF HEREFORD, Lord ROBERTSON and Lord ATKINSON. In the end their Lordships were equally divided. The Lord Chancellor and Lord JAMES OF HEREFORD were in favour of the plaintiff in upholding the judgment of Mr. Justice KEKEWICH, while the other Lords were in favour of the builder. The Lord Chancellor expressed his profound regret that in a matter which was comparatively small such enormous costs were incurred, and which it will be difficult to divide between the two parties.

THE venerable FRÉDÉRIC MISTRAL is one of the most glorified of Frenchmen, for he represents Provençal poetry. His "Mirèio" has been made the subject of an opera by GOUNOD, and others of his poems are esteemed as epics. MISTRAL is expected to differ in his ways from ordinary men, and there is no surprise expressed at the announcement that he is making arrangements for the erection of his tomb. The place selected for the resting-place of the poet is in the cemetery of Maillane. He has a theory that French poets at least are related to the Greeks. But a great many of the inhabitants in the South of France believe they are the descendants of Greek wanderers. As a Western Greek, MISTRAL is resolved that his mausoleum shall have some of the characteristics of a Greek temple on a small scale. In Baux there is a ruined structure which is supposed to have been a Roman, if not a Greek, pavillon. It was visited in the twelfth century by troubadours, knights and ladies, who used to compete in love songs and other literary exercises. An adaptation of this will be erected by MISTRAL. It will have a dome surmounted by a cross, and will be constructed of costly marbles. MISTRAL has reached his seventy-sixth year, but his admirers must hope it will be long before the temple is applied to its contemplated use.

GOVERNMENT TRAINING.

THE letter from the Secretary of State for India in Council to the President of the Royal Indian Engineering College at Cooper's Hill gives the *coup de grâce* to an institution which should be considered as evidence of what panic can do when it seizes the mind of a Minister of State. The earlier Indian railways were designed and carried out by civil engineers who were not ordinary Government officials. There were numerous men in England who were only too glad to accept appointments in a country where so many Englishmen and Scotsmen had acquired wealth. Then came the Mutiny and, as was to be expected, railway extensions were suspended. Lord STANLEY became Secretary of State, and he grew alarmed about the possibility of not having a sufficient supply of skilled assistants for public works. He therefore resolved on the establishment of Cooper's Hill College in order to be a nursery for them. The authorities in India, on whom the responsibility for the conduct of public works really rested, did not approve of the project. They declared that they considered the success of such a college to be very uncertain, and that they had grave doubts about any necessity for such an establishment. Lord STANLEY was morbidly self-opinionated, and was quite positive about understanding the circumstances of India better than any of the officials in Calcutta, Bombay, or Madras. Accordingly the Cooper's Hill estate was purchased from Baron GRANT for 55,000*l*.

The number of professors and other officers was out of all proportion to an institution which could only accommodate at the most 125 students. During the thirty-five years in which the college has been opened the total number of students admitted was 1,623, or about forty-six a year. According to the president, Sir JOHN OTTLEY, the number was put down at forty-two a year. He calculated the fate of the students as follows:—"An average of fifteen drop out of the batch during the course, and ten more complete the course without obtaining an Indian Government appointment, whilst only seventeen get such appointments. In other words, of every forty-two who have entered the college more than 35 per cent. have dropped out; about 24 per cent. have completed the course but failed to get an Indian Government appointment, and 40 per cent. have obtained appointments." Sir W. H. PREECE, who as a Government official himself was not likely to be too hard in judging, put the averages in another way:—"Cooper's Hill," he said, "is very extravagant. You must remember that at Cooper's Hill you are now merely getting boys from the public schools, and those boys are not selected in any shape or form. It is a mere matter of luck whether, out of the twenty-five who go in, five are good for railway engineering, one good for telegraphs, and so on." It would not be according to precedent for a Government department to declare that at any period of its existence it committed a mistake, and therefore Mr. JOHN MORLEY says that the college has successfully fulfilled the purpose with which it was founded, besides serving the interests of the Empire at large.

If success attended Cooper's Hill during thirty-five years, why is the building to be closed? The report of the committee appointed in 1903 declared that in other ways well-qualified engineers could be obtained without maintaining a special college, which did not, moreover, provide any particular advantages to the student. Even for the latest addition, that of forestry, it was found to be without any advantages. The explanation of the closing given by the Secretary of State for India is as follows:—"It is sufficient to refer briefly to the great change which has taken place since 1871 in the facilities for obtaining a scientific education in engineering in the United Kingdom, and to the fact that there are to-day a large and increasing number of universities and other institutions, equipped with costly appliances and having highly specialised talent at their command, where the subjects hitherto taught in the college at Cooper's Hill can be studied. In these circumstances it was felt that

it was no longer justifiable to cast upon the revenue of India the charge of maintaining a special college for the training of the engineers required for its service, and that the time had arrived when the Secretary of State in Council should look to these institutions for the supply of men for India."

Cooper's Hill may therefore be said to have vanished; not, of course, without leaving a deficit which India or Great Britain will have to meet. After the inquiry had been made by some half-dozen practical men the college could not be upheld. The most that can be said for it is that in 1871, when it was founded, there was no established engineering college in England, and that Lord STANLEY and his advisers were unable to understand how engineers could be trained except in classrooms. A little consideration should have convinced them that the system by which the greatest modern engineers were produced, men whose counsel was sought by foreign Governments and who had created engineering as a whole, was good enough to enable young men to take levels in India and to help in laying out works. But we cannot expect such knowledge in a Government office as would be possessed by an ordinary business establishment. A private individual or a public company in 1871 who required structural works on an extensive scale to be carried out in India would have been satisfied with the assistant engineers who are to be found in Westminster. It would be recognised that the principles adopted in one country for construction were applicable in others, and there would be no difficulty in bringing experience to bear in India. But the method of business in the India Office was unlike that followed in the City.

The failure of one Government experiment in respect of training naturally gives rise to the question whether others would not be discovered if the same kind of tests were applied to them. The official system of teaching science and art corresponds in some measure with that followed in Cooper's Hill. Undoubtedly there was far more reason for making the experiment of setting up schools of design in Somerset House than for founding a costly engineering college. Design was not systematised in 1837, and although there were some artists who could produce patterns in England, yet for most of the work except of the humblest kind, in which art was in demand, it was necessary to have recourse to foreigners. At first the aim of the schools was narrow, if not inadequate. Developments followed from time to time, until at length the original purpose of the schools was ignored, for scant attention was given to the designing of patterns or models. Let us grant that the experiment was called for by the necessities of the time, although when schools of design were first opened it seemed as strange for the Government to undertake art teaching as it would appear if proposals were now made to open schools of medicine and surgery, law and divinity. If after thirty-five years the Cooper's Hill experiment could be abandoned without any loss to Great Britain or to India, it may well be asked why an experiment which has been conducted for double that time continues to be necessary? Comparatively few people were concerned in Indian engineering, yet a supply of capable men was forthcoming. But industrial art has a relation to the majority of people, and, like all prosperous industries, should after a time have been left to grow without official fostering. In the course of seventy years a great many designers must have come into existence, and, just as in other professions, businesses or trades, they are the rightful instructors to those who are to succeed them; but so long as it is supposed that Government is making provision for all the requirements of manufacturers, what may be considered as the natural source of design is neglected. Young people take up the study, but they rarely become the pupils of men who live by the practice of design. Indeed, regular pupilage seems to be going out of favour in all branches of art, although it is the surest way to attain skill.

It is not only the neglect of pupilage which is to be dreaded; another evil also arises. At the present time it would be folly for an individual to set up an art school in London or in one of the provincial towns, resembling those of JULIEN, of TRÉLAT, of GUICHARD, and others in Paris. If he proposed to obtain the co-operation of able men it would be of little avail. The Government or colleges or societies seem to be combined for the purpose of preventing all private enterprise. But it is not difficult to imagine the advantages which such a school would possess. Yet under modern conditions it is an impossibility.

When science followed art as an allied subject for instruction, the aim of the Government was as limited as in art. The mining school connected with the Geological Survey formed the nucleus, and for a time the school was known as the Government School of Mines and at a later time as the Royal School of Mines. Afterwards the field was enlarged and it became the Normal School of Science, the connection with the School of Mines being still respected. Six years ago the title was changed to the Royal College of Science. The importance now attached to science in the official mind is evident from the last edition of the regulations for the Royal College of Science and Royal College of Art. There are 213 pages devoted to science, while art, including museums, can only have eighty pages. Science as taught in South Kensington is now of almost universal extent. It comprises mechanics, physics, chemistry, biology, geology, metallurgy and mining. Each of the groups has subdivisions, and mathematics is not neglected. The syllabus of the school is therefore very extensive, and at the present time an effort is being made to enable the college to obtain a monopoly of science teaching in the Metropolis.

In this case, also, it is possible that officialdom has gone beyond the necessities of the case. If it had been foreseen that the schools of design and the science school were to attain their present magnitude it is possible no Government would have made the experiment of founding them. Any success which Great Britain has attained was through individual efforts. It was always insisted on that the province of Government should be limited. The most which an economist like STUART MILL would allow in respect of education was that Government should insist on the elements being taught, and if required should establish schools for that purpose. It is doubtful whether anyone who has entered into the spirit of the constitution would care to go further than MILL. It is true that Government can employ unlimited resources. But will any unofficial individual have the courage to say that the results of the enormous expenditure on science and art during the last fifty or sixty years have been commensurate with the price which the country has had to pay for them?

There is no doubt the Royal College of Science possesses a numerous staff of professors, assistant professors and instructors. But we must remember that at Cooper's Hill the teachers were proportionately more numerous than at South Kensington, and yet the engineering college was a disappointment if not a failure. Possibly in both cases the students have felt from belonging to Government institutions that they possess privileges, and as there are no opportunities for pitting them against students who were taught elsewhere, there is only inadequate emulation and too little of a stimulus to exertion.

A Discovery has been made at Winchester Cathedral during the progress of the excavations for the underpinning of the structure. Near one of the buttresses at a depth of 12 feet the workmen came upon some paving composed of red and black tiles, each 1 foot long, 11½ inches wide and 1½-inch thick. The paving, which extends some distance, is embedded in the peat, and there are remains of a rubble wall on each side of it. Experts express the opinion that the tiles are the remains of an ancient Roman watercourse or conduit.

ELECTRICITY SUPPLY OF THE METROPOLIS.

IN one of the recent reports of the finance committee of the London County Council it is pointed out "that, having regard to the heavy capital commitments of the Council, both as regards tramways and other services, and to the present condition of the money market, which is most unfavourable to large issues of stock, capital expenditure by the Council should for the present be strictly limited to purposes which are absolutely necessary and urgent." We can easily imagine the surprise of that committee when they saw the report which recommended that the supply of electrical energy in the Metropolis should be secured as part of the work of the Council. Already some of the local authorities have powers to supply electricity in bulk, and their expenditure on account of electric lighting and other uses of the power amounted up to March 31 of the present year to 5,450,000/. Is it wise to interfere with local authorities and with companies, and to undertake still larger expenditure in order that the supply of electrical energy may become more generally available?

To some extent the answer has been already given, i.e. if we can accept a Select Committee of the House of Commons as qualified to give a decision. After investigating various schemes during more than twenty days the Select Committee recommended the adoption of one large and inclusive scheme, which should comprise not only the whole area of the Metropolis, but adjoining boroughs and districts. It was also considered that a central authority was required, and that the London County Council should be that authority. Finally, the committee suggested that as the provision of cheap electric-power for London was important and pressing, the necessary action should be taken without delay to obtain an Act for the purpose. It was therefore incumbent on the Council, notwithstanding the condition of the money market, to investigate the subject, in order that a proper Bill should be drafted.

It must be admitted that the London County Council has acquired an unfortunate reputation for grasping or centralising. It may therefore be supposed that the Select Committee of the House of Commons was merely playing up to one of the characteristics of the Council. So much has been accomplished by the co-operative efforts of individuals, it will at first sight appear as if private companies could as well deal with electricity as with steam-power or water-power. It is satisfactory to know that specialists have come to the conclusion that both economy and efficiency are secured when electricity is produced on a great scale. The machinery that is necessary for generating the power is costly, and on that account electricity cannot rival gas as regards price in certain places. It is possible to utilise electric-power in a detached mansion, but the expenditure which is required at first and the annual expenses are enough to demonstrate the peculiar conditions which attend the production of so invaluable an agent. The owner of such a mansion would probably fail to understand why illumination with him must be so expensive, while in some of the model dwellings of the Metropolis a tenement of three or four rooms can be lighted for less than a shilling a week. In no class of manufacture is the difference in scales of production more marked than in obtaining electric-power.

There must, however, be some limit to all varieties of manufacture. That is found to be the result of experience with private firms or companies. Some people may therefore think that the County Council have interpreted the recommendation of the Select Committee, about supplying adjoining boroughs and districts in addition to the entire county of London, in a too liberal manner. The outside area of supply which is contemplated by the Council includes parts of Essex, Kent, Surrey and Middlesex. The total area involved is 451 square miles, comprising 117 square miles in London and 334 square miles in the surrounding districts. We doubt whether the United States have

attempted to bring electricity to bear on an area equally extensive.

The most important consideration is the manner of treating existing undertakings. It is concluded that if a large generating station is created, independent generating systems, however costly in character, should not be allowed to have co-existence. Economy would not be promoted, and the aim of the Council is to secure a cheap supply of electricity. It is therefore proposed that the Council should be empowered to acquire compulsorily the electric undertakings of the borough councils of Battersea, Bermondsey, Bethnal Green, Fulham, Hackney, Hammersmith, Hampstead, Islington, Poplar, St. Pancras, Shoreditch, Southwark, Stepney and Stoke Newington. The Bill is also to provide that no further capital expenditure shall without the consent of the Council be incurred by the local authorities on the works in question. With authorities outside the county of London the Council do not propose to exercise compulsory powers; the whole or part of any undertaking is to be purchased by agreement. There are also companies having powers to supply electrical energy in the county of London. Their property can be acquired compulsorily by local authorities in 1931 and subsequent years. What is now recommended is "that the Council should be empowered to purchase compulsorily the undertakings of companies within the proposed area of supply at the time when, and on the terms on which, such undertakings would have become purchasable by local authorities, or at any time to purchase by agreement the whole or any part of such an undertaking." The value of the companies' property will be much greater than that of the local authorities', for the expenditure up to December 31, 1905, by companies supplying London amounted to 12,718,534*l.* It has yet to be ascertained how far the existing machinery and other plant can be utilised by the Council. But in any case a large loss will have to be sustained.

The great generating station is to be either at Barking or at Erith, and it can be erected in sections. It is suggested that in addition to giving a supply untransformed at high pressure, the Council should also give the supply at the pressure and of the kind which may reasonably be required by the various classes of consumers, and provide the necessary transforming apparatus. It is estimated that the cost of the generating station, including land, would be 1,400,000*l.*, while the cost of the transmission and distribution system, &c., would be 2,650,000*l.* It is anticipated that the demand for electricity would be so great that the revenue from the undertaking would be more than sufficient to cover the expenditure. It is declared to be of the utmost importance that a cheap supply of electricity should be available for manufacturing purposes, for within the proposed area the volume of manufactures is greater than in any other manufacturing district in the United Kingdom.

The finance committee have not had time to consider the proposals fully. But they point out that the extent of the undertaking and the amount of capital expenditure involved would be to a great extent beyond the Council's control. Within seven years the expenditure of four and a quarter millions would be required for a first instalment of the work. That sum would be in addition to the money needed for new tramways and other services. In taking over the undertakings of the boroughs the Council would also have to accept the outstanding debts.

The proposals are almost enough to appal the ordinary ratepayer of the Metropolis. No doubt the purchase of the existing undertakings need not take place immediately. Many of the shareholders in companies object to compulsory sale at any time. But as soon as the new generating station is erected at Barking or Erith there will be a desire to utilise its possibilities, and efforts will be made to obtain early possession of the existing undertakings. It should also be borne in mind that electricity is not expected to

be the only motive-power in a future time which is approximately near to us. As SHAKESPEARE says, the appetite grows by what it feeds on, and the victory over steam, which seemed to result from the experimental work of a very few years, has made men of science anxious to obtain a power which will supersede electricity. From the results already obtained several experimenters both in England and abroad are sanguine of success. After all, it may be only a dream of science. But those dreams, although often derided, very often become realities. It would not necessarily follow that the plant which was prepared for the distribution of electric-power would serve for the new force. In the vast metropolitan area there might be room for steam, electricity and hydraulic-power. But at a time when nothing that is scientific appears to be permanent it would perhaps be prudent to hesitate about involving the people of London in an increase of expenditure when the actual saving by the new proposals would not be of great account to the average ratepayer, and it is well to remember that the advantage offered by the new project consists mainly in saving.

SELBY ABBEY.

THE following report by Mr. G. J. Oldrid Scott has been presented to the committee:—

The deplorable fire which has done such great injury to the abbey broke out on the night of Friday, October 19, in the Latham chapel, in which the new organ had lately been erected. This chapel stands east of the north transept and opens also into the north aisle of the choir. The fire spread thence into the transept and choir, and later into the tower and nave. The injury done in every part of the building is immense, though the actual amount of destruction varies very considerably. The effects are worse in the immediate neighbourhood of the organ, the inflammable nature of which caused such intense heat that the face of the stonework exposed to it has been almost entirely destroyed.

The arches leading from the Latham chapel into the transept and the choir aisle have lost every trace of their mouldings, while the pier from which they spring is so much injured that it, as well as the arches, must be reconstructed. The two windows in the chapel are much injured, one of them having lost its tracery entirely. The chapel roof has disappeared, while not one atom of the organ remains. So furious was the fire at this point that the adjoining bay of the choir aisle has suffered almost as much as the chapel itself—the stone ribs of its groined ceiling are destroyed, while all the stonework in the immediate neighbourhood will need extensive renewal.

The choir, one of the noblest examples of Decorated architecture in the kingdom, has suffered grievously. Here the roof with the beautiful oak groining has entirely perished, and also the whole of the internal fittings, consisting of the long range of stalls, all the screens filling the side arches, as well as the reredos, which was erected at great cost fifteen years ago. This was given by the late Mr. Houldsworth, and it is only quite recently that it was completed by the addition of much rich gilding at the expense of his family. The marble paving of the sanctuary is destroyed, and the fine stone sedilia has received considerable injury.

Perhaps the most serious matter in the choir is the destruction which has taken place in the lower part of all the columns carrying the side arches. Here the flames from the burning stalls and screens, as well as from the timbers falling from the roof, have calcined the stone to a great depth, large parts of it having fallen away or become shattered. This injury is happily almost wholly limited to the inner faces of the columns which were most exposed to the heat and it does not extend to the finely-carved capitals and canopies. Nor are the arches, with their splendid mouldings, injured to any serious extent. This is a most happy circumstance, as it is the finest work of its kind in England, and its loss would have been indeed lamentable.

Higher up it is satisfactory to note that the clerestory windows, with their beautiful parapets, have escaped with very little injury, as well as the clustered shafts from which the groining springs. This groining, though generally of oak, has the lower part of its ribs worked in stone to a height of about 4 feet, and here again no great harm has been done.

Another subject for congratulation is the comparative safety of the grand east window. Its flowing tracery is unequalled, and the stained glass, which dates from the fourteenth century and which was restored some years since at the cost of Mr. William Liversedge, is of the utmost value. The firemen were told to concentrate their efforts on this splendid feature, and though the floor immediately below it was for a long time a veritable furnace, the mullions and tracery remain practically perfect, while the noble stained glass has only suffered such injuries as can readily, and at no very great expense, be made good. The glass in this window is amply insured, so that the cost of its restoration is provided for.

The aisles of the choir are groined with stone, and this fact prevented their receiving serious injury. Their roofs are intact and most of their windows are uninjured. One or two had to be broken by the firemen, and one, on the north side, was destroyed by the flames from the organ. This window was given by Mr. Liversedge some years back, and he intends to replace it.

The floors have suffered a good deal, especially such parts of them as are of wood, but on the whole the injuries are not very serious.

The north transept has lost its roof and seats, while such parts of it as are connected with the Latham chapel have suffered very severely. The large window has been partly burnt out.

The tower arches have happily suffered no irreparable injury, but all the floors and the roof have disappeared. Looking up the tower the sky can be seen crossed by a few iron beams, on which are insecurely perched three of the eight bells, the others having fallen to the floor and become broken. Over and above the injury the tower has suffered from the fire, there is in it a source of danger which should certainly be dealt with in connection with the other repairs, as the opportunity, if missed now, could never recur. The tower was originally built on a most insecure foundation. Instead of the piers having been carried down to the solid clay which underlies the site, they only penetrated the upper soil to a small depth, and as this soil consists of a kind of quicksand full of water, the great weight of the tower caused it to sink very seriously. This action began soon after it was built in the twelfth century, the arches abutting on it being much distorted. In the seventeenth century the mischief had gone so far that the south-east pier of the tower gave way, and the greater part of the superstructure fell, destroying the south transept and the adjoining parts of the choir and its south aisle. This pier was rebuilt a few years later, together with the south and east sides of the tower, while the injuries to the choir and its aisle were finally made good fifteen years ago. The weakness, however, still remains on the north side of the tower and only a few years since gave those concerned much alarm. The result was that it was thought necessary to remove the upper stage of the tower, which dated from the eighteenth century, in order to reduce the weight on the foundations. The tower can never be looked on as permanently secure till this weakness has been removed by underbuilding the foundations and carrying them down to the solid clay below. This happily is found at no great depth, and it is of the utmost importance that this essential work should be undertaken.

The abortive south transept has only suffered slightly.

The nave was the last part of the abbey attacked by the fire. This fact explains the comparatively small injury it has sustained. The fire brigades from Leeds and York were on the spot, and their efforts saved the stonework from any serious damage. The roof has gone, though a few beams still remain in a charred condition, showing the design of the panelled ceiling. The oak benches were practically destroyed by the falling timbers, but the noble ranges of arches and windows remain in a perfect state and hardly show a trace of the fire to which they were exposed. The nave aisles are also nearly intact, the glass alone having suffered to any extent. The western towers have their roofs partly burnt, and the glass in the west window is a good deal cracked. As the nave is by far the least injured part of the building, it is the intention of the vicar and churchwardens to press forward its re-roofing with all possible despatch. Drawings are being made, and tenders will be obtained for this work as soon as possible. The repairs required in other parts of the nave and its aisles will be done at the same time, and temporary screens will be placed in the eastern arches, so that the nave will be enclosed and rendered fit for use at as early a date as can

be arranged. It is hoped that it may be possible in this way to resume the abbey services in about twelve months. In the meantime, it is hoped that all the other parts of the abbey may be re-roofed and the ravages of the fire made good.

The restoration of the choir will of necessity take a considerable time, as all the missing fittings will have to be supplied, while the repairs to the stonework are very serious, and of a nature which forbids any undue haste. Nor can the new oak fittings be hurried, while to replace the large organ which has been destroyed must take many months. However, if only the necessary funds are forthcoming, no time will be lost in carrying out all these essential works, and it is confidently hoped that in three or four years the whole abbey may be brought back to the beauty and magnificence which it had but a short time since.

I proceed to give the approximate cost of the different divisions of the works I have described.

Nave and its Aisles and West Towers.—New roof of the same design as the old, with the colouring of the panelled ceiling, the general repairs to the nave, its aisles and western towers, new floors so far as necessary, the temporary enclosure at the east end, 5,000*l.*

Choir and its Aisles.—The general restoration of the choir with the new roof and oak groining, following in all respects the old design, the restoration of the injured stonework and floors, the general repairs to the choir and its aisles, 8,250*l.* (The repair to the painted glass in the great east window is not included, being provided for by separate insurance.)

The Fittings.—The reredos, altar, altar rails, repairs of sedilia, aumbries, side screens, stalls, repairs of stone screens, pulpit, organ case and other fittings, 8,000*l.*

The Tower.—Reinstatement of the roof, floors, bell beams and ceiling, general repairs and paving and underpinning, 3,500*l.*; recasting and hanging the bells, say, 500*l.*

North Transept and Latham Chapel.—New roofs and floors, rebuilding the stone piers and the three arches, general repairs, new tracery, &c., where necessary, 6,000*l.* (the organ is not included, as it is separately insured); architect, clerk of works and incidental expenses, 2,500*l.*; contingencies and unforeseen expenses, say, 2,000*l.*; total 35,750*l.*

Two points remain to be considered, which, though outside the repairs necessitated by the fire, are of very great importance, and of much interest to all who knew the abbey.

The first relates to the completion of the tower by the addition, in a suitable style, of the missing belfry stage. An old drawing is in existence showing the tower as it appeared before it fell in the seventeenth century, and a design was made some years since founded on this. The cost of this work is estimated at 6,000*l.*

The other is the addition of the south transept, which was destroyed by the fall of the tower. No one can doubt that the south side of the abbey loses very much in beauty by the absence of the transept, and it is possible that it may be thought well to include the new transept in the works to be undertaken. The design for this was made in connection with that for the completion of the tower. The estimated cost of this addition is 8,000*l.*

J. OLDRID SCOTT & SON.

2 Dean's Yard, Westminster :
October 1906.

BRITISH SCHOOL AT ATHENS.

ON Tuesday the annual meeting of the subscribers to the British School at Athens was held, with Lord Halsbury as chairman.

The report stated that excavations were begun this spring on the site of Sparta, and the work, mainly experimental, had given extremely important results. The most important archaeological find of the year had been the discovery, near the bank of the river Eurotas, of the shrine of Artemis Orthia, the savage goddess at whose altar the Spartan youths underwent the ordeal of scourging. In the trial trenches which had been sunk a greater mass of the remains of the archaic period of Greek art had been found than had ever been found at any site, and that included thousands of votive offerings of various materials, and a series of painted terra-cotta masks. The masks might have been used in some ritual mystery play, and thus had important bearings on the earliest history of the drama in Greece. In the coming session it is hoped completely to

excavate the site of the Temple of Artemis, which has now been expropriated, and to do this as quickly as possible, as delay is dangerous because the Eurotas is subject to violent floods, when the erosion of the bank is very rapid. It is estimated that for the satisfactory excavation of this site, and for carrying on the work in Laconia in other directions, not less than 1,500*l.* will be needed, and the committee hope that this amount will be subscribed.

Professor R. C. Bosanquet said the work of the school during the past year was somewhat eventful. Mr. Dawkins had undertaken journeys with special objects to Mount Athos, where he had collated MSS., to a remote part of Thrace, where he had witnessed a mystery-play embodying Dionysiac traditions, and through the Turkish islands, where, in conjunction with Mr. Wace, he had studied the fast-vanishing costumes and dialects. Mr. Hasluck had made two journeys in Asia Minor and obtained fresh material for his book on Cyzicus. Mr. Dickins had continued his work on the sculptures of Damophon, and had been invited by the Greek Government to help in the re-erection of the colossal group at Lycosura. Mr. Wace and Mr. Tillyard had studied during the winter at Rome, and had worked at the Sparta excavations from March to June. Among the six new students there were two expert draughtsmen, Mr. Orr, whose work had lain in the Candia Museum, and Mr. Traquair, who had made plans and drawings of Mediæval castles in the Morea, and Byzantine churches in Constantinople. Miss Hamilton, a Carnegie student, had completed her book, since published, on miraculous cures in heathen temples and Christian churches. Of the other new students, Mr. Droop had devoted himself to a study of some problems of the early Iron Age. Mr. Brown had investigated the topography of the battle of Delion, and Miss Abrahams the arrangement of drapery in early Attic sculpture. By the successful inception of the campaign at Sparta a long-cherished scheme had been realised which would add new chapters to the history of Greek art and of Greek institutions.

Mr. G. A. Macmillan said they had lost Sir Richard Jebb, to whom primarily the school owed its foundation. Professor Bosanquet, who with such marked success had held the post of director for six years, had retired. The committee was fortunate to obtain in the new director, Mr. R. M. Dawkins, one who had a high reputation as archaeologist, philologist and explorer. Dr. Walter Leaf had been nominated a trustee in the place of Sir Richard Jebb, and was thereby relieved of the office of honorary treasurer, which he had held since the foundation of the school, in which he was succeeded by Mr. V. W. Yorke.

RHIND LECTURES.

THE second of the course of lectures by Dr. Sayce, professor of Assyriology in the University of Oxford, had for subject "The Archæological Materials: the Excavations at Susa and the Origin of Bronze." Professor Sayce said the science of archæology might be said to be founded on the study of pottery. Pottery was practically indestructible, and owing to the combination of conservatism and love of variety common to mankind, it was found that different ages and districts were marked by differences in pottery, which was, nevertheless, uniform over a definite period of time. Hence archæological chronology was in great measure based on a succession of ceramic forms. In Egypt, more especially, this chronology had now been thoroughly worked out, thanks largely to the impulse given in 1862 by Mr. Rhind, who was the pioneer of scientific excavation in that country. In Assyria and Babylonia, unfortunately, there had hitherto been but little scientific excavation, "museum objects" being alone sought for and little attention given to the conditions under which they were found. Thus far the chief scientific work in Babylonia had been performed by the French at Tello, but here all the remains belonged to practically the same age (B.C. 4000-2700), and so threw but little light on those of a later epoch. In Susa, or Shusan, however, the ancient capital of Elam, M. de Morgan had since 1897 been carrying on elaborate excavations in accordance with the most modern archæological methods, and since one of the results of his work was to show that Elam was once a province of Babylonia, light had indirectly been cast by them upon Babylonian archæology. At Susa the remains of two neolithic settlements had been discovered beneath those of the historical city which was founded before 4000 B.C. The earlier neolithic settlement was characterised by a fine thin pottery

which had affinities with that of Asia Minor and prehistoric Egypt; then came other settlers with inferior pottery. These last were succeeded by a population among whom the civilisation of Babylonia was introduced, including the use of copper, seal-cylinders, alabaster vases and the like. They also employed a black ware with incised lines filled with white. Similar pottery had been found in Palestine, Egypt—where it was now regarded as having been brought by the Hyksos—and even Spain. With the introduction of copper the historical age of Elam began. The earliest worked copper of which we knew was met with in Babylonia, which continued to be characterised by the use of copper instead of bronze down to the Persian period. In Assyria, however, bronze was known from about B.C. 2000 onwards, and apparently was introduced from Asia Minor, where the earliest bronze implements yet discovered were found by Dr. Schliemann in the second prehistoric city at Troy. In Egypt bronze first appeared in the time of the twelfth dynasty, but an analysis of the gold ornaments of the sixth dynasty shows that there must already have been intercourse between Egypt and Asia Minor. And as far back as B.C. 3000 the Assyrians had established colonies in Eastern Cappadocia, where there were mines of copper and other metals. Tin, however, was not among them, and one of the chief puzzles of archæology therefore was at present, Whence came the tin of which the early bronze of Asia Minor was composed? So far as the archæological facts went they indicated Asia Minor as the country in which bronze was invented, although according to the mineralogists, not only was no tin found there, but no early tin workings are met with nearer than Spain and the British Isles.

In his third lecture Dr. Sayce said that one of the earliest discoveries of Assyriology was that the pictographs out of which the cuneiform characters were developed were invented by a people who spoke an agglutinative language. This people was called by the Babylonian scribes Sumerians, and to them were due the primitive culture and civilisation of the country. The discovery, however, was opposed to the prejudices of scholars, and was accordingly received with incredulity, though it is now one of the established facts of science. Sumerian culture was adopted and improved upon by Semitic settlers, the result being the Babylonians of history, who were a mixed race, and from certain points of view might be described as speaking a mixed language. In physical type the Sumerians appear to have resembled the Elamites, who also spoke an agglutinative language, which, however, was not related to Sumerian. An analysis of the original Sumerian pictographs gave an idea of the culture of their inventors, and indicated that they must have been invented on the shores of the Persian Gulf, their inventors not being yet acquainted with the use of metals, and, owing to the scarcity of stone, employing hard wood for their tools and weapons. On the shores of the gulf Eridu, "the Good City," the early seaport of Babylonia, was built between six and eight thousand years ago, though the silting up of the coast has now made it an inland city more than 100 miles from the sea. From Eridu Sumerian culture spread into the Edin or "Plain" of Babylonia, the Eden of the Old Testament, where great engineering works were carried out, the floods of the Tigris and Euphrates being stored and canalised and the land drained. Up to the last Sumer or Southern Babylonia remained predominantly non-Semitic; the Semitic element being most powerful in Akkad or Northern Babylonia, where the first Semitic empire (of Sargon of Akkad) arose in B.C. 3800. Historical Babylonia, in which the Sumerian and Semitic elements were combined, was characterised by agriculture, which belonged more to the Sumerian element, and trade, which was more especially Semitic in origin. It became a great commercial community, even the crown prince taking part in trade. To the Semitic element also was due the anthropomorphism of Babylonian religion, the gods being conceived as men, while conversely the human king was deified. The Sumerians had no gods properly speaking; they were still in the animistic stage of religion, and the sorcerer among them took the place of a priest. With Semitic anthropomorphism the priest entered upon the scene, and the triumph of the priesthood, who eventually succeeded in absorbing the State, marked the final triumph of the Semitic element in the population.

Mr. Thomas H. Longfield, F.S.A., architect, died in Dublin on Sunday. During several years he was keeper of the Museum of Science and Art in that city.

TURTON TOWER.

MANY of us remember the late Mr. James C. Scholes, says Colonel Lees Knowles in the *Bolton Chronicle*, and we have read with pleasure his interesting and valuable works, such as "Documentary Notes relating to the District of Turton" and "Notes on Turton Tower and its Successive Owners." I am not, however, proposing to tread in the steps of our local antiquary, but merely to put together a few observations upon the architecture and condition of Turton Tower, which may perchance be of interest at the present time. "Turton" is a contraction of "Tower-town," and Turton Tower, whence the name is derived, is an interesting and valuable memorial of the past. No doubt originally there was merely a single tower, of the kind known as peel towers, so common in ancient times on the borders. These towers appear to have been constructed of earth and timber, strengthened by palisades; but latterly a "peel" was a small square tower with turrets at the angles, and with a door considerably raised above the ground. The lower part, where the cattle were kept, was generally vaulted. The word "peel" appears to be derived from the Latin word *pila*, meaning a pillar or a pier, and also a mole or mass of stone, from which, no doubt, we have the English word "pile," meaning a tower or castle, and the expression, "a pile of buildings."

The tower, a single rectangle of stone, probably about three storeys in height, with walls about 4 feet in thickness, was placed close to the banks of a stream. There are no architectural features remaining to determine the precise date of the original walls, which are of a somewhat rough order, with large quoin or corner-stones. The ash-laring or facing used to cover walls of rubble is very irregular, large stones being packed with small ones. The masonry, however, is in a singularly perfect state of preservation. At the north-west corner of this rectangle are the remains, perfect still at the top, of a "vice." A "vice," or a "vise," as it is sometimes spelt, is the newel or central shaft of a winding staircase. The word is derived from the Latin *vitis*, "a vine," and allied to the French *vis*, "a screw." It is not quite apparent whether this is a part of the original structure or whether it was added when, towards the close of the feudal period, the tower may have been converted into a more comfortable residence by the introduction of mullioned windows, which probably were substituted for the previous loops and arrow-slits. At the north-east corner of the battlements, in the earliest part of the building, may still be seen the shaft of the garderobe for the soldiers. This is perfect, but its outlet at the base is now concealed. The garderobes in the walls were cut probably at a later date.

In the opinion of my college friend, Mr. W. D. Caröe, a Lancashire man and a distinguished architect, the first change, if the walling is of earlier date, took place in the fifteenth century, when windows, apparently of two lights on the two lower storeys and one light above, iron-barred and shuttered, but without glass, were introduced, and when, according to clear evidence, there were three low storeys in the building. At this time the extent of the tower was still only a rectangle. This is clearly shown by the remains near the pantry-door of a window almost entirely destroyed, and by the further remains of a window—now internal—above it. Both these were on the original north face of the tower. Two of the windows of this date on the ground-floor, one on the upper floor and five on the original top floor still remain blocked up, but all of these last are not easily visible. At the same time, the lower portion of the present kitchen wing was added, and most probably the garderobes cut in the thickness of the original walls. This kitchen wing consisted of a two-storeyed building, with a heavily-timbered, pitched roof. It had three detached and large chimneys in the centre and two corbelled from the west wall. The grotesque label terminations or projecting mouldings now existing on most of the windows of this wing are modern, and probably belong to the restoration of 1831-44.

With regard to the erection of the circular staircase, the evidences at present obvious are conflicting, and a removal of the plaster would alone enable a judgment to be formed. If it is original it seems strange that the staircase walls should not be thicker or that the staircase itself should be so large. On the other hand, some approach to the battlements or to the upper storeys of the original tower must have existed, and there would be none more likely than a "vice."

The tower did not long continue in the condition so far indicated. In the reign of Queen Elizabeth, and probably towards the close of it, vast changes were made with a view

of bringing up its comfort to the more luxurious standard of those times. The old floors were taken out and the storeys raised so that two occupied nearly the whole space of the former three, and a new storey was added. Large three, four and five-light transomed windows heavily mullioned were substituted for many of the previous ones, and a new entrance and entrance-hall were erected on the north side of the tower, with a half-timbered storey of two gables over it.

It is not quite clear whether the present oak staircase was erected at this period or not; in any case, it has been subsequently considerably tampered with. One would be disposed, on the face of it, to think its erection likely at a time when so many changes were in hand and when imposing staircases were so much in vogue, but it intrinsically bears evidence to work of a date some twenty or thirty years later. One can only suppose that the former winding stone staircase, or vice, had become dilapidated, for rooms of no importance were secured by its destruction through the two lower flights, and that the oak staircase was substituted for it.

It remains to be proved whether the side walls of the existing entrance-hall are ancient or not. Mr. Caröe is at present disposed to think that they are not ancient. It appears that in 1831 there was a half-timbered structure of three storeys, containing the oak staircase, but there is no evidence to show whether it was a recent erection or not. The entrance-hall acquired its present form between 1835 and 1844, when it was recased in deal, with elaborate carvings in the barge-boards which project from the gables, hiding the horizontal timbers of the roof, and are quite foreign to the original more solid and monumental work. Between 1835 and 1844 changes also took place in the kitchen wing, and the curved Jacobean gable was then first introduced. Subsequently to 1844 the third storey was raised over the kitchen wing, and the half-timbered gable in deal, which is at right angles to the entrance and for which there was no authority, was built. In this the details of the 1835-44 work was studiously copied. At the same time, the original kitchen chimneys, which consisted of three large detached shafts rising out of the roof, were entirely lost. In this restoration, also, the sills of the windows of the drawing and dining-rooms were lowered, and their ancient proportions were destroyed. There is no clear evidence to show whether in 1835-44, or during the later so-called restoration, the existing window was introduced in the morning-room and the curious chimney, of a factory type, raised. It is quite clear, however, that considerable changes have taken place in the north wall of this room. The present wall does not occupy the ancient position, but it cannot be surmised what the existing arrangement replaced unless excavations for foundations are made.

Referring more particularly to details, especially of the interior, it is generally to be noted that the eighteenth-century restorations have largely interfered with the antique interest of the building so far as the outward observance is concerned.

Record of Owners.

The following is a brief record of the family ownerships of the tower and manor, as disclosed by documentary evidence:—Temp. King John, Roger Fitz-Robert; Temp. King John, Henry, Duke of Lancaster; early fifteenth century—1628, Orrell; 1628-1769, Chetham; 1769-1814, Greene; 1814-35, Frere; 1835-90, Kay; 1890-1903, Appleton; 1903, Sir Lees Knowles, Bart.

It thus appears that the Orrell family were responsible for the earlier extant architectural features of the tower and also for the transformation of Queen Elizabeth's reign, and that the Kay family were mainly the instigators of the nineteenth-century restorations, although some changes are said to have been introduced during the ownership of Miss Appleton.

In further connection with these restorations it may be observed that an Elizabethan mantel-head has been used as a door-head of the lodge. This is a counterpart of the one recently found over the ancient fireplace in the second-floor passage and also of that existing in the billiard-room.

In connection with the tower, the barn at the farm should be noted. This is an excellent example, especially in its gable, of characteristic Lancashire seventeenth-century building.

It has been estimated by the architects that 50,000*l.* will be required for the purpose of the complete restoration of Selby Abbey.

NOTES AND COMMENTS.

ON December 12 the tenders for the construction of the Panama Canal will be opened. The system to be adopted is one which is seldom tried in England unless in connection with some military buildings. That is to say, the contractors will have to declare at what percentage above or below a price to be determined by engineers representing the United States Government and the contractors the contract will be accepted. Several American contractors and associations of late years have adopted what they call a percentage basis for carrying out large works, and the arrangements of the Canal Commission recognise the principle. The contractor is to do every kind of work that is required according to plans and specifications to be furnished by the chief engineer to the Commission. But the work, it is to be understood, will be confined to labour and transportation. The Commission will furnish the plant, including locomotives, electric light and power plant, and machinery of a substantial character, but not hand tools. Raw materials will also be supplied, construction tracks will be laid down, quarters for all employes will be set up as well as stores, hospitals and office buildings. The contractors' workmen can travel on the Panama Railway and on the steamship lines connected with it at about one-half the usual tariff. Water will be supplied and mess-house privileges will be arranged. The contractor, in addition to his own men, is to employ all those entered upon the pay-rolls of the Panama Commission. Payments will be made monthly for the actual construction work. The payment of the percentage will be reserved until the works are accepted as complete. Should the total cost of construction exceed the cost as estimated by the engineering committee, one-half per cent. will be deducted from the percentage for each 5,000,000 dols. by which the actual cost exceeds the estimated cost. If the cost is less than the estimated amount the contractor shall receive in addition to his percentage one-third of the difference. If the work is not completed in the stipulated time the contractor is to forfeit 100,000 dols. for each month in excess. If, on the contrary, the work is completed in less time, he will be paid a premium of 100,000 dols. a month.

THE stoneworkers in Birmingham appear to be of a particularly jealous disposition. Some time ago we offered some remarks about their endeavour to prevent contractors from having stone dressed at or near the quarries. At a time when competition is remarkably close they thought the contractor was bound to pay an extra sum for carriage and an extra sum for labour in order to satisfy the desires of Birmingham workmen. On Tuesday there was a further exhibition of their spirit. They made a complaint in the House of Commons that a teacher of modelling in the Birmingham School of Art had been working at carving on new buildings in the district, thus displacing competent stone-carvers. The President of the Board of Education was asked to intervene and to prevent the adoption of such a practice in the future. It has long been desired that efficient painters, sculptors and architects should be employed as art masters, and the Birmingham Corporation have acted wisely in seeking such men. For students, carving on a building is much more impressive than any exercise before a class. On a building it can be seen that the teacher knows what he is talking about. If under such circumstances a master could displace several workmen as was alleged, then it is obvious that the Birmingham stoneworkers are very slow coaches. The President of the Board of Education was, of course, unable to interfere, and the workmen's representative might have known as much. The committee in charge of the school know what they are about, and it can be taken for granted that no master or teacher is paid unless he renders an equivalent for his salary.

ILLUSTRATIONS.

CATHEDRAL SERIES.—MANCHESTER: NEW CHAPTER-HOUSE, FROM SOUTH-EAST.

OAK PULPIT AND CHANCEL FITTINGS, SLEEKBURN CHURCH, NORTHUMBRELAND.

THIS church has just been completed, and forms a new parish cut out of Bedlington parish. The church is built of brick with stone dressings, and seats 500. The chancel fittings, mosaic pavement and painted east window, by Messrs. CLAYTON & BELL, were the gift of an anonymous donor. The whole was carried out from designs by the diocesan architect, Mr. ARTHUR B. PLUMMER, F.R.I.B.A., of Newcastle.

NEW PREMISES, READING.

THESE buildings were designed for a firm of purveyors in Broad Street, Reading. The front consists of dark red bricks and Doulting stone. The builder was Mr. F. NEWBERRY, of Reading; the clerk of the works, Mr. F. BAKER; and the architect, Mr. G. W. WEBB, F.R.I.B.A., Reading.

THE SCOTTISH TEMPERANCE LIFE ASSURANCE CO.'S OFFICES, CHEAPSIDE, E.C.

THIS new block of buildings, the property of the Scottish Temperance Life Assurance Company, Ltd., is situated near the corner of St. Paul's Churchyard, opposite Cheapside. The lower storey is faced with grey Kenmay granite, slightly polished, the upper portion being of Portland stone, with a roof of green Westmorland slates. The whole of the rear portion of the building is faced with white glazed bricks. The lower storey is surmounted by an order of Ionic columns, flanked by superimposed oriel windows terminating in gables, which are crowned by Scottish lions rampant, supporting shields and carved in bold relief. The central feature over the main entrance terminates in a richly carved pediment, with a graceful figure emblematic of "Temperance."

The main front is supported on ferro-concrete stanchions, and the floors and beams are also constructed in ferro-concrete with the exception of the top floor, which is protected from fire risk by means of BANK's helical lathing and granite-plaster ceiling. The staircases are of ferro-concrete except that of the top floor, which is of solid teak. Internally the walls are finished in fine adamant plaster, the dados of main staircase being decorated with Rust's vitreous mosaic, of rich colour. The main entrance doorway and shop fronts are of teak, while the joiners' work and panelled dado of the company's suite of rooms on the first floor are of wainscot oak. In the finishings of the remaining offices Kauri pine is used, the floorings being of wood block.

The whole of the contract has been in the capable hands of Messrs. L. WHITEHEAD & Co., LTD., of Clapham Road, carried out from plans prepared by, and under the personal supervision of, Mr. FRED. ROWNTREE, F.R.I.B.A., of 11 Hammersmith Terrace, London, W. Mr. N. J. HILL has ably acted as clerk of works.

STAIRCASE, WEST HAM GUARDIANS' OFFICES.

THE excellent example of woodwork shown in the illustration has been carried out from Mr. DUNFORD's designs by Elliott's Moulding and Joinery Company, Ltd., Albert Works, Newbury. We have already represented examples of the company's woodwork in various styles, and Renaissance and Gothic designs can be interpreted at the works with equal spirit and truth.

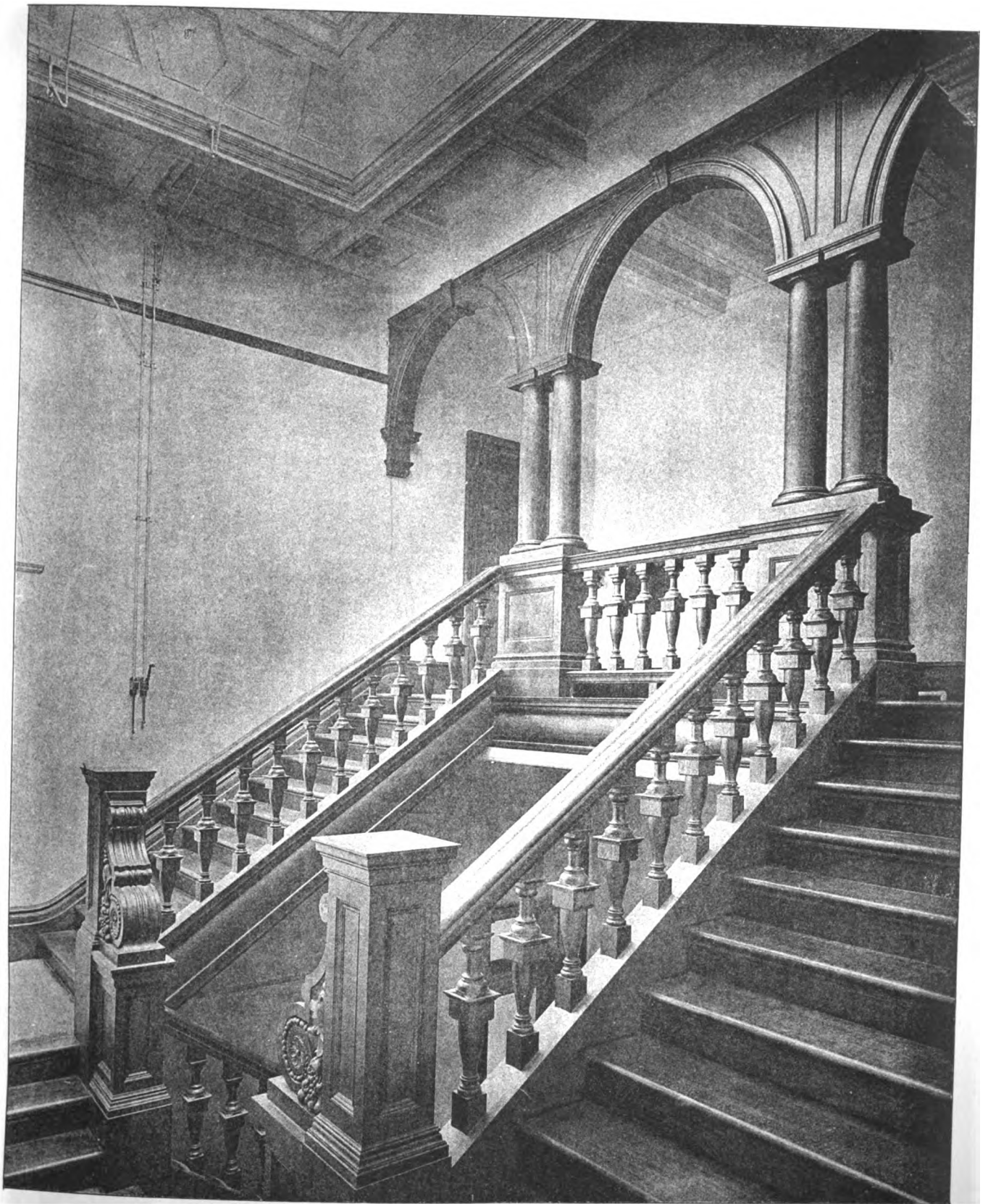
The Architect, Nov. 2nd 1906.



PHOTO. SPRAGUE & CO. LTD. 4 & 5 EAST HARDING STREET FETTER LANE, E.C.

THE SCOTTISH TEMPERANCE LIFE ASSURANCE CO.'S OFFICES, CHEAPSIDE, E.C.
FRED ROWANTREE, F.R.I.B.A., Architect.

The Architect, Nov. 2nd 1906.



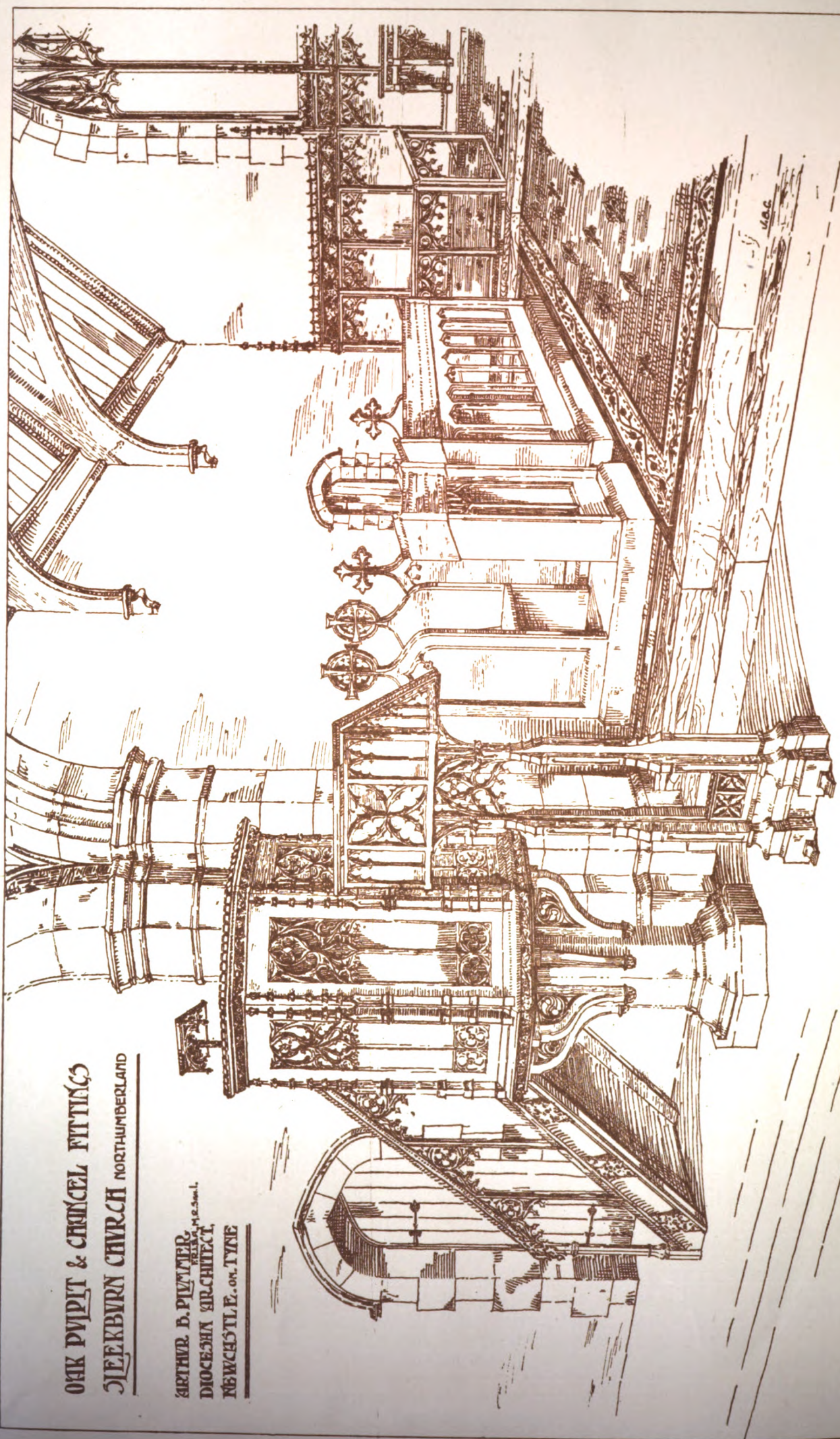
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STAIRCASE: WEST HAM GUARDIANS' OFFICES.

J. WILLIAMS DUNFORD, Architect.

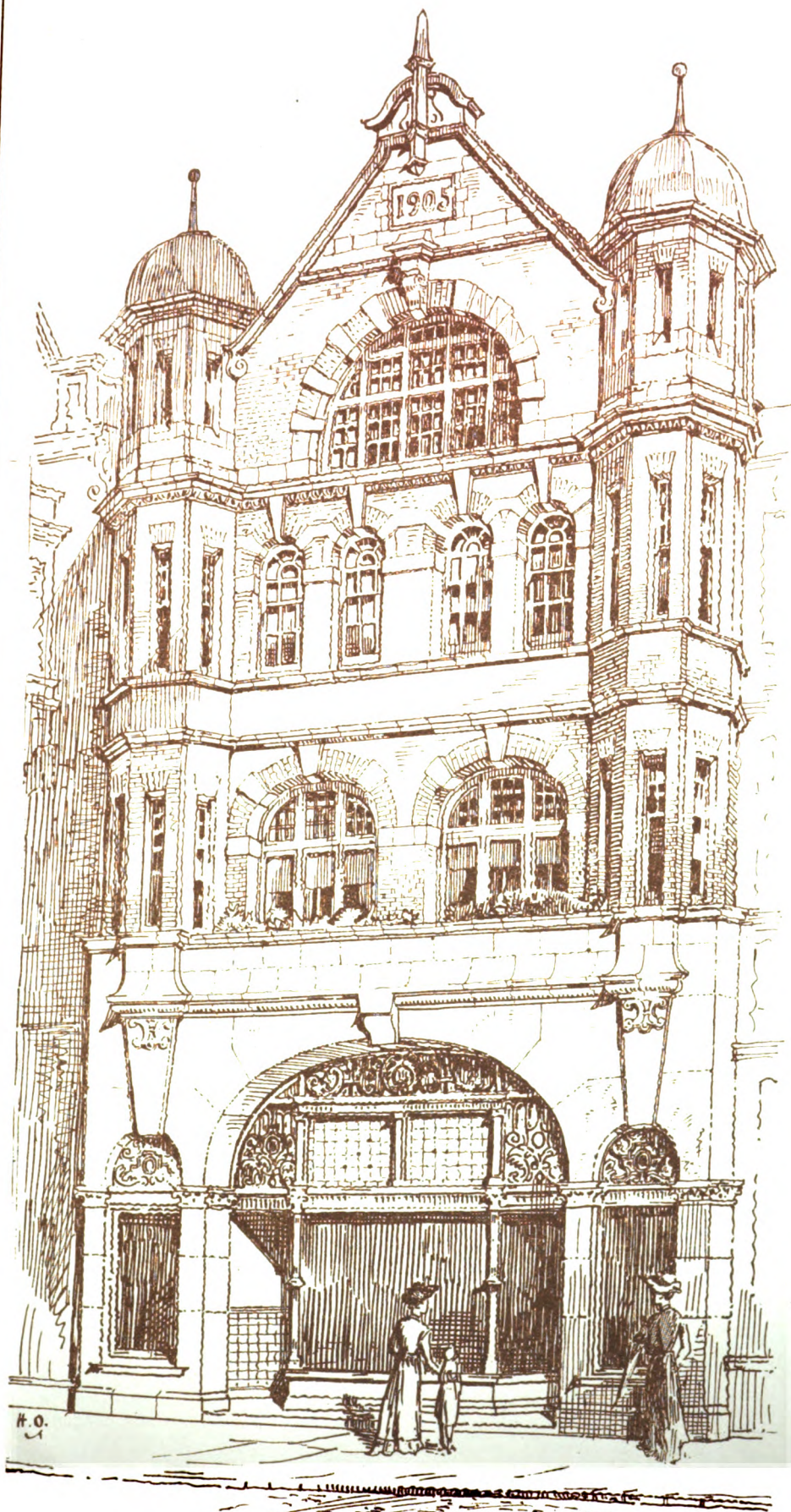
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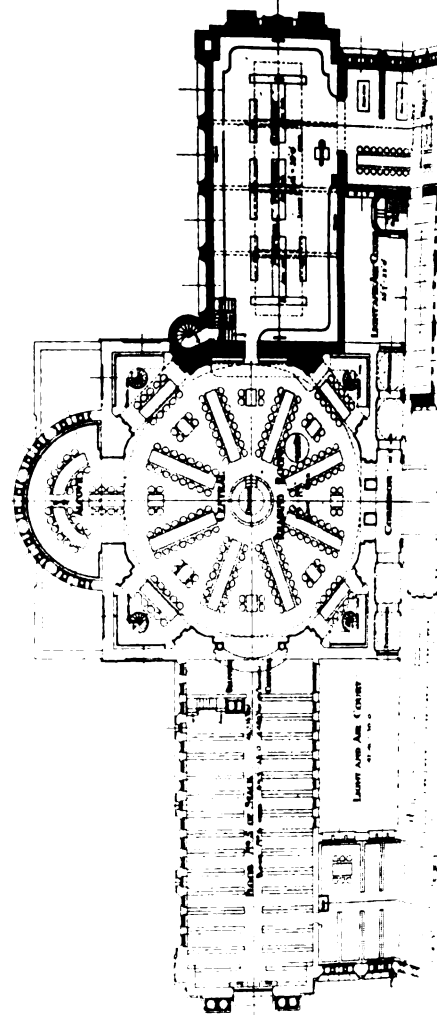
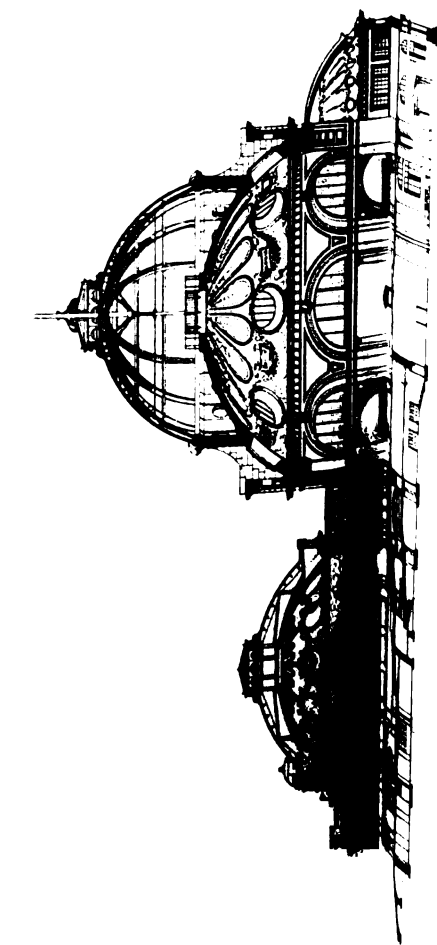
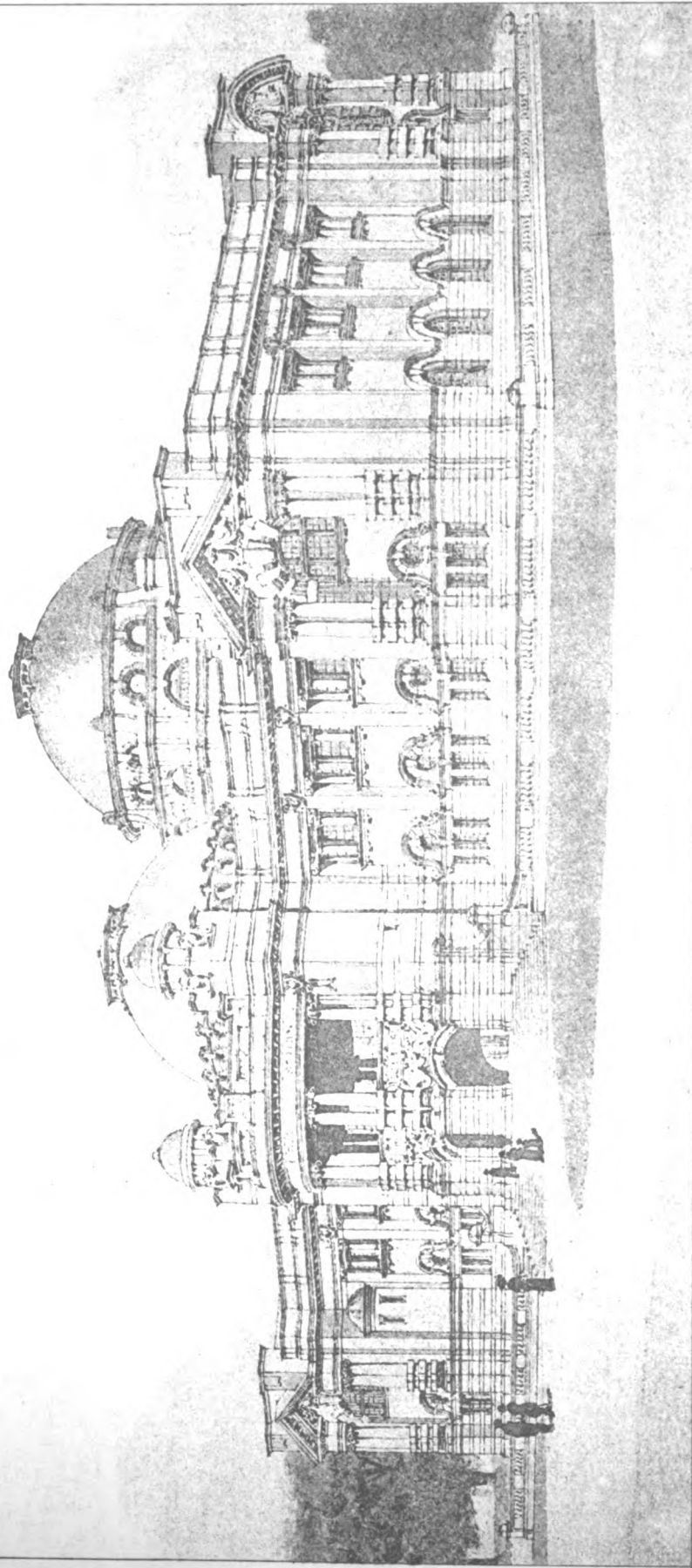


ST. PETER & ST. PAUL'S CHURCH
NEWCASTLE, NORTHUMBERLAND

ARTHUR B. PIERCE
DIACON ARCHITECT
NEWCASTLE, ON TYNE

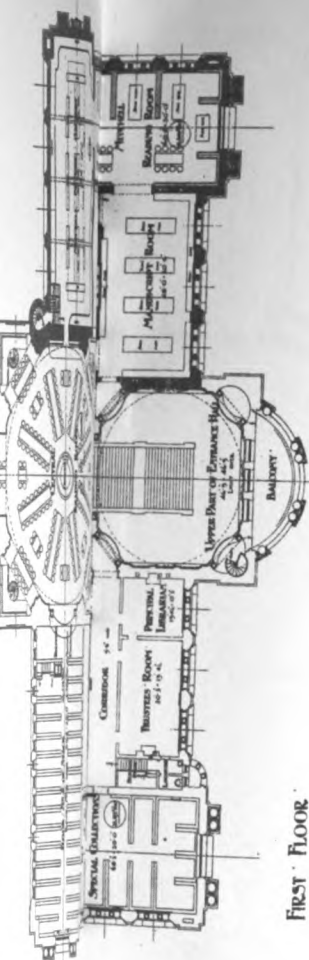


New South Wales State Library.

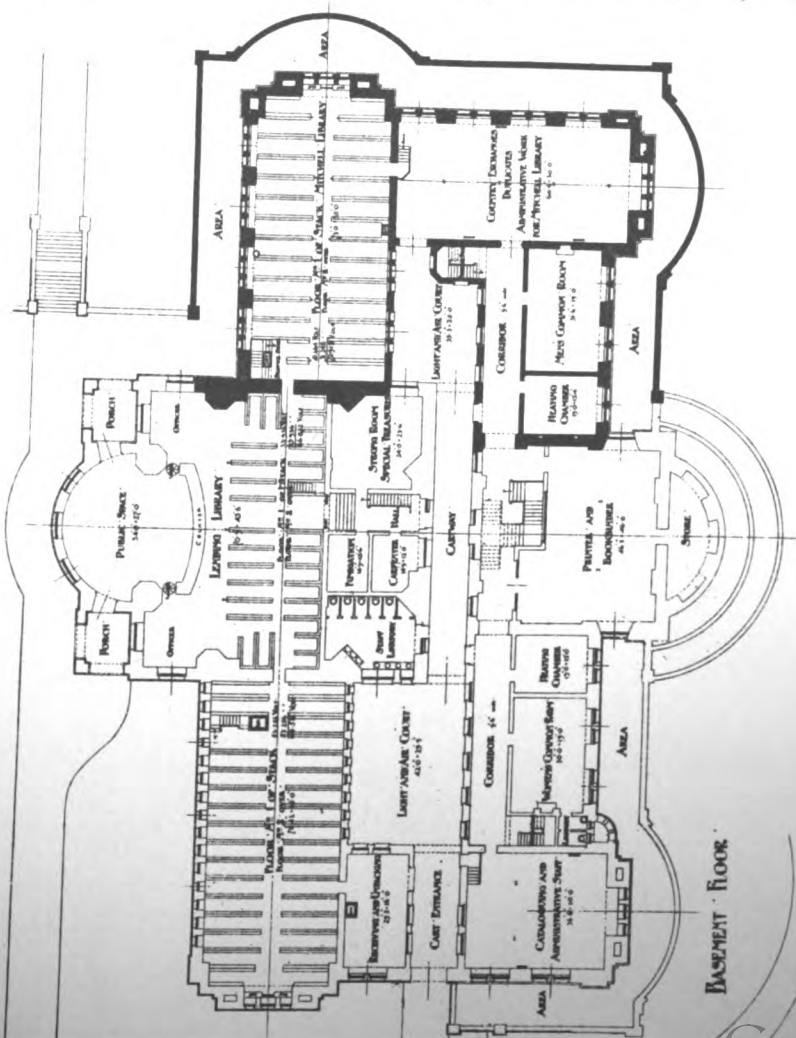




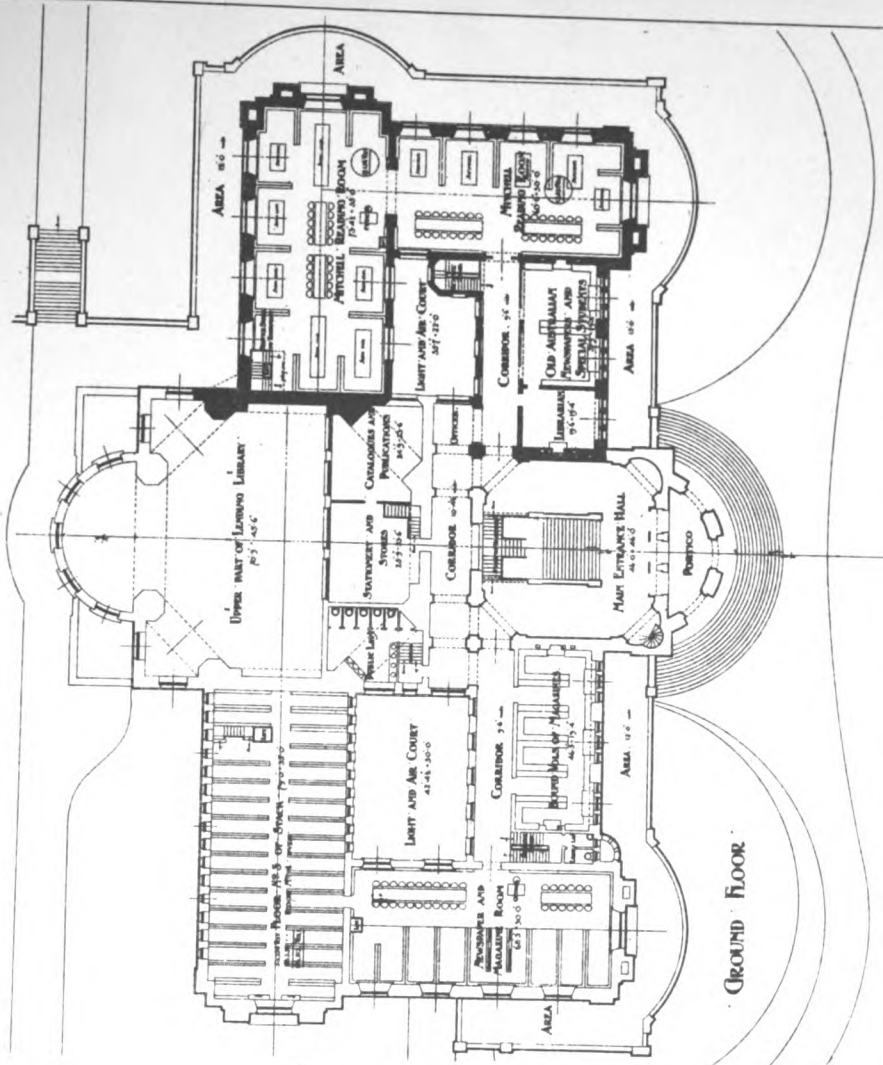
SECTION THROUGH CENTRAL READING ROOM AND ENTRANCE HALL



FIRST FLOOR



BASMENT FLOOR

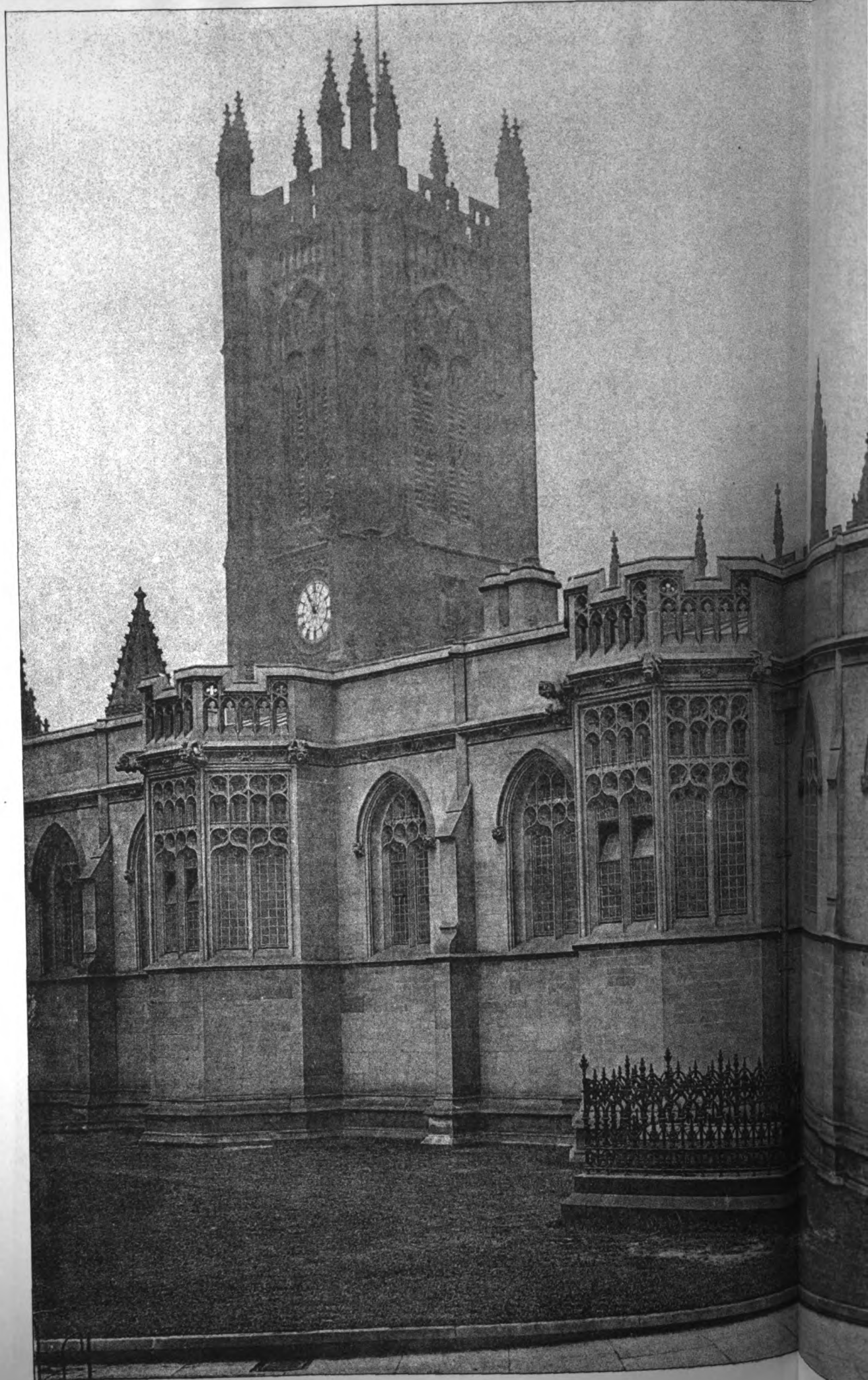


GROUND FLOOR

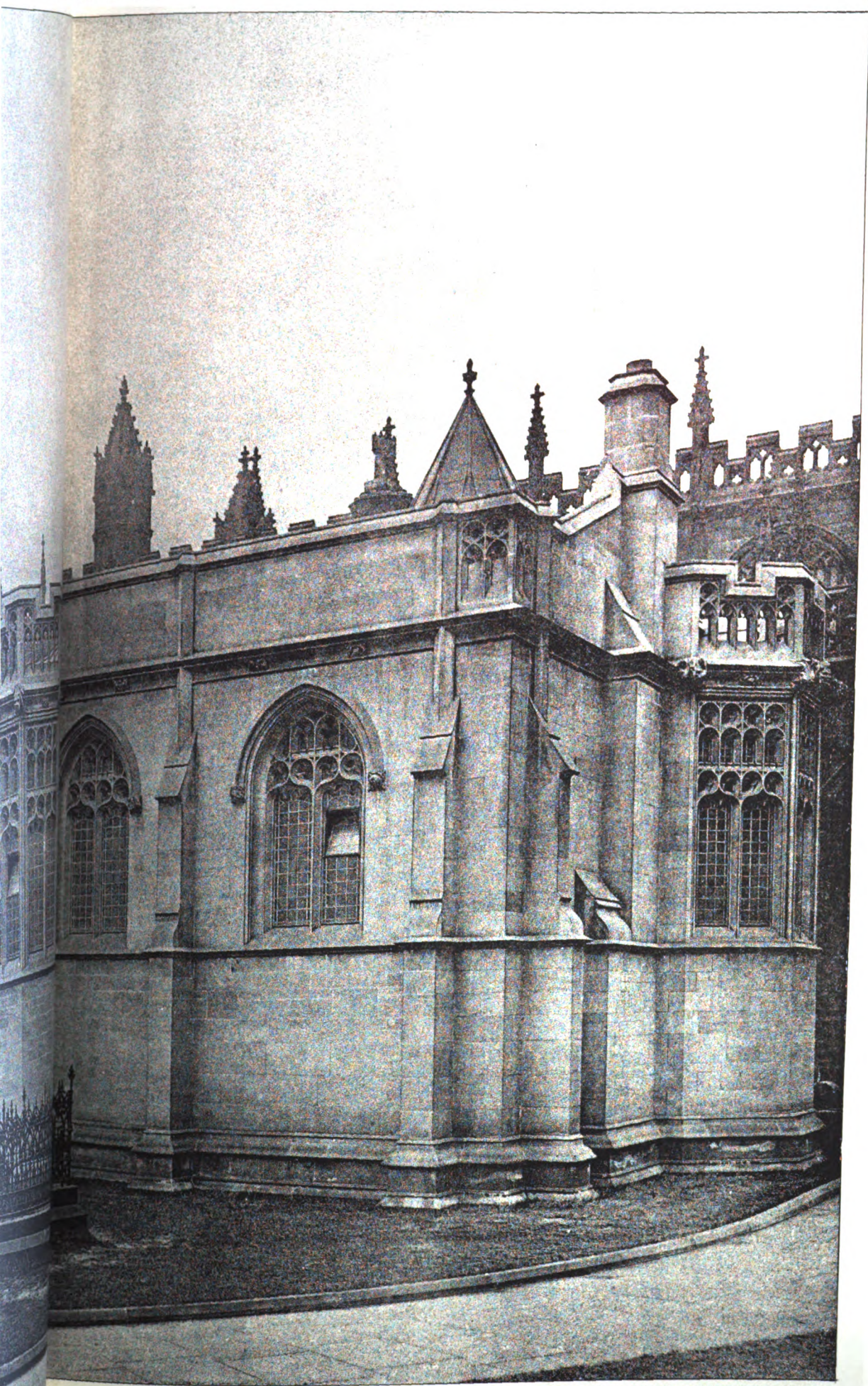
NEW SOUTH WALES STATE LIBRARY.

W. L. VERNON, Architect

INK PHOTOGRAPHIC & C.L. 4 & 5 EAST HINDING STREET FETTER LANE E.C.



CATHEDRAL SERIES, No. 582.—MANCHESTER CATHEDRAL, CHAPTER-HOUSE, F.



"INK-PHOTO" SPRAGUE & CO. LTD. 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

NEW CHAPTER-HOUSE, FROM SOUTH-EAST.

NEW SOUTH WALES STATE LIBRARY.*

A MUNIFICENT bequest by a Sydney citizen of a collection of books, manuscripts, maps, engravings, &c., relating to Australia and Australasia, valued at over 100,000*l.*, has necessitated the establishment of a larger and more commodious building than that at present used for the purposes of a public library in the New South Wales metropolis. The State Parliament having voted the necessary funds for a commencement of the work, plans were prepared by the Government architect, and a site selected in a large open space, one of the great recreation grounds of the city. The complete building, of which the west wing will be devoted to the recently acquired collection, will comprise a basement, ground floor and first floor, above which will rise a spherical dome, the main façade occupying a frontage of 226 feet. The completed design shows a rectangular structure, with two inner courtyards giving light and air; the general disposition being a main front entrance, leading direct into a central reading-room, flanked on one side by the western wing, and on the other by a lofty book-stack and the accommodation generally required for the public library.

The style of architecture adopted is a modification of the Italian Renaissance, due attention being given to the exigencies of the accommodation requirements internally, the site and its surroundings, the materials available and the national character of the undertaking. The disposition of the windows is determined by the special requirements of the library, and in the majority of cases they will light the galleries and rooms from above the height of the book-presses. The building will be constructed throughout of brick and stone with steel and fireproof construction of the floors, roofs and staircases; lighting and book-lifts to be adapted for electric motive power, and heating to be effected by central heating chambers with hot-water installations. The fittings for book-shelves and exhibition cases for the display of manuscripts, &c., will be of metal, the reading tables, chairs and newspaper stands being of red cedar. The reading-room will be surmounted by the spherical dome, after the fashion of that at the British Museum, having a diameter of 66 feet and a total height from ground-floor level to base of flagstaff of 103 feet. The height of the building generally will be 55 feet from basement to parapet.

The western wing will be known as the Mitchell Library, from the name of the donor of its intended contents, and the details of the accommodation to be provided therein are as follows:—Basement—Book-stack, with sufficient height for gallery, 73 feet by 35 feet; rooms for administration, 60 feet 6 inches by 30 feet and 31 feet 6 inches by 19 feet; heating chamber, 19 feet by 15 feet. Ground floor—South reading-room, 73 feet 4 inches by 35 feet; west reading-room, 60 feet 6 inches by 30 feet; room for old Australian newspapers, 31 feet 9 inches by 19 feet 4 inches; librarian, 19 feet 6 inches by 19 feet 4 inches. First floor—South picture gallery, 73 feet 4 inches by 35 feet; west reading-room, 60 feet 6 inches by 30 feet; north manuscript-room, 48 feet by 30 feet.

The accommodation for the public library will be as subjoined:—Basement—Lending library, 70 feet 9 inches by 45 feet 6 inches; alcove to lending library, 24 feet by 27 feet; strong room for special treasures, 24 feet by 23 feet 6 inches; printer and bookbinder, 46 feet 3 inches by 46 feet; women's common room, 30 feet by 19 feet; cataloguing and administration staff, 36 feet 6 inches by 36 feet; receiving and unpacking room, 29 feet by 16 feet; heating chamber, 19 feet by 15 feet; special cart entrance and staff lavatories. Ground floor—Newspapers and magazines, 68 feet 3 inches by 30 feet; room for bound volumes and magazines, 46 feet 3 inches by 19 feet 4 inches; stationery and stores, 25 feet 9 inches by 23 feet 6 inches; catalogues and publications, 24 feet 0 inches

by 23 feet 6 inches; main entrance hall and staircase, 46 feet by 46 feet; public lavatories. First floor—Central reading-room, octagonal in shape, with angular recesses, 71 feet 6 inches by 71 feet 6 inches; alcove to same, 39 feet by 19 feet 4 inches; room for special collections, 68 feet 3 inches by 30 feet; trustees' room, 30 feet 3 inches by 19 feet 4 inches; principal librarian, 19 feet 4 inches by 15 feet 3 inches; attendant and typist. When complete there will be accommodation for nearly half a million volumes. The approximate cost of the complete building is 114,044*l.*, or about 120,000*l.* if the elevations are carried out in stone.—J. P.

SUGGESTIONS TO AUTHORS OF PAPERS.

THE American Society of Mechanical Engineers offer the following advice to members who contemplate writing papers:—

In preparing a paper for presentation before a professional society or for publication, there are some general principles, the observance of which will add greatly to the value of the work. These principles do not relate to the subject matter directly, but rather to the manner of presentation. In the first place, a paper should, and generally does, relate to some especial department of work with which the author has had experience, so that he is very apt to assume many things as matter of common knowledge, when in fact they are not nearly so familiar to most of the audience as they are to himself. It is not usually a mistake to be too clear, particularly in the preliminary statements. Avoiding undue assumptions as to the familiarity of the audience with the subject, the general form of a paper should be about as follows:—

State first, in a brief and clear manner, just what the paper is about, what the author is endeavouring to show or what he expects to prove. This introductory statement should be very brief, and having been made it should be kept in mind throughout. A paper should be about but one thing at a time, and that one thing plainly stated at the start. Then should follow the general treatment; description of work, of experiments, of opinion, &c., this portion constituting the matter usually forming the body of technical articles or papers. After this should come what may be called "proof," that is, a statement showing how the general matter immediately preceding has demonstrated what the author has set out to show. Finally there should come a very condensed summing-up, in such a form that a brief glance would enable a casual reader to grasp the substance of the paper and decide without reading the whole whether or not he wants to examine it in detail.

The introductory statement and the final conclusions should in every case enable the reader to get at the kernel of the whole matter, of which the bulk of the paper should be the detailed and expanded treatment.

The use of tables should be avoided whenever it is practicable to present results in a summarised form and where the tables do not make in themselves a distinct addition to the value of the paper.

Papers may be divided into two classes: those which give a record of experience or investigation in a formal manner, presented mainly for the purpose of putting the subject upon the official record, and those intended to arouse discussion, and presented for the very purpose of eliciting the opinions and experience of members at the meeting.

The purpose of the second of these classes cannot be successfully attained unless the original paper is in a form which permits the argument to be readily grasped. Many members do not have the opportunity of examining the paper until a few minutes before it is presented, and yet these should be able by a glance at the introduction and the conclusion to decide whether it is a subject which they can discuss. Results of investigation are sometimes given in final form only, as tables or plotted curves, and, while these are both most desirable, there should always be a general summing-up of the leading results of importance in plain language for immediate absorption by anyone.

In nearly every case these simple principles may easily be followed without imposing any hardship upon the author of the paper, and without making it necessary for him to modify in any way his own style or general method of treating a subject.

A few points relating to the reproduction of papers in

* See Illustration.

the printing office may be added, as of much importance to the publication committee.

Write plainly on one side of the paper. Number the sheets consecutively in the upper right-hand corner, and have them of a uniform size. A good size is 8½ by 11. It is desirable to have manuscript typewritten when this can be done without undue inconvenience. Give dimensions, &c., in the English system. If desirable the metric equivalents can be bracketed.

Put your full name and address on all manuscripts. Copy should be sent flat, never rolled, and preferably not even folded. Never fold illustrations intended for reproduction. Tracings may be sent rolled in mailing tubes.

All diagrams, drawings, &c., should be made on separate sheets of paper, and if possible so as to bear photographic reduction to the standard page size of the "Transactions." Photo-engraving is reliable and accurate, and greatly to be preferred to any process which requires the illustration or diagram to be redrawn. Good tracings can always be reproduced, but the reduction should not have to be more than one-third, preferably one-half, the linear dimensions of the original. Since the width of the type measure of the page is 4½ inches, a drawing to be reduced to page-width should not be more than 8 to 12 inches wide.

In making drawings intended for reproduction it is well to exaggerate the size of all numerals and dimensions, so that under reproduction on a reduced scale they will still be legible. The greater the reduction the heavier should be the lines to give sharp results. As the height of the page is 7 inches, the proportion of height to width in copy should be about 1.7 to 1. Any drawing of these proportions will, when reduced by photography, fill a page correctly. Do not use red ink, as it does not reproduce.

In selecting photographs or making photographic prints for illustrations it should be remembered that the glossy solio prints are better suited for reproduction than velox or other matter surface paper, besides bringing out all the detail in the negative to the best advantage. Photographs should not be printed too deep, and the reproductions are better made from prints of a slightly reddish tone than from those overtone to a bluish tint.

All copy intended for illustrations should be clearly marked with the title, subject and author's name, a reference to the manuscript to which it relates, and all other data of interest. This had better be written on the back in pencil; ink is apt to show through, especially when written on the back of light portions of a photograph.

The places where plates and figure references are to be inserted in the text should be indicated in the manuscript. Illustrations should only be used where necessary for the elucidation of the text—never for mere embellishment.

A list of illustrations giving their titles in brief should accompany the manuscript.

GLASGOW INSTITUTE OF ARCHITECTS.

AT the quarterly meeting of the Institute of Architects—Mr. Monro in the chair—reports of the Council as to the following matters were approved of:—"Competition issued by Greenock School Board," "Admission of members to fellowship of the R.I.B.A.," "Local Examinations held in June last," "Master Heating and Domestic Engineers and Hot-water Work," "Urgency committee's report regarding applications for R.I.B.A. Fellowship by architects in Glasgow district," &c. Delegates were appointed to attend the George Buchanan quatercentenary celebrations on November 1. It was agreed to hold a local R.I.B.A. examination in November. It was reported that the prize offered by the Institute for measured drawings in the Technical College was awarded to Mr. Archibald Revie, Flowerhill Street, Airdrie. Seventy-four drawings were submitted by sixteen competitors for this prize. The recommendation of the Council to proceed with the new constitution with a view to the members of the Glasgow Architectural Association joining this Institute was unanimously approved of. The final adjustment of the scheme is expected to be carried through at an early date.

The Manchester City Council are going to apply to the Local Government Board to alter or amend the Manchester Corporation Act, so as to enable the Corporation to borrow a further sum of 50,000*l.* for the purpose of supplying water for hydraulic pressure and for other purposes. This would lead to no expenditure of money beyond what the Corporation had already decided upon.

THE LATE STANFORD WHITE.

THE American architects are not disposed to accept all the slanders against Stanford White which his murder inspired. In the last quarterly bulletin of the American Institute of Architects are the following letters by those who knew and appreciated him and his work:—

I knew Stanford White first in his early manhood, at the time of that Renaissance of art in the New World in the seventies of the last century, when the Society of American Artists, the Art Students' League and the newer architectural associations were coming into being, and when our painting, sculpture and architecture were thrilling with a new spirit. He was an inspirer and leader from the first. Since then I have constantly been associated with him on art committees formed for the accomplishment of various patriotic purposes. He was the one we first turned to in such enterprises, and his help was always as quick and generous as it was strikingly original in result. Others, much better than I, can analyse the product of his genius—I can only say that his perception of beauty and power of creating beautiful effects were absolutely flashing in rapidity, and, I thought, absolutely certain in the production of exquisite forms and surfaces. It has seemed to me that he had the swiftest perception of beauty of any man I ever knew. His apprehension was lightning-like, and so was his execution. Those living near the scene of the exercise of his extraordinary and unflagging artistic energies know, as others hardly can, the variety and scope of his creativeness. Beside his brilliant and enormous architectural output, his picture-frames, pedestals, magazine covers and his schemes of temporary decoration were multitudinous, and each bore the mark of individuality in application and arrangement, no matter where he swooped down and snatched up the material for his combinations. Speaking of magazine covers, the one that he first made, by his style of lettering and its distribution of masses, revolutionised the magazine covers of our day. He said at the time, "They will first make fun of it and then imitate it." And they did both.

To meet Stanford White in the street and be greeted with a burst of commendation meant to many an art-worker weeks of cheerful plugging away; for everyone knew that his appreciation was as discriminating as it was hearty.

Of late years I have not seen so much of him—but to think that one cannot again get the cheer and stimulus of his genial greeting and helpful advice brings a lump in the throat.

RICHARD WATSON GILDER.

Stanford White stands on his own ground a master of the theory and practice of architecture. In his work he was stimulated by inexhaustible originality and a thorough knowledge of the essentials of classicism. Style, treatment, adaptation and artistic quality were his naturally. His sense of colour, proportion and completeness were distinguished and refined. Given means he did monumental things, and with the slightest of means he produced elegance, charm and art. His art, art criticism and appreciation compel the respect and affection of all who can see and feel, and the recognition of his genius, which came early, will grow while civilisation lasts. He displayed superb individuality both in work and play, and his sturdy friendships, his generous deeds and noble, lovable self will for ever remain his pre-eminent monument.

CHARLES L. FREER.

Stanford White was a genuine lover of antique tapestries of the highest order. He could seize their principal decorative merits at a glance, and knew without any hesitation which possessed the greatest artistic value and importance. The subjects represented were in the main immaterial to him provided the quality of the point, the softness and delicacy of the colouring and the general treatment appealed to his refined and cultured taste. We have examined many celebrated antique tapestries together, and his enlightened comments upon their merits exhibited the excellence of his judgment and the high standard of his taste.

CHARLES M. FFOULKE.

Stanford White I knew mainly through the frequent and spontaneous praise given to his work by Mr. McKim. During several years of close association with the latter I never heard him speak of Mr. White except in terms of admiration of his genius. While in his own work Mr. McKim deliberately exercises the quality of restraint, he nevertheless enjoys to the full the exuberance and the sumptuousness displayed by his friend and partner. Washington is the richer for the Patterson house on Dupont Circle, a piece of Domestic architecture in which Mr. White has well expressed the joyousness of the social life at the

nation's capitol, and also has given to his work that suggestion of the tropics which is present in the climate of the city. Detroit rejoices in two of his creations—the State Savings Bank, which realises what Mr. Burnham would term "the commercial advantages of beauty," and the Hecker Mausoleum—an exquisite little Greek temple, well placed at the end of a long vista in a well-managed setting of green. Mr. White had been selected as the architect of an important building in Washington that would have called into play all his highest qualities, but now another hand must do that work.

CHARLES MOORE.

I was the personal assistant of Stanford White about twenty-five years ago, shortly after he became a partner in the firm of McKim, Mead & White. I was immensely impressed with him then as a man of extraordinary ability and of the most attractive and engaging personality. I have never had occasion to revise this opinion. That he was a great artist is now conceded by all. We in the office knew it then and predicted for him the great career which he fulfilled. A more kind and generous man it has never been my experience to meet. There was absolutely not a particle of malice in his disposition. I never heard him speak slightly or contemptuously of any man. He was as generous in his thought as he was in his work. He gave of himself fully and enthusiastically to everything he undertook. He was the sincere and helpful friend of every creative artist, of every struggling young man or woman, whether architect, painter, sculptor, actor, poet or artisan, if they showed an intensity of intention and had the least particle of creative instinct, and many such owe to him their success in life. He was a kindly critic, and his criticism was always constructive and helpful. He was one of the most ingenious men I ever knew in solving practical problems of architectural design. In that sense he was one of the most "practical" artists in his profession. He was so broad in his taste that no beautiful thing failed to receive his admiration and his praise. He was a man through and through, with a man's faults, but those faults were greatly overbalanced by more than an ordinary man's ability and generosity. In short, he was one of those big men mentally and physically who are fitted by nature for important work, and who successfully accomplish it. All who came in contact with him felt the impulse of an unusually strong nature. I have often said and thought that the word "genius" could be more aptly applied to Stanford White than to any other artist of his time. In his death the world has met a great loss.

CASS GILBERT.

Mr. White was a great man as well as a great artist. No one ever failed to get instant recognition from him of any good thing he had done. He looked for good things in others' work, and where he found them he made haste to personally tell the designer how pleased he was. This magnanimity in him was the expression of deep sincerity never found except in men of high quality. He was a constructive critic, which means that he was controlled by his heart as much as by his splendid intellect. The belief that Stanford White loved me will ever remain a source of great happiness.

D. H. BURNHAM.

STANFORD WHITE.—Huge of heart and strong of soul, inspired, dauntless, brave; full of love for art; broad, cultured and kind. In his work he leaves a priceless heritage to all of us.

WM. S. EAMES.

Many years ago it was my good fortune to be one of the many young men who have come under the magic influence of that great artist, Stanford White. His scope of decorative ideas was unbounded, and his resourcefulness in design surmounted all difficulties. His criticism, fertile with inspiring suggestions, fired the imagination of his admiring students. He had for beauty such a passion and such perception that he saw it where it was—in a half-hidden flower peeping out at the sun and in the thunder-cloud darkening the mountain top—and he made men see it with new eyes. The world of art owes him greater homage than it will ever pay.

WM. A. BORING.

My first recollection of Stanford White was when he visited a building as Richardson's representative. I recall him tall and thin with florid complexion, energetic, thinking of the artistic expression of the work. The eagerness with which he secured colours and transferred the beautiful tones of the evening sky to paper, placing in the foreground the pinnacle and gargoyles of the building artistically against the golden red, remains vividly impressed on my mind. An enthusiastic Richardsonian when the master died, I was anxious that the firm of McKim, Mead & White should develop and perfect the Byzantine of Richardson into an American style. I was gratified that my desires were not

realised after this firm had made its individual impression on art. Their forceful individuality were first brought to my attention through the work of Stanford White in the base of the Saint-Gaudens *Farragut*, a creation artistic, beautiful and in harmony with the sea and the figure which stands firmly upon it. The exhedra and background of Adams tomb, dignified and impressive, I felt was with bronze figure by Saint-Gaudens the most impressive and artistic mortuary memorial produced. Afterwards came the Madison Square Tower with its perfect proportions, refined details and beautiful silhouette. I mentally resented insinuations that it was only a copy of the Giralda Tower as I resented the imputation that Shakespeare was a plagiarist because the plot and outline of his plays may be traced to Boccaccio's "Decameron" and other stories. The individuality of expression, the harmony in composition, the artistic feeling introduced has made each production, in drama and architecture, a new creation for the elevation of mankind. Because of my interest in Thornton's work I feel a personal gratitude to Stanford White for his grasp of the spirit of Thornton, the architect, and Jefferson, the intelligent client, in the recent additions to and restorations of the University of Virginia. He is the only man since the days of Jefferson who appears to have appreciated the beauty of the old buildings and the dignity of the formal grouping.

A recent visit to New York depressed me because of the constant reminders of his loss. Going up Twenty-third Street the Madison Square Tower came into view; the man who designed it would never delight us with another artistic production. I passed the Farragut statue; the man who put his spirit into the base could never add to our artistic growth. The Madison Square church was next noticed; he will not continue his studies in exterior colour to the advantage of art. The *Herald* building soon came into view; the country will never again have his refined productions in terra-cotta and marble. I came down Fifth Avenue; the Gorham and Tiffany buildings—so different in character, so dignified in proportion, so refined in detail—we no longer have his skill to improve the design of our business structures. On the way from Broadway to Fifth Avenue I noticed the Lamb's Club; we will not now have his much needed guidance in the refined and true solution of the Georgian style. Passing down Madison Avenue, Tiffany's residence, reminded me that we would never again have his individual and refined hand to lead us to better work. Finally, St. Bartholomew's new front, with its charming combination of coloured marbles, sandstones and bronze, its true feeling for the best in the antique, its combination of refined carving and sculpture; no longer would he continue the production of works of art for our pleasure and enlightenment. During this same visit, I called upon an artisan in carving. He exhibited a carved frame which he had been making for Stanford White. He said, "I have lost my most able and appreciative adviser on artistic work of this character." A noted expert in tapestries deplored his sudden loss to the country, as he so thoroughly appreciated the beauties of tapestries and had done so much to introduce their refining effects.

A short time before I had seen Stanford White in all his physical vigour, in all his artistic energy, in his prime glad to appreciate, eager to produce or obtain the beautiful. The need in the art world of capable men, refined men to guide aright the present enormous expenditures in this country towards artistic ends, is so great, it is deplorable that we should lose the continued labours of such a man as Stanford White.

GLENN BROWN.

HERALDRY IN RELATION TO THE APPLIED ARTS.*

HERALDRY grew out of the widespread use of personal badges, a practice which had existed from the earliest historic times, and became crystallised into a system of carefully regulated devices somewhere about the twelfth century. The closing up of the head armour until it wholly covered the face also afforded an excellent reason for using distinctive marks by which the wearer might be known, and the added value that was thus acquired by personal badges was given further expression by the pageantry of the tournament, whose splendour always comes to mind as the inevitable background of early heraldry.

Though in its beginning heraldry essentially marked the

* From the Cantor lecture by George W. Eve, published (with illustrations) in the *Journal of the Society of Arts*.

fighting men, its decorative quality and compact significance extended its use in the course of time to other parts of the community, civil and religious, until it represented every important interest—cities and boroughs, trade guilds and simple merchants, as well as kings and nobles and other components of the feudal system with which heraldry was at first identified. This extension of its scope was particularly marked at the period of the Renaissance, to which much of the modern use of heraldry may be referred.

Symbolism, which pervaded the whole life of the Middle Ages and imparted beautiful meanings to everything, naturally ascribed spiritual qualities to heraldic bearings, and such symbolism was, no doubt, one of the powerful influences in the choice of armorials in early times. But although the symbolic meaning of the heraldic figures continued to be tabulated in treatises until a late period, the influence constantly tended to become weaker, until it practically ceased, or became merged in an allusive rather than a purely symbolic quality. Some chance object would be adopted as a memento of a notable deed, and even when the symbolic reason had influenced the first bearer, his subsequent deeds and the glory that he acquired built up round his arms a family sanctity, that in time quite overshadowed the symbolic meaning.

Purely symbolic charges, however, still occur, such as the bee as an emblem of industry, the ship for commerce, the palm of victory and the dove for peace, among the many others that will readily come to mind.

A noteworthy feature of the early work, the work on whose excellence in strength, simplicity and expressiveness we are all, I think, agreed, was the common-sense nature of the methods that were followed. That is to say, the artist knew what he was doing and why he did it. For good heraldry is never at variance with sound common sense, and is always able to give a reasonable answer to a fair question. Therefore, in the study of old work, in order the better to learn how to do our own, we need never hesitate to inquire why things are so. And the knowledge that is thereby gained cannot fail to benefit the work.

In the course of time heraldic devices were displayed on many parts of the armour, but it was the shield that was and still is of primary importance. Before proceeding to consider its form and the evolution which it has undergone, it will be well to mention that the shape of a shield has, in general, no heraldic significance whatever (the sole exception, the lozenge shape on which some ladies' armorials are borne, being put aside for the present). That is to say, a given coat-of-arms may be placed on any shaped shield that is artistically fitting, without in any way varying the statement of heraldic fact. The consequent power of choice, in the shield shape, is a very valuable one, in connection with the adaptation of the shields to their bearings, to the various spaces they occupy, and to the character of their surroundings.

Let us now consider this principal heraldic object, the shield; as an actual defence, such as it would appear in representations of historical events, and afterwards as developed into decorative forms. From Classic times downwards it was an object of peculiar regard, as a part of a man's armour which was especially identified with its owner and which it was dishonour to lose. It had an interest that was almost a sanctity, and it was, therefore, natural that an emblem of such supreme importance as the personal device should find space for its expression on an already symbolic shield. Also its detachability and the ease with which it could be displayed hung by its belt from some convenient support made it an appropriate representative of its owner, and as such it was considered and treated in a variety of ways, honourable and otherwise.

The shape with which regular heraldry was first associated is that known as the Norman shield, which was tall and narrow, actually about 4 feet high and about half that in width, and being strongly curved from side to side, partially encircled the body. It was pointed at the foot and could be thrust into the ground and held in position by the fighting man when he was dismounted. Such shields were made of strong thicknesses of leather covering a wooden substructure and strengthened with bands and bosses of metal, and it was from these reinforcing pieces that certain plain heraldic forms, called ordinaries, are sometimes thought to be derived. Among the earliest examples of the regularly charged Norman shield is one that was executed, in *champlevé* enamel, on the magnificent tomb of Geoffrey Plantagenet, Count of Anjou, the progenitor of our Plantagenet kings. In this typical case the shield is very large, extending from the shoulder to the ankle, the

top edge is straight, and forms right angles with the upper parts of the sides, the corners being slightly rounded. In other cases, of somewhat similar shields, the top is semi-circular. This latter form survived for a considerable time and is still used in Italy for decorative shields.

The difficulty of managing the long shield when it was used by a mounted man led to its gradual shortening, until by the end of the twelfth century it was about the length of the torso, and later still became much smaller and nearly equilateral. No doubt the increased defensive power of the whole armour contributed to the decrease in the size of the shield.

The quality of the curves which form the sides varied considerably, in some cases being rather full, swelling slightly from the rounded upper corners and becoming flatter as they met to form the point. Others more nearly approached the flat lines of an equilateral triangle, the upper corners being distinctly rounded, though they became more angular in later examples. For a considerable period the lines of the sides began their curvature quite at the top, until at the beginning of the fourteenth century they began in straight lines, which formed right angles at the top, and at about a quarter of the height developed into the point curves. This form is well known as the "heater" shape, from its resemblance to the heater of a smoothing iron, and suits bearings that are simple, especially such as are not crowded in the base or lower part of the shield. It of course goes well with Gothic surroundings, but may seem somewhat affected among modern work. I mean an affectation of antiquity. It seems to demand strong, simple treatment of the mantling and other accessories.

The next shape is, perhaps, the most useful of all the plain shields, and so it has never ceased to be employed since its inception in the fourteenth century. It is nearly square, about five parts in height to four in width, the base being round, or nearly so—that is to say, the base lines meet in a blunt point, or one semicircular line suffices for the whole base. This shape is equally suitable to most bearings, either single coats or the more complicated combinations of quartered arms which sometimes present such difficulty. It is thus peculiarly suitable to series of arms which naturally vary in character.

There were also large square shields, called *pavoises*, used for fighting on foot, and having a projecting rib down the middle. Another form had, instead of the broad rib, a sharp ridge or *arris*. This is said to be the last to have been used in actual battle, and probably suggested the similar line which was so marked a feature in some of the later decorative shields.

It should therefore be noted that, although shields are represented flatly in most cases on the monuments and seals, they were in actual fact curved in one or more directions; and this curvature may, of course, be extremely valuable, especially in modelled work, from the play of light and shade and the variety of line that the surfaces afford. As was natural, the simple curvatures of the early shields were dictated by the practical necessities of defence, and to the forms which resulted the later decorative shields gave fanciful development. The general principle of all defence is that it is easier to deflect a blow than to directly resist it, and in the application of this principle the curve of the shield was at first from side to side, as we have seen; then in order to prevent a blow from glancing downwards, the base of the shield was made to project, so that the attacking point was carried on to the sloping sides, from which it slid off. Finally the top was also brought slightly forward so that the whole shield had a double curvature, convex from side to side and concave perpendicularly.

It remains to describe a form of actual shield which greatly influenced those decorative escutcheons which were designed in such great variety in the fifteenth and sixteenth centuries, by which time the battle use of the shield had become obsolete, and when the present freedom of shield design may be said to have begun. This was the shield *à bouche*, the special tournament defence, with a gap in its right-hand margin, through which the lance could be placed so that the shield fitted closely against the guard-plate of the weapon, thereby making a closer defence. This gap, or embouchure, was sometimes at the top of the shield, but was more usually at the side. In a great many instances one or other of the various shapes of tournament shield was followed fairly closely in the seals and in other forms of decorative work, and the cusped form also came into extensive use, which continued into the first half of the sixteenth century. Further variety was obtained by the addition of foliated decoration, which followed the lines of

the shield, as in that of Henry V. on his stall plate in St. George's Chapel, Windsor.

The distinctive *bouche*, however, perhaps conveys too direct an allusion to the tournament to harmonise with merely decorative modern use; but by omitting the *bouche* and duplicating the other side of the shield the objection is avoided and some good forms may be arrived at.

Another method by which the tournament shield was freely developed into purely decorative form is shown when the *bouche* side of the shield was made to give but a mere indication of the opening, while in others it merged into a line swinging without a break from the projecting point. In this way an infinity of shield shapes was devised, and were either left in their simple line or further ornamented with foliation, which thus completed the transition from the actual motive to the decorative equivalent. Such a foliated shield occurs in the large wood-cut of the arms of Herr Kress of Kressenstein, who was one of the Nuremberg friends of Dürer.

In the works of Martin Schöngauer, Israel van Meckenem, Albert Dürer, the Behams, Burghmair, Virgil Solis, Aldegrever and Jost Amman, among others, an enormous number of ornamental shield shapes occur, which are evolutions from the tournament form in some of the ways that I have indicated, with the added influence of the classically derived scrolls and volutes of contemporary decoration.

It is easy to deduce from the foregoing that a space of any shape may serve as a field for a coat-of-arms. But, as I have already indicated, there is the unfortunate exception in the lozenge-shaped shield, on which it has become customary to depict the arms of widows and of unmarried ladies. In most instances it is exceedingly difficult, if not impossible, to adjust its bearings to it in a satisfactory way, especially where chevrons between charges are concerned, though this difficulty may be somewhat lessened by substituting curves for the straight outline of the lozenge; and here it may be usefully noted that its sides may be of any form, and that its angles may be rounded to a very considerable extent so long as the general idea of a lozenge-shaped space is present.

In designing or choosing a shield shape it must be remembered that the first duty of the shield is to display its bearings in the most effective way with the greatest distinctness and decorative effect. It should also be in itself of pleasant and suitable shape in its relation to the lines and character of the mantling or other decoration that may enclose it, and to the helmets, coronets or other objects that may form part of a general composition.

The natural convexity of the early shields is, as you know, generally ignored in their artistic rendering; in illumination especially they are represented as flat, but in sculpture, in seal engraving (which is a form of sculpture) and in engraving a concave form is frequently employed, perhaps suggested by the hollow shields or, as is more likely, by the nature of the work itself.

This is extremely valuable, for on a convex surface the lights on the bearings may become confused in the broad light on the shield, and their shadow sides be partially or wholly lost in its shadow, whereas the concave surface distributes the light and shade over the whole field in a kind of decorative counterchange. The shadow under the lighted rim gives value to the lighted side of the charges, whose definition is completed on the other side by their shadows in contrast with the field, which in that part comes forward and takes light.

Before proceeding to discuss the treatment of the bearings of the shield it will be necessary to say a few words on the subject of heraldic language. Heraldry, like other systems of knowledge, requires the use of technical terms, and these sometimes act, at first sight, as a deterrent to its study. Such terms, however, have become needlessly complicated, for most of them that one finds in treatises on the subject are of such infrequent use that they may be put aside in a general way, to be looked up in a glossary when occasion requires. But there are certain principal terms which it is necessary to keep in mind. For practical purposes the names of objects, the means of expressing their relative positions and of defining the heraldic poses of the animals will suffice, and this is comparatively simple. The great point to keep in mind is that there should be no doubt or inaccuracy about the essential heraldic facts on the one hand, and no unnecessary insistence on unimportant detail on the other. Heraldry is naturally governed by its significance, and consequently artistic variation is permissible only so far as heraldic or symbolic statement is not inter-

fered with, for in working from a sketch which is often a merely diagrammatic indication of the armorials, this question of how far it may be improved in an artistic sense, without impairing its validity as heraldry, will continually arise. And it will be found that its interpretation will be greatly helped by the technical heraldic description called *Blazon*, for in it will be found all that is really essential. It is not desirable perhaps further to describe the method here; it will be found described at more or less length in all treatises on heraldry, and with a little trouble will be easily understood.

The simplest coat of arms that is possible is, of course, one which consists solely of a plain surface of one tincture, such as the plain golden shield of Pope Alexander III. in the twelfth century, or the simple ermine shield of Brittany, which occurs so frequently in French heraldic decoration as the arms of Anne of Brittany, the queen of Louis XII.

The field, or surface of the shield, may be divided in various directions, and so become parti-coloured; and though the exigencies of material, as in sculpture, may cause the spaces to be indicated by sunk planes, they are in theory but divisions of the surface, and are so represented in painting; also in sculpture they may be divided by raised (or by incised) lines; but the countersinking is better. The simple charges, the perpendicular pale, the horizontal fess, the oblique bend, the borders round the shield, the cross, and so forth—forms which normally extend to the edges of the shield, and are called *ordinaries*—are considered to be superposed on the surface, and in sculpture are frequently accented by being bevelled at their edges, which thus acquire more emphatic light and shade.

The proportion of the ordinaries to other charges and to the field is obviously a most important point, and the first thing to do in this connection is to quite put out of mind any idea whatever of a fixed scale. The only true principle is that which makes for unmistakable clearness of definition by means of artistic balance and good distribution, suitably expressed in the material concerned. It was on this principle that the Mediæval designers worked, with that common-sense regard for practical necessities which they always combined with their extraordinary instinct for design. The tomb of Louis Robsart, Lord Bouchier, in Westminster, may be taken as an example, and in this particular attention should be given to the engrailed cross. It is very much narrower than seventeenth-century writers prescribed; there is no question of exactly one-third or one-fifth of the surface; but there is also no question of its sufficing clearness of definition, while ample space is left for the other charges, the water bougets, and for their treatment with appropriate largeness, the whole effect being that of a well-decorated space of which all the details are distinctly legible.

Since we are dealing with the subject mainly with a view to the interpretation of a provided sketch, it will be well to keep in mind the principal points concerning the arrangement of charges on a shield. Their number must be noted, for, except when a field is said to be powdered or sown, semé, with a charge many times repeated (in which case the number is indefinite), the number of the charges is of primary heraldic importance. The order in which charges are arranged next claims attention. This, like their number and heraldic disposition, must never be tampered with; their size, however, and their consequent distance apart may be anything within the compass of the shield that the artist wishes.

Of all the various charges on heraldic shields the animals naturally attract most attention, and the lion in particular is of especial interest, not only for the variety of its pose and treatment, in which connection it serves as a telling example of the characteristics and changes of heraldic style, but as the principal part in the royal arms of both England and Scotland, it is a figure with which every art worker has sooner or later to deal, and it therefore presents a very suitable means of showing what is essential in heraldic pose, as well as what is to be aimed at in artistic treatment.

It is, of course, easy to understand that when the number of persons bearing symbolic emblems were few, he who bore a lion, for instance (having no other lions in his neighbourhood), would have the animal represented in any pose that suited the space that it had to occupy, so that in an upright space like that of a pointed shield, the beast would be ramping upright, but in a horizontal space would assume a horizontal attitude, and this is exactly what happened in early times on warriors' shields and headpieces. The thing was a lion, and that was enough. When, however,

lion-bearing personages increased in number, some means of distinguishing one from another became obviously necessary, and among those means set variations of pose were found most effectual, and so they became endowed with a regular heraldic significance, and constituted valid distinction between otherwise similar bearings.

This will suffice to show the importance of so rendering a given coat-of-arms as to avoid any alteration that may, as it sometimes does, result in turning one coat into another. I will therefore endeavour, as shortly as I can, to explain what is heraldically essential in animal pose. This may be broadly classed under three heads:—(1) The general direction of the animal, (2) the arrangement of its limbs, and (3) the pose of the head. Putting aside for the moment certain comparatively unusual attitudes, which will be referred to later, we find that the general pose divides itself into two classes, one of them more or less perpendicular in direction, rampant, and the other horizontal, passant.

As I have indicated, both these poses occur in the royal arms, in those of Scotland a lion rampant within a tressure, and of England three lions passant-guardant in pale. The arrangement of the limbs is somewhat similar in both positions, all four legs being clearly separate, one forepaw being strongly raised in an attitude of vigorous rage. This clear division of the limbs is heraldically important, for if, for instance, the hind legs of a rampant lion are placed close together, the beast is said to be saliant (leaping) instead of rampant, and is a different bearing altogether. The passant lion becomes statant when the four legs are placed as though the animal were standing on all of them, and this is, of course, another definite and distinctive pose. One of the before-mentioned attitudes, saliant, is very rare, being probably of comparatively recent differentiation from rampant, and the other pose, statant, usually occurs in crests. It is necessary, however, to keep them in mind in order to avoid confusion.

We have now to consider the pose of the head, and it must be understood, in the first place, that in heraldry an animal's head is always meant to be in profile—the simplest way in which an object can be drawn—unless some other position is specified. Other positions of the head are full-faced, gardant, as in the last slide, and another looking backwards, a comparatively rare pose, which is known as regardant. A little latitude is permitted in modification of these three distinctive positions of the head, but only so far as escapes all possibility of misunderstanding. Thus the profile head may be turned until the further brow is visible. On the other hand, a beast that is in the gardant position need not be quite full-faced.

The positions that have been described, viz. rampant and passant, are those commonly met with; but besides the somewhat similar positions of saliant and statant, which have also been mentioned, there are others, such as sejant, sitting on the haunches with the forelegs upright, like Stevens's lion, or with one leg employed in supporting an object, such as the shield that is held by the well-known lion by Donatello, in Florence; and couchant, lying with the forelegs extended, the attitude of Landseer's lions in Trafalgar Square.

Much of this may seem unpleasantly restrictive of artistic freedom, but as it is essential to the accurate rendering of the subject, it is an inevitable condition of heraldic design. It remains to the artist to make the heraldic statement in as beautiful and expressive way as he can. Let us therefore consider some of the qualities that go to make a satisfactory work.

The placing of the animals as charges will naturally present most difficulties, for whatever their pose they must occupy their spaces in such a way as to express their character with the utmost distinctness, while at the same time covering the field in a decorative manner. That is to say, good distribution is of the greatest importance in all good heraldry. Very excellent examples of it are to be found in most of the work of the Mediæval period, especially in the fourteenth century. In fact, good distribution and vigorous expression are its most characteristic points. The ceremonial shield that was borne in the funeral procession of Edward the Black Prince, and was afterwards hung over his tomb in Canterbury Cathedral, and the no less remarkable sculptured shield of his uncle, Prince John of Eltham, in Westminster Abbey, are instances in point. Notice there the adaptation of the figures to the varying demands of space, the preservation of the heraldic pose and the great spirit of the whole work. Other excellent examples may be found on the contemporary seals.

This shield shows among other excellent qualities the characteristic attenuation of the animals, which is a most striking feature of Mediæval work, and is a good instance of the adaptation of figures to the condition of their heraldic use, an ever-present proof of the reasonableness of the Mediæval artist. In the earlier shields the figures were done with a considerable degree of reference to natural form, very simply expressed, like those of the Saracenic silks. Soon, however, the necessity for clear definition of the bearings on a shield or banner suggested the additional emphasis of the figures in their fields and resulted in the peculiarly heraldic character which makes so much for practical decorative effect. In this as in so many other cases, a common-sense regard for the practical quality, legibility, resulted in the effective attainment of the decorative one.

As guides to setting out lions on shields, a sort of skeleton method is often found useful in which simple lines indicating the general direction and placing are drawn, and the forms are built up on these in due relation to the field and to each other.

The drawing of heraldic figures should be firm and decided, every line being made to do the most of which it is capable in expressiveness of character and in decorative force. The pose of the figures, in complying with the heraldic rules and with the requirements of ornamental distribution, should still be in accordance with anatomical possibilities, and by this I mean that physical distortion for the purpose of getting a figure into a space is offensive and unnecessary.

In thus arranging the limbs to occupy satisfactorily the given space, the play of the shoulder is very important, not only in the strong forward reach of the uppermost foreleg, in the positions of passant and rampant, but also in the drawing back of the other foreleg on the body, where the narrowness of the containing space requires it.

It will, therefore, be desirable to study animal anatomy, at least so far as will fix in the mind the position of the principal joints and their range of movement, as well as the more important muscles and other surface characteristics. The muscular masses of the shoulder play an important part in the suggestion of power, and this may be helped by the treatment of the mane. That very distinctive leonine feature usually covers the whole forepart of the body to the line of the shoulder where it joins the trunk; but if it is disposed in the natural way, covering the neck and chest but leaving the shoulder bare, as in some wild lions and in those of the Assyrian and other eastern sculptures, the modelling of the muscular shoulder is emphasised and the suggestion of strength is more marked. It is not, of course, intended to import such forms unchanged into a shield, but only that the lesson of simple and direct expression of leonine power and character should be learnt from them.

Characterisation should be strong and definite, and, above all, the expression of vigour should always be intended. Vigour in the animals is, perhaps, the most striking quality of good heraldry, however different it may be in style and period. An unerring sign of decline in heraldic art is always the loss of vitality in the animals. The Mediæval designer was, of course, influenced by the symbolic qualities of courage, magnanimity and power that were ascribed to the lion, and he tried, no doubt, to express them, but vigour seems to have been his principal aim; and if in the pursuit of it he exaggerated the toes into forms that were claw-like, we forgive the grotesqueness for the sake of the supreme vitality that resulted.

The treatment of the wide-stretched paw is no unimportant part of the expression of that vigorous rage which is the character and sanction of the principal heraldic poses, and without which they become feebly ridiculous. Also these claw-like toes had full warrant in nature, and, if we look at the paw of the domestic cat when it stretches itself, we shall get a very good idea of what the paw of a lion would look like in vigorous action. The toes divide to a remarkable extent, showing much of the character of the Mediæval form.

To the absence of vigour the lions that we know so well in ordinary commercial heraldry owe their absurd appearance. Their original designers seem to have looked at a tame beast in a menagerie, and (determined to do something more natural than those wild Gothic fellows) looked at him as he stood blinking in his quiescent state, drew him propped up into heraldic attitudes and let him go at that. The next slide shows that this treatment began by the Italians as long ago as the fifteenth century, and we copied them. The vital distinction between good and bad treat-

ment of heraldic animals consists in the recognition of something beyond mere form, namely, the expression of emotion, of the heraldic emotion of active rage. And this may be seen in the Gothic heraldry of the Middle Ages, in its time of strength and in its decline, no less than in the comparison of, say, the lions of Schongauer and Dürer with those of Della Robbia.

Before leaving the lion it will be well to point out explicitly what has already been implied, viz. the desirability of filling the field space to a satisfactory extent. Returning to the Black Prince's shield, we remember that the English lions stretch from side to side, and thus decorate the whole surface.

Neglect of this was a conspicuous feature of the work of last century, when it became customary to depict these same lions of England in a column down the middle of their field with a great blank space on either side. There has been some gradual improvement (in the heraldry of coinage, for example), but in this and some other respects the courage to go to the full extent of the decorative possibilities seems still to be lacking.

To sum up the qualities that are to be aimed at in depicting a shield of arms, they are:—A shape of shield that is suitable to all the circumstances of its use and surroundings. Clear definition of its bearings by means of direct and simple drawing, and just proportion between the charges and their fields. Good distribution over the shield space, and in the animals strong characterisation combined with the utmost vigour that can be expressed.

SCOTTISH MODERN ARTS ASSOCIATION.

THE committee of the new Association have issued a statement, in which it is said:—"It has long been admitted that the existence in Scotland of a recognised School of Painters, and the absence of any Society with funds to secure representative specimens of its best modern work as national possessions, constitutes an anomaly of the most unusual description.

"Year by year Scottish painters earn the critical appreciation of connoisseurs and buyers throughout Europe and America—for proof of which it is only necessary to consult the records of the various national and international exhibitions of art which have been held during recent years, at the last of which, of the four medals awarded, the three first were taken by Scotsmen and the fourth by an artist who had been trained in this country.

"It may be said that there is not in foreign countries that neglect of Scottish art which we are compelled to deplore in our own, which is evidenced by the fact that there is not a gallery in Scotland to which the student of art, professional or amateur, resident or visiting, can be referred, as containing a permanent collection of work adequately representative of modern Scottish art. Even if we include galleries south of the Tweed which are ostensibly representative of British art, such as the Tate Gallery in London, it is clear that little note is taken of the majority of those painters who are considered by Scotsmen to be an essential part of our national artistic asset. The absence of a gallery of modern Scottish art is largely responsible for the indifference and ignorance which prevails regarding the Scottish school of painting.

"To remove this limitation to our national endeavour and to enrich our national treasures, the Scottish Modern Arts Association has been formed, whose aim it will be to secure, year by year, such works of Scottish artists as a thoroughly qualified and unbiassed committee of selection may judge to be worthy of purchase; and, secondly, as funds permit to extend its operations by purchasing contemporary works of outstanding interest, other than Scottish, and so to form for Scotland an adequate collection of modern art in its more comprehensive sense.

"It has been judged that the present time is extremely favourable for the object in hand. The changes that are about to take place in the constitution of the authoritative body which, to a great extent, controls national art matters in Scotland, and the legislation affecting the National Gallery, make the moment almost a psychological one, and it is hoped that neither diffidence nor delay will prevent an immediate practical outcome of our endeavours.

"To realise to the full what the absence of such a body as the one just constituted means to art in Scotland, it is only necessary to take a glance backward and see to what extent the generations of art immediately preceding the present are represented in the national collections. Of the

Scottish painters of the nineteenth century, only Raeburn, Philip, Thomas Duncan, and possibly Thomson of Duddingston, are adequately represented in the Scottish National Gallery. Of Watson, Alexander Fraser, Sam Bough, George Paul Chambers, Erskine Nicol and Tom Faed—to mention only a few—there is a very meagre representation, so meagre indeed as to remove its representative character. Of such distinguished Scottish painters as Wintour, Milne Donald, Pettie, George Manson, Colin Hunter, Arthur Melville and Robert Brough, there is not a single specimen. A similar remark applies to those living artists, the bulk of whose work may be safely called complete. The sequel to such a condition of affairs is obvious. The blank to be faced by future generations, under existing circumstances, promises to be no less striking. It is the removal of this blemish upon our national patriotism, taste and good sense that the present Association sets out to achieve.

"It may be indicated from the first that the movement being undertaken is in no sense a local one, but is essentially of a national character. The Association will give no preference to any centre or school of art in Scotland, academic or extramural, but will be prepared to treat all schools and all individuals without prejudice. Although it will naturally follow that the collection of pictures will eventually be housed in the capital city, yet will it be in no way an Edinburgh, but a national collection, the possession, not of a city or a corporation, but of a people.

"When dealing with living artists, the pictures will be bought, if possible, direct from the artists themselves, or through the medium of the public academy or exhibition in which the pictures hang at the time of purchase, and at such a price as will prevent any attempt to use the Association for merely monetary ends. Probably some scheme similar to the one employed by the Luxembourg Gallery in Paris may be followed. In the latter case the purchase price is considerably below the ordinary sum named by the artist to the private purchaser. The following of such a plan, it is believed, would be in accordance with the wishes of the majority of the artists themselves.

"In the meantime it may be mentioned generally that the idea is (1) to raise a capital sum which may serve as an endowment fund, and (2) to institute a membership which shall be constituted by a minimum subscription of one guinea per annum. To illustrate broadly the outcome of such a plan, it may be stated that a capital sum of, say, 12,000*l.* would realise an income of some 400*l.* a year, and the subscription accruing from a membership of 600 added to this interest would secure at least a thousand pounds (1,000*l.*) per annum for the objects of the Association. It is hoped that the response to our appeals will be more extensive, but even with the sum indicated the Association could proceed to the purchase of works of art.

"It is only necessary to add that the Association will be prepared to consider, and, if desirable, to accept any legacies or works of art for the purposes of the Scottish National Art Fund, and in other ways to carry out any scheme which it considers within its scope for the furtherance of art in Scotland.

"We should be glad if you would reply to our request at your earliest convenience.—Yours,

Patrick W. Adam, Robert Alexander, Walter Armstrong, Balcarres, G. Baldwin Brown, Robert Burns, James Cadenhead, D. Y. Cameron, Thomas D. Gibson Carmichael, James Cooper, J. J. Cowan, John R. Finlay, James Guthrie, Duddingstone Herdman, Arthur Kay, Kinross, J. H. Lorimer, C. H. Mackie, W. D. M'Kay, Ian Malcolm, John Stirling Maxwell, J. Campbell Mitchell, Patrick Murray, R. B. Nisbet, J. Campbell Noble, James Paterson, R. W. Philip, David Robertson, Alexander Roche, Hugh Shaw Stewart, Harold Tarbolton, Edward Tennant, William Walls, E. A. Walton, A. Stodart Walker, convener,

Members of interim executive committee."

The "*Burlington Magazine*" has been appreciated by connoisseurs. But the price, which is half a crown, prevents a great many people from taking advantage of the information it contains. The conductors have issued a shilling edition which is to contain both articles and illustrations from the dearer edition. The first number is a creditable specimen, and the plate from the new *Madonna*, by Raphael, in the National Gallery, is by itself enough to insure the success of the experiment.

GLASGOW ARCHITECTURAL ASSOCIATION.

AT the opening meeting of the session the president, Mr. James Lochhead, delivered an address to the members. He referred to the gratifying increase in membership and the excellent quality of the papers delivered by members and others to the Association. The address which followed partook of the nature of a plea for greater alliance in the practice and study of architecture, his endeavour being to emphasise the necessity for a thorough understanding and collaboration not only between architects and contractors, but between architects themselves in the pursuit of their ancient and honourable profession. It was regrettable that the public appreciation of architecture fell so short of the attention bestowed on the sister arts. That the negative qualities in the attitude of the public to architecture, as the first consideration, and the public's appreciation of architecture have been a persistent thorn in the flesh of the profession is manifest by the murmurings which have gone forth, especially of recent years, and that they are not merely the plaint of the ubiquitous grumbler is also manifest from the fact that this formed one of the most important subjects to come under the notice of the recent International Congress of Architects. There was a force identified very closely with the public which might form a valuable ally in the cultivation of greater interest in what is good in architecture, namely, the Press, the most democratic of all forces. If, according to Bishop Creighton, architecture is the most democratic of all the arts, there is a want of harmony somewhere, for generally speaking the home architect does not owe much to the members of the fourth estate. Of course, the professional Press, the lecturer maintained, had its own sphere of undoubted usefulness, but was practically limited to the profession, the public being only interested in the illustrations. Surely a little of that interest which the Press lavishes on sculptors, musicians and painters might be bestowed upon the efforts of the architect. The President was hopeful of the future, which would bring with it more of that recognition and appreciation of architecture which is undoubtedly its due. His closing remarks referred to the projected amalgamation of the Association with the Glasgow Institute of Architects, and to the good that was likely to ensue. A vote of thanks was awarded Mr. Lochhead for his address.

GENERAL.

Friedrich Bensch, the German sculptor, has died at Girgenti, in Sicily, in his sixty-third year. His works are to be seen in Berlin, Münster, &c. One of the best known is the *Steam*, in the Technical School of Charlottenburg.

Sir A. B. W. Kennedy will deliver an address at the opening meeting of the session of the Institution of Civil Engineers on Tuesday, when the medals and prizes will be presented.

Professor Gourlay will deliver a lecture on the Byzantine churches of Constantinople this (Friday) evening to the members of the Architectural Craftsmen's Society, Glasgow.

Mr. Banister Fletcher will give an introductory lecture on "Greek Architecture" at the University of London, South Kensington, on Monday, November 5, at 8 P.M.

Mr. Percy L. Marks is about to publish through Messrs. Swan, Sonnenschein a volume entitled "The Principles of Architectural Design." The part relating to exterior design has appeared in *The Architect*, but in the pages interior design will likewise be treated. The illustrations will be derived from actual works. The subscription price is 7s. 6d.; after publication it will be raised to 10s. 6d. The list of subscribers is influential and satisfactory.

The Aston Town Council on Tuesday discussed a proposal by the public works committee to increase the salaries of the surveyor's three assistants instead of appointing a successor to the architectural assistant, allocating his work amongst the members of the present staff. This would involve a saving of 74l. per annum. Mr. J. E. Berry protested against the recommendation, and characterised it as false economy. It was unjust to put more work on the shoulders of men who were already fully employed. For a considerable time the members of the department had been working at high pressure, and it was wrong for the Council to "speed-up" their servants, and all for a paltry saving of 74l. per annum. The recommendation was adopted, Mr. Berry being the only dissident.

Mr. H. Percy Adams has been awarded the gold medal for his architectural works by the jury at the Milan International Exhibition.

A Collection of "Manchester Sketches," by Mr. Frank L. Emanuel, has been issued from the offices of the *Manchester Guardian*. Cottonopolis has a character of its own, which Mr. Emanuel has not only studied, but realised in black and white with surprising success. He is Rembrandtish in his effects, and the collection of plates deserves to be welcomed not only by citizens, but by all who can admire vigorous and original draughtsmanship.

The November Number of *Concrete and Constructional Engineering* contains the rules concerning reinforced concrete which are about to be issued by the French Ministry of Public Works. The explanatory circular accompanying the rules explains the theory of concrete beams as it appears to the French official mind.

At a Meeting of the Society of Engineers on Monday next at the Royal United Service Institution, Whitehall, a paper on "Recent Storage Battery Improvements" will be read by Mr. S. Cowper-Coles.

At the last Meeting of the Dundee Technical Institute committee it was announced that the subscriptions for the new Institute scheme totalled 22,500l. This was the sum aimed at, and in the hope that an equal sum would be obtained from the suspense account earmarked to the Scottish Education Department, a site for the new building had been purchased. The negotiations were considered satisfactory, and it was agreed to take steps to obtain an architect.

The Durham Education Committee have declared the following awards regarding the competitive plans submitted for new schools:—Greenside—John Morson, architect and surveyor, Westgate Road, Newcastle, and Durham. Consett—1, W. H. Knowles, architect, Collingwood Street, Newcastle; 2, James Garry, Church Street, West Hartlepool; 3, Messrs. Clark & Moscrop, Feethams, Darlington.

Mr. Harcourt, M.P., gave last week the following official explanation in the House of Commons of the refusal by the Government of the Stibbert bequest. It was, he said, declined in August last because it appeared to His Majesty's Government, on examination of the will, that they would have practically no power over the administration under the conditions laid down by the testator, and would be involved in rather wide financial liabilities. Neither under the terms of the bequest nor under the Italian law could any part of the collection have been transferred to this country. The renunciation of the bequest by us transfers it on exactly the same terms and conditions to the commune of Florence, and therefore those desiring to see the collection will do so exactly as if we had been in nominal custody of it.

The Preston Free Library Committee, in order to familiarise children with work that is artistically good and to teach them the history of their country, are distributing framed pictures to the elementary schools of the town. The pictures are by the best artists, dead and living, who have dealt with the legends, the poetry and the history of this country and the great events of the world. In addition, the committee have obtained a series of large coloured photographs of places noted for their historical associations or for their beauty.

Mr. A. G. Smith, the American Consul at Victoria, British Columbia, in a report says that engineers and other deeply interested parties are planning not only new railroads in British Columbia, but are projecting schemes to connect the island of Vancouver with the mainland. The people of Victoria and Vancouver Island desire the extension of the island railroad to Cape Scott, the extreme north of the island, and the bridging of Seymour Narrows by a Government railroad toll bridge. Plans have been prepared for the construction of such a bridge. The scheme proposes a series of bridges from island to island. The longest span from Valdez Island to rock would be nearly 1,000 feet in length, but as the Quebec bridge across the St. Lawrence has a span of 1,840 feet, the one contemplated here could be erected without danger, once the pier is built on rock in the centre of the Narrows. Competent engineers say this is entirely feasible. It is estimated that the cost of this bridge or series of bridges would be from 2,800,000l. to 3,600,000l., to be paid for by Dominion funds.

The Architect.

THE WEEK.

THE gift of 300,000*l.* by Mr. CARNEGIE for the erection of a Palace of Peace at The Hague would deserve to be called princely, only that history demonstrates that princes in all ages were not favourable to peace when they were able to profit by war. The competition was international, and no doubt inspired the London County Council to give architects everywhere a chance of designing the new county hall. The Council, it must be owned, were supported by the resolution of the late Congress of Architects, at which international competitions were recommended, and there is not much use in a congress passing resolutions without opposition if they are not accepted as final and binding. It would be fortunate for English architects if that were the only example of imprudence on the part of those who profess to be the official representatives of the art. Whether foreigners take part in the London competition or not, it is to be devoutly wished that the result will be more satisfactory than that of The Hague competition. The numerous judges who were appointed have reason to be ashamed of their mode of acting. They knew the extent of the funds likely to be available, and yet a design was selected which any builder must have seen would cost far more than the sum indicated. Mr. CARNEGIE has acted loyally and has not withdrawn his offer, although from the fiasco there is a probability that his money will be wasted on a "folly" instead of a palace. But he has wisely declined all appeals to increase his 300,000*l.*, and his resolution will probably lead to another competition. All that is at present gained by the contest is a demonstration that in architectural affairs there is not safety in a multitude of counsellors. A number of Dutch women would have served equally well as judges.

An effort was made on Monday at a meeting of the Maidstone education committee to appoint an architect for a school about to be erected. A sub-committee recommended:—"That the ground plan of the proposed new school as prepared by the borough surveyor be approved, and that he be further instructed to proceed at once with the work of preparing plans which shall give full details." Mr. BROWNSCOMBE proposed that a competent firm of architects should be invited to prepare the detailed plans, as the borough surveyor had already a sufficient number of buildings to engage his attention. As the school was supposed to cost only 8,000*l.* the architect's fees at 4 per cent. would amount to 320*l.*, and an equivalent sum was likely to be saved. Another councillor said they were now saving 2,000*l.* a year on architects' fees and probably 1*l.* a head on children to be accommodated. The committee were very nearly divided on the subject, for Mr. BROWNSCOMBE'S amendment was lost by only one vote. Evidently the majority do not set any value on the advantage which can be derived from having satisfactory buildings erected in the town. The school was to be a plain structure, and it is not difficult to imagine what that means.

THE decisive action of Mr. HUGH BLAKER, the curator of the Holburne Museum in Bath, might well be imitated in some other picture galleries. On the walls were about 250 works presented by the late Sir WILLIAM HOLBURN, and which he had catalogued. In consequence of Mr. BLAKER'S action about 200 have been eliminated. It is needless to say that among those which have gone into limbo the majority were supposed to be masterpieces of the great artists. There was an *Arctino* by TITIAN, a portrait of CHARLES I. by VANDYKE, a portrait by RUBENS of his wife and child, a

portrait of GERARD DOUW by himself, a *Nell Gwynne* by LELY, a *John Milton* by WALKER. In fact, Sir WILLIAM believed that he was the fortunate possessor of a noble collection, and that he was really endowing Bath when he made over the pictures to that city. The decision to strip the gallery cannot cause much excitement in Bath, for few visitors cross the threshold. At present, however, the collection should possess a more genuine interest, for out of the fifty pictures which have survived the scrutiny there are twenty-two by the BARKERS, whose names are connected with Bath. THOMAS BARKER'S *Woodman* was made the subject of many engravings, and BENJAMIN BARKER'S landscapes deserve admiration. There is also a fine portrait by HOPPNER, who was a rival of Sir THOMAS LAWRENCE, and one or two examples by GAINSBOROUGH.

THE Disused Burial Grounds Act of 1884 enacts that "it shall not be lawful to erect any building upon any disused burial-ground, except for the purposes of enlarging a church, chapel, meeting-house or other place of worship." The clause will alter the condition affecting a new parish church at Epsom. It was proposed to erect a church by instalments in the churchyard. But as that course cannot be adopted, the new building will have to be erected in two sections around the existing fabric in order that it may be considered as an enlargement in the legal sense. There will be a difficulty in dealing with the tower. It is desired to preserve it, but, if so, it will be necessary to erect another tower. The new work will commence at the east end, and the first part is estimated to cost about 7,500*l.* The amount already promised is 6,700*l.* It is strange that a design should have been prepared, subscriptions sought, and the working plans and specifications ordered without any attention having been given to the Disused Burial Grounds Act, which has been in operation for the past twenty years.

THE Ripon City Council appear to be desirous of acting worthily by arranging for a water supply for the protection of the cathedral against fire. A supply of water is at present available, but it is proposed to have a connection with the mains at St. Agnes's Gate and St. Mary's Gate, which would allow an increase of pressure and a large supply. Although the church was not raised to the rank of a cathedral until modern times, *i.e.* 1836, yet its history goes back to the seventh century. The building was erected by St. WILFRID and was one of the earliest constructed of masonry. The west front, central tower and part of the choir and aisles of the existing building are supposed to date from the time of STEPHEN, the worthy king. The great window is thought to be late fourteenth-century work. The cathedral was restored by Sir GILBERT SCOTT, and is too important to allow of any neglect of protection because it might be feared that the water supply would not be fully paid for by the Dean and Chapter.

THE theft of a statue of Isis from the Louvre must incite the authorities not only of that great museum but of those in other cities to adopt more precautionary methods to insure the safety of the collections. Egyptian sculpture is usually heavy, and it is surprising how a statue could be removed and probably carried through the streets of Paris without attracting some attention from the police. The Egyptian section is generally visited only by those who have a particular interest in the objects and who would be indifferent to what took place in other parts of the great hall. The loss may be only temporary, but it is an indication that in Paris there is less respect for national property than formerly. Both the Louvre and the Luxembourg are insufficiently guarded. But there was confidence that all the visitors would be protectors of whatever was exhibited. Henceforth it will be necessary to expend more money in guarding the different galleries, and especially those where there are portable objects.

PARTY WALLS.

IT would be interesting to discover when the peculiar rights connected with party walls were first claimed and allowed. Man is selfish by nature, and we cannot suppose that in an early age he was likely to grant any convenience to a neighbour unless he received compensation or was made accommodating under compulsion. Some speculators have indeed held that early man preferred the solitary state and that he wished to have a cave or tent as his own possession. The advance of civilisation would therefore in some measure be connected with party walls, for we must suppose from their existence that men were not only able to erect houses, but they were willing to live in streets of houses which were joined together rather than detached. It is concluded that the Greeks recognised party walls because the word *mesotoichos* was used by them. If the houses were of the frail kind which is inferred from the few descriptions of them, we cannot suppose that much extra support could be given by any of the external walls.

The Romans, on the contrary, not only built substantially, but they took care to define the law of building. For instance, CICERO mentions as a stock argument in the Courts the following one on the subject of a party wall:—

All men have a right to add to a common party wall a wall extending its whole length, either solid or on arches, but if anyone in demolishing the common wall should promise to pay for any damages which may arise from his action he will not be bound to pay for any damage sustained or caused by such arches; for the damage has been done not by the party which demolished the common wall, but in consequence of some fault in the work, which was built in such a manner as to be unable to support itself.

The passage, apart from its legal importance, has interest as throwing a light on construction. It is not improbable that the masons and bricklayers of Rome were of Etruscan descent, and had an almost superstitious belief in the properties of the arch. They would use it, therefore, as a means of providing against future loads on a wall as well as for the attractive appearance of a series of arches. But if by any chance the part of a wall which served as an abutment to the arcade was to be broken into or weakened in any way, it is quite possible that some of the arches would lose their cohesion. We may therefore conclude that while the *paries solidus* or plain party wall of stone or brick was favoured by the common law of Rome, the *paries fornicatus* was looked on as being more ornamental than useful, for although more expensive it was not stronger than an ordinary blind wall. Another instance is mentioned by CICERO:—"In the case of someone building a roof for the purpose of covering a common wall, PUBLIUS SCÆVOLA asserted that there was no right of carrying that roof so far that the water which ran off it should run on to any part of any building which did not belong to the owner of the roof." This is an obscure decision. But we may, at least, infer from it that great care had to be taken in Rome to preserve party walls from damp. The French get over the difficulty by having in the top of the party wall a "chaperon" or capping, which is inclined on both sides to allow the water to escape in an equal measure on each property.

It is possible that the Roman law was not without effect on what was known as the "custom of Paris" in respect of party walls. If anyone wished to build against the wall of another man's house he had not only to avoid any injury to it, but he had to purchase a right to share in the support afforded by the wall. It might be supposed that one-half the wall would be required. But some authorities in the seventeenth century considered that not more than 18 inches had to be paid for, although the wall might be more than 36 inches in thickness. In modern times the price to be paid in France is determined not by the actual cost of the wall

but by its present value, and in reckoning the value the depth of the foundations has to be taken into account.

This rule about purchasing was recognised in the rebuilding of London after the Great Fire. It might be expected that when such an immense area had to be covered arrangements would be made for the disposal of the sites in the different streets according to some approved plan. But apparently individuals were allowed as much liberty as they would have had before the catastrophe. By the Act which was passed in the year following the Fire, it was enacted that the Corporation of London were to appoint one or more discreet persons, intelligent in the art of building, to be surveyors, to see that the scantlings or dimensions prescribed were well observed. It was decreed that the exteriors of buildings should be of brick or stone, or brick and stone together. Party walls therefore became necessary, and the following general order was given respecting them:—

The surveyors shall take care, party walls and party piers to set out equally on each builder's ground to be built up by the first beginning of the building and toothing left in the front wall, and that no man be permitted to build on the said party wall until he hath reimbursed the first builder the full moiety of the charges of the said party wall and piers, with interest at six per cent. for forbearance; and in case of difference the alderman of the next ward to mediate an agreement, and where he cannot do it, to appeal to the Lord Mayor and Court of Aldermen to hear and determine the same.

In by-streets or lanes the houses were to be two storeys high, besides cellars and garrets. The party walls were to be $1\frac{1}{2}$ brick thick up to the garrets, and in the garrets 1 brick at least. Buildings of the second class were to have three storeys besides cellars. The buildings in the principal streets were to have four storeys, besides cellars and garrets. The party walls up to the first storey were to be 2 bricks thick and then $1\frac{1}{2}$. It was also announced that:—"Where any difference arises between several owners concerning party walls, the same shall be referred to the City surveyors to decide the difference, if they can, who may order, exchange or divide their ground, or award satisfaction in money; but if the parties refuse to submit to such order, then the Mayor and Court of Aldermen to determine the same without appeal." The surveyors were to see that the party walls were set out equally.

The directions relating to the rebuilding of the City of London in the seventeenth century, it will be seen, were much more simple than those to be found in the London Building Act. An endeavour has been made to prevent mistakes by making party and external walls have the same thickness. But it is an advantage to have as precise directions as possible on so important a subject. In the United States there is much diversity of opinion among authorities about it. In some States the by-laws require that the party walls shall be of the same thickness as external walls, or, in other words, they correspond with the practice in London. There are certain towns where the party walls have to be 4 inches thicker than the external walls, while in others the party walls can be 4 inches thinner. Theory is in favour of giving greater thickness to the party walls as they have extra duties to perform.

A treatise on party walls and the rights and liabilities of adjoining owners, by Mr. A. R. RUDALL, of the Middle Temple (London: JORDAN & SONS, LTD.), is of much interest, for common law affects party walls except in London and places regulated by local Acts. In looking over the pages it is surprising that still more actions do not arise in relation to party walls, for a disagreeable neighbour can find scope through them for giving annoyance and causing money to be wasted. Indeed, from some of the judgments it might be doubted what is the extent of the rights which each party can possess in a party wall. The centre of a wall is not necessarily the boundary between two properties. If by some over

sight a man builds a wall on another man's land he ceases to have any property in it and the wall becomes a gift to the owner of the site. All architects who may have to deal with buildings in country towns and villages will find many warnings in the pages which will be useful to them. The author also treats of party walls under the London Building Act. The number of cases referred to will show that in spite of all the precautions taken in preparing the Act and the unusual scrutiny in committee-rooms, opportunities are left which litigious persons can turn to account.

BATHS AND WASHHOUSES.*

A TERRIBLE indictment against the mass of the English people was expressed when they were described as "the great unwashed." But if we remember that it was not until 1824 that a few benevolent individuals tried the experiment of opening a bath for the poor in London there seems to be some excuse for the allegation. Cleanliness was impossible (outside a Russian house) without the use of water, and in the first half of the nineteenth century water was a scarce commodity in the towns of Great Britain. The wise Dr. JOHNSON advised a friend to be content with a dirty skin rather than attempt a bath, and confessed that he hated immersion. However proud we may now be of the tub, it was not a national necessity until a comparatively modern period. Mr. BOWIE, the surgeon, must have been considered as a visionary when he projected public baths which could be upheld without loss. As the first experiment in Whitechapel cost 26,000*l.* there was ground for the suspicion. The novel building not only rendered public service, but various foreign Governments obtained copies of the plans in order to set up similar establishments.

The large volume by Mr. A. W. S. CROSS shows the progress which has been attained in the course of half a century. We are far from adopting the magnificence which was apparent in the great Roman baths, but by the aid of machinery the services have attained a perfection which probably would have amazed a Roman patrician. As a rule, baths for immersion and swimming baths are preferred. Though no air and vapour baths are to be found in many of the later buildings, it may be assumed that in course of time such additions will be more general. The world has not yet realised BACON's idea of "fair and large baths of several mixtures for the cure of diseases and the restoring of man's body from arefaction, and others for the confirming of it in strength of sinews, vital parts and the very juice and substance of the body."

Examples are given of baths designed by the author, Messrs. WILLS & ANDERSON, E. HARDING PAYNE, KAYE PARRY & ROSS, T. W. A. HAYWARD, SPALDING & CROSS and H. T. HARE, W. G. WILSON, A. R. JEMMETT and A. S. TAYLOR, R. STEPHEN AYLING, MAURICE B. ADAMS, H. DIGHTON PEARSON. These will suggest different ways of dealing with a very important problem. Much depends on cost, and on that subject Mr. CROSS writes:—

It is extremely difficult to compile thoroughly reliable data of the probable cost of public baths and washhouses, or, indeed, of any other buildings. For instance, one site may require foundations of a far more costly nature than another, or, owing to their location, the incidental expenses for the carriage of materials or for the cartage of excavated earth are alone sufficient to cause considerable variations in the cost of structures which at first sight appear to be capable of being erected at about an equal rate per cubic foot. Then, too, the great divergence in the quality of the materials used in the construction of some of the more recently erected public bath establishments, causes their average cost per foot to become an unreliable factor in the preparation of an approximate estimate for buildings of a

more or less similar character. As instances, in some establishments there are porcelain enamelled fireclay ware slipper baths costing 10*l.* each, whilst in others cheap iron baths are fitted. The dressing-boxes and bath compartments are sometimes constructed of deal, sometimes of teak, sometimes of slate, sometimes of marble. The slipper-bath valves also vary in cost from 3*l.* to 6*l.* or 7*l.* a set. The bath platforms may be paved either with inexpensive granolithic paving or with costly interlocking rubbed tiling; the enamelled bricks may be either of the best or of "seconds" quality, or there may be no enamelled bricks used, and so on throughout all the portions of the building. With the engineering plant there is the same difficulty. It is a desirable and wise provision to install an extra boiler as an auxiliary in case of a breakdown in one of those required for the heating arrangements, and in some public baths the boiler plant provided is thus in excess of their actual everyday requirements, whilst others contain only the minimum requisite amount of steam-generating power. Fuel economisers which add considerably to the initial cost of the engineering plant, but are of the greatest possible assistance in decreasing the subsequent working expenses of the establishment are sometimes provided, but more often, in order to reduce the first cost of the boiler installation, they are not included in the plant laid down by the bath authorities.

A similar argument could be used with other varieties of buildings, yet averages are made out and are found to be useful. It is not compulsory on local authorities to erect baths, and opposition to proposals is usually based on apprehensions of the expense which will have to be incurred. It would have been advantageous if Mr. CROSS had supplemented the information in his book by statements of the cost and accommodation afforded in metropolitan and provincial baths. We are told that the debt on the two Shoreditch baths amounts to 125,974*l.*, and it would not be difficult for an authority to decide whether they would serve as standards. The necessity of having some idea of the cost is shown by an interesting paper by Mr. WAKELING, chairman of the baths and washhouses committee of the Shoreditch Borough Council. That body proposed to spend 30,000*l.* on baths, a competition was organised, and after much delay and trouble the plans of one competitor and the elevations of another were amalgamated. The builder's tender was for 35,000*l.*, and that sum had to be increased by 24,177*l.* owing to the employment of more durable materials. For the benefit of others in a similar position, Mr. WAKELING says they made a mistake in asking the President of the Institute of British Architects to nominate an assessor, because "he too often appoints an architect to act in that capacity who does not possess the requisite practical knowledge governing the requirements of the particular type of building upon which his advice is sought, and in our case the assessor omitted to inform us that a baths establishment of the size and finish we required could not be constructed within the limits of the cost we had named." On all such matters as administration Mr. WAKELING's paper is valuable, for he investigates subjects, as far as they come within the purview of his observation, with an attention which could not be expected from an architect.

The majority of people who use public baths prefer slipper baths. Ordinary enamelled baths, it is said, should never be employed, and preference is given to those with vitreous enamels, which Messrs. DOULTON manufacture. The Duplex bath valves of Messrs. GEORGE JENNINGS, LTD., are recommended. A description is given of the system of slipper baths which Mr. JAMES KANE, of Bristol, has patented. In the first place, the bath-room is separated from the dressing-room. The inventor prefers the spray system. By his plan the slipper or spray baths are placed in a central hall, and the dressing-rooms are arranged on the opposite side of a passage. The temperature of the bath-room is maintained at 100 deg. Fahr., and the dressing-rooms at 60 deg. Fahr. The Lassar baths are in favour in Germany and the United States. The bather stands "upon a floor grating in the warm cubicle

* *Public Baths and Washhouses.* A treatise on their planning, design, arrangement and fitting. By Alfred W. S. Cross. (London: B. T. Batsford.)

or bath-room, and after having well soaped his body with warm lather, turns on, by means of a lettered lever valve, a fine spray of warm water, which drives away all soap and impurities, and ends, by a continuation of the movement of the controlling valve, with a cool or cold spray." The Lassar baths are used at Acton, and it is said the attendance in the twelve baths is 400 weekly.

The architect would have a comparatively easy task if he had only to design buildings and to select the fittings. But the efficiency of a public bath depends mainly on the water supply, the heating, the ventilation and the lighting. On all these matters information is given by Mr. CROSS. Sometimes it may be necessary to sink a special well. The heating is described at length, and experts have furnished information on that subject and on lighting.

The Turkish bath necessarily requires greater care in designing than any ordinary bath. Mr. CROSS says the bather is not allowed to enter any of the bath-rooms while wearing either boots or shoes. But in some well-conducted baths a bather is required to put on sabots. In that way the floor is kept in a more cleanly state. Another regulation which deserves to be adopted in England is to have the walls, slabs and floor of the hot-rooms cleansed with a hose and water once an hour. Twelve to fifteen feet is suggested for the height of the rooms. The heating and ventilation present many difficulties, and it is doubtful whether a perfect Turkish bath exists in Great Britain. Vapour baths can without difficulty, where there is a large site, be combined with a Turkish bath, and the amphitheatre arrangement is probably the best. If the steam when entering is made to pass over some odorous material the bather is less oppressed.

It cannot be said that we have an excess of bathing and washing establishments in this country. Indeed, there exists a prejudice in many places against hot-air and vapour baths, as if they were likely to transform those who would use them into Russians and Turks. Their therapeutic value is, however, unquestionable. We may expect, then, that as authorities become more enlightened they will endeavour to erect public baths. As it presents excellent examples of modern baths there is certain to be a demand for Mr. CROSS's book as a guide not only for architects, but for public authorities. It is produced in admirable style, both with architectural elevations, plans and sections and illustrations of appliances.

THE ARCHITECTURAL ASSOCIATION.

A MEETING of the Association was held on Friday evening last at Tufton Street, Westminster, Mr. R. S. Balfour, president, in the chair.

The following gentlemen were elected members:—Messrs. L. Brunati, W. Reid, J. Page, A. Womersley, A. D. Robinson, H. H. Hill, C. W. Clark, L. J. Hicks, R. H. Wheeler, F. O. Marchant, A. R. Allen Lodge and L. A. Culliford.

The PRESIDENT announced that the presentation to Mr. W. G. B. Lewis would take place at the next ordinary general meeting on November 30.

The Korinthian Order.

Mr. HUGH STANNUS read a paper on the Korinthian capital. He apologised for the change of subject from the one given in the Brown Book, and explained that pressure of work had precluded the possibility of completing proper diagrams for the other subject in time for the date he had agreed to take. He had been occupied for some years in thinking about the present subject, during such leisure as a busy man has, and in preparing notes; and he proposed, firstly, to show the evolution as Mr. Schultz had similarly done on the Ionic capital fifteen years ago; and, secondly, to go critically through the various elements which may be said to constitute the Korinthian capital with some consideration about their possibilities.

Mr. Stannus commenced by admitting that the Korinthian capital was one of the small things of architecture, but often the hand of the artist is shown by his attention to such small

things. He defined the capital and explained its constructive function and its æsthetic value. In Korinthian examples the essential elements were:—The calyx, *i.e.* the leaf-band at the starting, and the major cauliculus, *i.e.* corner-scroll under the abakos at the top. Without these a capital might be Korinthianesque or semi-Korinthian, but it could not be considered as a complete or perfect example of the style.

He explained the origin of the name, it having been adopted because the ornamental parts of the early capitals were made of bronze from the ancient city of Korinthos, repeating the remarks on this subject which he had made in a discussion following a paper by Mr. Lethaby at the Society of Arts on February 11, 1890. He showed views of Roman remains in which the capital was bare, the ornamental leaves having been removed; and directed attention to the holes of the rivets with which they had been originally fixed, and said that this example, though late, was evidence of the practice.

He traced the evolution, from the Egyptian papyrus-flower capitals, to a (theoretical) early example of the Aiolou type. Then explaining his reasons for believing that the capital which is figured in Professor Cockerell's book on Bassai was not a portion of the architecture of the temple, but only the capital of a statue pedestal, he suggested the date of it as about 380 B.C., judging by the details shown in Cockerell's drawing. He demonstrated the gradual building-up of this capital with bronze scrolls and leafage ornaments, thus proving that it is the simplest and therefore the earliest example of which there was any pictorial record; and further that it was undoubtedly derived from a bronze original. The date of the succeeding type, from Epidauros, he accepted as 374 B.C.; and from internal evidence he showed that it was later than the Bassai type, though containing equally strong evidence of a bronze original, and also traces of Ionian influence. The Miletos type, he placed at about 360 B.C., and he explained the design. He then mentioned the Choragic column type, which shows traces of Phœnician influence; and further he proceeded to explain and criticise the Lusikrates type, of 335 B.C. There must have been intermediate steps between this date and the time of Antiochos IV., but he did not know of any existing examples. The Olumpeion type of 174 B.C. shows a severe and orderly arrangement of the leaves; and it was probably from some of these capitals, which were a part of the loot taken by Sulla to Roma, that the Romans derived their normal type as seen at Mars Ultor and in the Pantheon. The Tivoli type, he considered, for historic reasons to be about 75 B.C.; and showing slides of several examples, he suggested that some of them were intentionally archaisic, and that there has not been any further development from that type; the Classic and Renaissance architects basing their further variations on the canonical Mars-ultor type.

Mr. Stannus then proceeded to enunciate the principles which govern the design. Firstly, he showed from nature the radiation in growth, the gradation in richness, the alternation in position, the redundancy in foliage, the variety in leaf edge and the economy in effort; and secondly, he applied these to the capital. He concluded by pointing out the moral of it all was that the canon is not closed, and he indicated various directions in which a healthy evolution might travel. There were yet great possibilities for the Korinthian capital. He had led them up to the Promised Land, and he hoped they would enter in and possess it, and he finally referred students to Mr. Spiers's book on Grecian and Roman, and to Mr. Statham's little book, which he characterised as a thoughtful book for thoughtful people.

The paper was fully illustrated with diagrams and lantern slides.

Mr. R. PHENÉ SPIERS, who proposed a vote of thanks to Mr. Stannus for his paper, in referring to the introductory remarks of the author, said it would seem that the climate of Egypt had a different effect upon Mr. Stannus than it had upon himself. He was bound to say that as regarded the origin of the various sources from which Classical architecture developed there was no borrowing from the Egyptians. The Greeks took nothing. In the explanation of the Aiolou type of capital the conclusions were theoretical. The author had also pointed out that the very essence of the Korinthian capital was the spiral which, starting from the bell, rose to support the abacus. But, said the speaker, there was no abacus in Egyptian architecture and, in fact, the Egyptians never realised the important value which an abacus could have. The speaker supposed that if the Greeks had copied from Egyptian examples they would have done what the Egyptians did, but there was no trace in Classical work of the series of lines which represented the

stems and stamens of flowers. Those details were not found in any Greek capital of any description and in any time. The speaker differed with the author in several of the dates given to some of the examples.

Dr. CLAY seconded the motion and said he was very much interested in the description of the way in which the bronze capital had originated. He did not know whether the theory was entirely made up or whether there was a foundation of fact to support it.

Mr. H. DAVIES said he would have liked to have heard one or two points at greater length. No reference had been made in the paper to the colour treatment of the Greeks. He thought that if they studied the detail, the further they searched new ideas would be revealed of the difference in colour treatment.

The PRESIDENT, in putting the vote of thanks to the meeting, said they would all agree the lecture had been a most interesting one.

GLASGOW ARCHÆOLOGICAL SOCIETY.

OF the company of gentlemen who met fifty years ago on a winter's afternoon in the directors' room of the Merchants' House, Hutcheson Street, with the view of forming an archæological society in Glasgow only one, says the *Glasgow Herald*, it is believed now survives. Mr. John Honeyman, LL.D., who is now an ex-president of the Society, and crowned with many other honours, was then described as "Mr. Honeyman, jun., interim secretary," and probably, therefore, it was largely due to his then youthful zeal that the meeting was convened. The Lord Provost, Sir Andrew Orr, took the chair, and referred in a somewhat doubting spirit to some former occasion when "many enlightened gentlemen met for a like purpose." The gentlemen had scarcely been enlightened enough, one gathers, to be very practical, and nothing up to 1856 had come of their pious aspirations. On this occasion, however, a code of rules—which are very much the present rules—was proposed by Mr. John Baird, architect, who stated, in answer to a question by the Lord Provost, that at least fifty members might be counted on. The future Sir Michael Connal then proposed the election of office-bearers, to wit, the Lord Provost as president, Messrs. John Strang, LL.D., and William Euing as vice-presidents, and a council consisting of Messrs. John Buchanan, Gabriel Neil, Laurence Hill, John Baird, J. T. Rothead, William Keddle and John Honeyman, jun. Mr. J. B. Simpson was to be hon. secretary, but as a matter of fact Mr. Honeyman took up the duties, and Mr. William Church, jun., was hon. treasurer. Then Mr. Rothead made a speech as to the very favourable field which Glasgow and its neighbourhood presented. "When they looked at the magnificent old remains, at the Roman wall, at the Roman forts at Kirkintilloch, it was with regret that they knew they were not in possession of all particulars regarding them. He said that there was an old house in Great Clyde Street, belonging at one time to a family called Dreghorn, the ceilings of which were all covered with hand-wrought plasterwork and not with stucco. Mr. John Carmichael hoped that each party present would endeavour to give the proposal as much publicity as possible. Mr. David Dreghorn remarked that a very great use might be made of photography." Then a vote of thanks was proposed to the Lord Provost, and the antiquaries went home, having laid an excellent foundation for the work that was to come. A full report appears in the *Glasgow Herald* of December 8, 1856. It is pleasant to read that at the third meeting of the Council of the new Society, when the membership had already grown to sixty-five, there was present Mr. J. Mitchell Mitchell, "one of the secretaries to the Society of Antiquaries, who expressed his pleasure in seeing such a Society formed in Glasgow, and assured the Council of the interest and co-operation of the respected body which he represented." The pleasant relations of the antiquaries of Glasgow and Edinburgh have continued to the present day; whatever jealousies there may be otherwise (if there are jealousies, which is not admitted), there have been none at any time between the Society of Antiquaries of Scotland and the Glasgow Archæological Society.

For over twenty years Glasgow had every reason to be proud of its antiquaries; they met often; they read careful and elaborate papers, and they published useful transactions in parts of a convenient size. As was to be expected the leading citizens of the day were all members, and at the

request of the Lord Provost the Court-house Commissioners authorised him to give the Society the use of one of the unoccupied safes in the Wilson Street building, and the proprietors of the *Herald*, through Mr. Pagan, intimated that they were willing to print the transactions without profit, "merely charging the Society the price of the paper and the wages of the workmen." Alas! those noble days have departed; the Society has no safe in the Court-house, and its bill for printing transactions is no trifle. Perhaps the authors of half a century ago were modest in their Press corrections. After some years of service Mr. James Smith, of Jordanhill, succeeded Sir Andrew Orr as president, and Mr. William H. Hill, and afterwards Mr. Cunningham Monteath, filled the office of secretary. Then when Mr. Smith was dead, and Dr. Hill had resigned, there was a time, such a time as comes to all societies, learned or social, when the best members were not so energetic as they had been and the almond tree flourished. It was even proposed in 1873 that the Society should cease to be a separate body and become a section of the Philosophical Society, but a general meeting of the members seems to have extinguished the proposal and a committee was appointed with the very proper purpose of communicating with the trustees of the City Improvement Act "with a view to secure the preservation of such sculptured stones and other relics in the ancient buildings now about to be removed as may be in danger of destruction." Mr. Euing was president for some years, and was succeeded by Dr. John Buchanan. In September 1877 Mr. Cunningham Monteath died, and on October 4 Mr. Alexander Galloway, a well-known antiquary, agreed to act as interim secretary. He set to work with great vigour, prepared a report from the foundation of the Society on the membership, the number of papers, the subscriptions and disbursements, and outlined a scheme for the development of future work. Mr. Galloway's enthusiasm was contagious. Principal Caird accepted the presidency in 1878, and Professor (now Principal) Lindsay, Mr. Galloway and Mr. Dalrymple Duncan became hon. secretaries. At once the Society entered on a new lease of vigorous life. Since 1878 there has been no hesitation in its progress, and its usefulness has multiplied. The presidential chair has been filled by an extraordinary series of able men, whose names are household words to all who know Glasgow of the last quarter of a century. Professor John Young, the most versatile of scholars, succeeded Principal Caird, and was always ready from the inexhaustible stores of the Hunterian Museum to furnish instruction and entertainment; to him succeeded Professor John Veitch, equally eminent in other ways, who set a high example to all presidents in that for three years he rarely failed to fill the chair at each meeting; then came Principal Lindsay, and after him in succession Dr. Honeyman and Professor John Ferguson. For one brief year the lamented Colin Dunlop Donald presided over the Society, whose membership he had enormously increased by his energetic and contagious enthusiasm in all matters relating to old Glasgow. He was succeeded by David Murray, whose successor was the venerable Archbishop Eyre, a man who took singular delight in the opportunities which the meetings of the Council and of the Society afforded him of becoming personally acquainted with Glasgow men who, like himself, were lovers of the beautiful and ancient in art and literature. Principal Story followed the Archbishop, and had as successor Dr. John Oswald Mitchell, whose presidential address, written on his sickbed, will long be remembered by those who heard it. The present president is Mr. J. D. G. Dalrymple, who has intimated his intention of commemorating the jubilee of the Society, which owes so much of its success to his energy during his secretaryship, by providing funds for an annual series of lectures on archæological subjects, somewhat analogous to the well-known Rhind lectureship in Edinburgh; the lecturer is to be appointed by the Council of the Glasgow Archæological Society, and it is proposed that the lectures should be delivered in the University—a proposal to which Principal Story has given a cordial welcome.

The Society altered the form of its transactions some years ago; they form a series which is indispensable to all students of Glasgow, its men and manners, its streets and families. In addition to its transactions, however, the Society some years ago published a very complete and authoritative report on the Antonine Wall, the text of which was written by Dr. George Neilson, and the Society was under obligations to Mr. P. M'G. Chalmers for drawings illustrative of the report. The Society is also more or less

directly responsible for the formation of the Regality Club, and looks with sisterly eyes on the vigorous young Old Glasgow Club, so that its activities have been far-reaching. Again and again it has taken a vigorous stand in defending the preservation of the very few Glasgow antiquities which remain. But for its emphatic action on one occasion there is only too much reason to fear the Tron steeple would long ago have gone, and the removal of that excellent specimen of a Scottish mansion-house, Kelvingrove House, to suit the mere temporary convenience of an exhibition refreshment committee, was an act which the Society did its utmost to prevent. To the formation of the collections in the Bishop's Castle in the first exhibition, and to the archaeological section in its successor, the members lent strenuous and valuable aid, and to the success of the Old Glasgow Exhibition equally useful help was given.

No account of the Society can be written which fails to take account of the annual excursions. Not content with six winter meetings which have been addressed at one time or other by most of the leading archaeologists of the day, the Society each year in summer has gone east or west or north or south to visit places of archaeological interest; Culross and Linlithgow, Dumfries and Birnam, Borthwick and Glamis are only a few out of the many places which have been seen by members under the most favourable circumstances, thanks to the courtesy of proprietors and local authorities on their part, who, it may be added, are not seldom benefited by the stimulus given to the local preservation of archaeological remains by the visits of such societies. Additional interest is given to the year of jubilee of what may not unjustifiably be regarded as a hard-working and meritorious Society by the quatercentenary of George Buchanan's birth being celebrated in the same year, and in the banquet of this week both events will be commemorated on one happy occasion.

TEMPLE OF DIANA, EPHEBUS.

AT a meeting of the British Academy last week a paper was read by Mr. D. G. Hogarth on "Artemis Ephesia." The lecturer related the results of his excavations on the site of the great Temple of Artemis at Ephesus in 1904 and 1905, undertaken at the request of the authorities of the British Museum. In the first place a complete ground plan was obtained of the temple of the sixth century B.C., which had been discovered below the Hellenistic stratum by Wood in 1870, with much fresh evidence of its architectural character and many small objects dedicated in that temple, among which were several cult-figurines of the goddess. Secondly, the excavation revealed remains of three distinct temples of the period before Cræsus which had not been found by Wood. These were all of much smaller area than the sixth century and Hellenistic temples, and the most primitive appeared to be a naos just large enough to contain a statue with an altar facing it, the whole enclosed in an open temenos. The foundation for this shrine lies at the intersection of the axes of all the successive temples alike, and it is evident that at all periods it was the central Holy of Holies, where stood the cultus-statue. When this central structure came to be examined it was found to be a platform made solid with a filling of flat slabs, between and among which had been packed a quantity of small objects in gold, electrum, silver, bronze, ivory, amber and other materials, including certain very early electrum coins. The whole number of objects was nearly 1,000; and from their position and the fact that they are almost all objects of personal adornment and evidently selected, they can only be supposed to have been placed intentionally where found for the use of the goddess, whose statue stood above, and at the epoch of the first foundation of her small shrine. They appear to belong to the latter part of the eighth and to the earlier part of the seventh centuries B.C. Outside this naos foundation and in the lowest stratum all over the area of the earlier temenos other objects of similar period were also found to the number of about 2,000. These include fine statuettes and other objects in ivory, crystal and metals, &c., and many more coins, but little or no personal jewellery. This unique treasure includes many representations of the goddess and her attributes, and many objects used in her cult. But attention was given especially to the first category, which was considered in connection also with the cult-figurines found in the "Cræsus" temple. These representations, nearly fifty in all, show how the goddess was locally personified over a period ranging from the eighth to the

fourth century B.C. There are several varieties of type, but it is noteworthy that in no case is there any approximation to the "multimammia" figure rendered familiar by statuettes of the Roman period and supposed to be preserved also by a well-known type of cultus-image portrayed on Ephesian and other Asiatic city coins from the second century B.C. to the third century A.D. This latter type, however, is probably not "multimammia" at all, and there is some reason to doubt if it really represents any Ephesian statue. It seems possible that it is a traditional cultus-type, not local, but probably of Phrygian or Cappadocian origin introduced into Ephesus and showing degraded survivals of features of the winged goddess type. The local Ionian personification, so far as the available evidence goes, seems to have been originally of genuine Hellenic character, a natural matronly figure. The confusion of Artemis Ephesia with the great West Asian goddess of the non-Hellenic peoples is argued to have happened late in time and to have been symptomatic of a change in the character of Ephesian civilisation, which gradually became more Asiatic, and adopted a conception of the goddess-cult reflected in the early history of Ephesian Christianity, and still to be discerned locally at the present day.

RHIND LECTURES.

THE fourth of the Rhind Lectures in Archæology by the Rev. Dr. Sayce described the connection between Babylonian and Egyptian civilisation. The two earliest civilisations with which we are acquainted were, he said, those of Babylonia and Egypt. Was there a connection between them? They both grew up on the banks of great rivers, and rested on a similar system of irrigation engineering. Could the system have arisen independently in the two countries? On the one hand, there is the fact that between the hieroglyphs of Egypt and the pictographs from which the cuneiform characters were derived there is identity or similarity in a comparatively small number of instances; even the symbols for "god" are different. On the other hand is the important fact that Egyptian was, in its essentials, a Semitic language, standing in the relation of a sister to the parent of the other Semitic languages, and therefore of Asiatic extraction. Egyptian tradition described the "dynastic" Egyptians as entering the Nile Valley from the south and conquering the neolithic aborigines by means of their metal weapons; the tradition has been shown to be correct by recent excavations, the prehistoric population of Egypt being unacquainted either with the use of metals or with the art of writing. A characteristic feature of the dynastic Egyptians was the employment of the seal cylinder. This was a Babylonian invention and is by itself proof of the influence of Babylonian culture. So too is the use of clay as a writing material, as well as the employment of brick instead of stone. In Upper Egypt the natural building material was stone, as that of Babylonia was brick. Recent discoveries have shown that the dynastic Egyptians originally made use of the Babylonian system of reckoning time, and even adopted the Babylonian pictograph (the branch of a palm-tree) to denote "a year." In art the early Egyptian heraldic position of human and animal figures was also Babylonian. The lecturer pointed out a remarkable agreement between the names, figures, attributes and pictographic representations of Osiris and the god of the primitive Babylonian seaport, Eridu. Henzen has shown that certain composite animals depicted on an Egyptian monument of the age of Menes are identical with those found on an early Babylonian seal cylinder, and Professor Petrie has noticed that the cubit of the pyramid builders was borrowed from Babylonia. The early stone vases of Egypt, again, are identical in shape with those of early Babylonia, and the sacred dwarfs who, according to the Egyptians, danced before the gods, reappear on early Babylonian seals. Probably even the shaduf, for raising the water of the falling Nile, was a Babylonian invention. We may conclude therefore that there was intercourse in the prehistoric age between Egypt and Babylonia, and that civilising influences, together with the wheat and language of the Egyptians, came from the neighbourhood of the Euphrates. Civilised man made his way from the East.

The subject of the fifth lecture was "Babylonia and Palestine." A few years ago Palestine was archaeologically an unknown land. But the veil which covered its early history has now been lifted. First came the discovery of the Tel el-Amarna tablets, which showed that in the century before the Exodus Canaan was an Egyptian province, but

that its culture was wholly Babylonian, the cuneiform characters of Babylonian language being used for literary purposes. We now know from the Babylonian monuments that Canaan was once (and for a long time) a Babylonian satrapy, that in the age of Abraham Babylonia itself was ruled by a Canaanite or "Amorite" dynasty and that Babylonian law and theology were introduced into Palestine. For many centuries Canaanite culture remained Babylonian, and there were libraries and schools where the foreign script and language were taught and learned. In the age of the Tel el-Amarna tablets education was widely spread there, and was shared in by ladies and Bedouin sheikhs. The excavations of the Palestine Exploration Fund at Lachish and Gezer, and of the Austrians at Taanach, have supplemented the discovery of the Tel el-Amarna tablets. We have learnt that Palestine was once inhabited by a race which was unacquainted with the use of metals, which burnt its dead and lived in caves. Then came the "Amorites," a taller race of Semitic type, who introduced copper, buried their dead and surrounded their cities with lofty walls of stone. They erected high places formed of monoliths and sacrificed children to the gods. In course of time bronze took the place of copper among them, and may have been brought from Asia Minor along with the polychrome pottery, which was of Hittite origin. The lecturer read translations of some letters in cuneiform characters recently found at Taanach, near Megiddo, which illustrate how widely-spread education was in Canaan in the Mosaic age. He also quoted some of the Babylonian laws which throw light on certain passages in the book of Genesis, and finally referred to the curious fact that, although we know from the inscriptions that Babylonian rule in Palestine lasted for several centuries, and that the influence of the literary culture of Babylonia was profound, few traces of Babylonian influence have been found by Mr. Macalister in his excavations at Gezer. Future excavation alone can explain the archaeological puzzle. The Phœnician alphabet does not seem to have superseded the cuneiform syllabary in Palestine until the age of Samuel and David.

PICCADILLY IMPROVEMENT.

THE agreement between the Crown, the P. and R. Syndicate and the London County Council with regard to the widening of Piccadilly at the Piccadilly Hotel provides, *inter alia*, that land shall be added to the public way so as to enable the frontage at the junctions of Piccadilly with Air Street and Piccadilly Place to be rounded off instead of the frontages of the buildings in these thoroughfares meeting at right angles. In order that the hotel may be erected to the line provided in the agreement, the corners on the Piccadilly frontage of the hotel will have to be canted. Mr. R. Norman Shaw, R.A., who has prepared the design of the elevation of the building, has written pointing out that if the corners of the hotel be canted, as suggested, the dignity and proportion of the front will be seriously impaired, and that several architects whom he has consulted concur in this view. He therefore urges that the London County Council will allow the building to be erected with square angles at these corners. This will necessitate the retention for building purposes of two pieces of land of an area of about 14 square feet each, which it has been agreed to add, but which has not yet been added to the public way. The question appears to be one of architectural design, as the retention of these small pieces of land will not interfere in any way with the convenience of the public. It has been agreed that if the Council concurs in the retention of this land, the compensation payable by the Council will be proportionately reduced. The improvements committee in their report point out that Mr. Norman Shaw, who is the senior architectural Royal Academician, acted as one of the assessors in the case of the designs, prepared by selected architects, for the suggested elevations of the buildings which might be erected in Aldwych and on the crescent site between the Strand and Aldwych, and that he has also agreed to act as an assessor in connection with the designs of the new county hall. They say they feel sure that the Council will wish to endorse the opinion of so eminent an authority as Mr. Norman Shaw, when this can be done, as in the present case, without prejudice to the public interest, and therefore recommend that the proposal to erect the Piccadilly Hotel with square instead of canted angles at the junctions of Piccadilly with Air Street and Piccadilly Place be agreed to, subject to a reduction proportionate to the area of the land retained for building purposes.

SOCIETY OF ARCHITECTS.

ARRANGEMENTS have been made by Mr. B. D. Cancellor (member of Council) for members and students of the Society to visit Winchester on Friday, November 16, when, by the courtesy of the dean (the Very Rev. W. M. Furneaux), facilities will be afforded for inspecting the structural repairs being done in connection with the faulty foundations and other defects which have been discovered and are being remedied under the supervision of Mr. T. G. Jackson, R.A., and the surveyor to the dean and chapter, Mr. J. B. Colson, F.R.I.B.A. The details of the work are of an exceptionally instructive and interesting nature, and the occasion will form a most valuable opportunity of seeing the latest methods of dealing with a problem of this kind.

On the occasion of a previous visit of the Society some years ago, time did not permit of seeing the Hospice of St. Cross; but this time there will be an opportunity, and the master (the Hon. the Rev. Canon Brodrick) has kindly offered to personally show any of the party over the building during the afternoon.

The outing is open to members and their friends, and ladies are invited. The visit has been timed to follow the first ordinary meeting of the new session, which will have been held the previous day, so that members coming from a distance may make their arrangements accordingly. The party will assemble at Waterloo Station at 9 A.M. and take their places in a saloon carriage, which will be attached to the train leaving Waterloo at 9.20 A.M. The secretary will distribute the tickets en route. Applications for railway tickets and other accommodation must be made not later than Friday, November 9, accompanied by a remittance. Those joining the party en route or at Winchester will make their own travelling arrangements and inform the secretary as to their other requirements.

ROMAN VILLA AT GRIMSTON.

THE site of a Roman villa was recently discovered at Grimston in a pasture near the church. The remains, which lie at a depth of about 12 inches to 18 inches below the surface, were noticed by Dr. Henry Laver, of Colchester, who reported the discovery to the Norfolk and Norwich Archaeological Society, and the Society has, with the permission of the Marquis of Cholmondeley, the owner of the soil, caused excavations to be made. The villa apparently runs from north to south. At the north-east corner was located the hypocaust, or heating chamber of the house, the flue tiles for the hot air being found in some cases in situ. Amongst the debris in the hypocaust were found many fragments of mosaic pavement, with portions of designs, but it had evidently been broken up, and for the most part lay face downwards. Adjoining the hypocaust was found an ash pit, in which, besides ashes, oyster-shells and bones of sheep, pigs and ducks, were discovered some fragments of Roman window glass, some bone pins and the blade of a large knife. Shells of the Roman snail (*Helix pomatia*), which had never previously been recorded for the county, were also discovered. To the west of the hypocaust is a large chamber paved with red tesserae, probably about 30 feet square, although the western boundary wall has not yet been discovered. From this chamber ran southwards a long corridor or passage way, with rooms apparently on either side of it, although the foundations on the eastern side are somewhat indefinite. This corridor is 8 feet wide and about 60 feet long, being also paved with red tesserae. On the western side of the corridor and its southern end are two or three chambers, one being 21 feet square, portions of the others having in recent times been removed in making a pit. In the southernmost of these chambers were found large quantities of wall plaster, richly painted in pure bright colour, and some lined margins, showing that the villa must have been artistically decorated. It is not proposed to continue the excavations any further at present.

The First of the walls of the new Liverpool Cathedral, that of the lady chapel, is now plainly visible. The porch in St. James's Road nearest the choir, affording entrance to the central tower and leading to the foundation-stone, which was given by the mothers of the diocese, has been allocated to the children and young people of the diocese as their gift. A separate account has been opened at the bank called the "Children's Fund," and it now stands at 260s.

NOTES AND COMMENTS.

It cannot be denied that Americans possess a sense of humour, although it is often more grim than what we are accustomed to in England. The *American Architect* refers to an action taken by an architect to recover fees for designing a gaol in which the client desired to incarcerate himself. A wealthy man of Illinois was sentenced by the Federal Courts to a term in the penitentiary. His lawyers, ignorant of his peculiar views, secured a stay of proceedings, and this displeased the convicted man, who desired to get his punishment over as speedily as possible; then he proceeded to Joliet and asked the keeper of the penitentiary there to lock him up, but as he had no commitment papers to proffer, the gaoler was unable to oblige him. Determined not to be thwarted, he declared he would build a prison for himself, hire a more complaisant turnkey and serve his time in aristocratic isolation. He employed Mr. FRANK LINDQUIST, an architect of Chicago, to design the needed prison building. This appears to have been done, although it is not clear whether the building was actually erected or not. In any event, the unfortunate architect is now suing for 3,000 dols. due as commission, a sum which his eccentric client declines to pay, desiring possibly to give conclusive proof that the proper place for him is behind stone walls.

It is to be feared that the origin of the fire at Selby Abbey was in the carelessness of some of the workmen temporarily employed in the building. If that becomes evident, Selby will be only an addition to many other wrecks from the same cause. The organist saw men working by candle-light, and the candles were without shades. The men were also indifferent to the order that smoking was prohibited. The organ-builder said he had noticed a peculiar smell as of scorching or burning at the eastern end of the north aisle, which he concluded was caused by the water near the stoves or the fuel used for heating them. He did not report at the time what he had observed from fear he would be laughed at. Whatever may have been the cause of the fire there can be no question about the interest taken in the rebuilding of the abbey. His MAJESTY participated in the feeling of sorrow so universally provoked by the calamity. Already between 8,000*l.* and 9,000*l.* has been subscribed, and this, with the sum received as insurance, amounts to 18,000*l.* The estimated outlay being 50,000*l.*, the balance which has yet to be raised amounts to 32,000*l.* The committee have been invited to apply for Government aid, and it is not likely that any member of the House of Commons would oppose the granting of assistance in so exceptional a calamity.

THE difficulty of dealing with tenders from contractors living at a distance, and which are found to be lower than those received from local contractors, is continually arising. The best rule to adopt is to accept the lowest tender, unless something is known which is detrimental to whoever sent it and which is enough to excite doubts about the character of the work he will execute. It must be allowed that it is natural to prefer local contractors, for the selection of one of them means employment for local labour and orders for local tradesmen. The Flintshire education committee were last week called on to deal with the difficulty. For a school at Connah's Quay, the highest tender 4,300*l.* and the lowest 3,517*l.* came from contractors outside the district and the county. The Board preferred to accept the tender of a local contractor amounting to 3,554*l.* The difference was not great, but still it deviated from the general rule. For another school the lowest tender was 2,913*l.* An effort was made to have a local tender of 2,980*l.* accepted. But the committee did not care to repeat their action in the first case. Evidently there is little chance for outsiders in Flintshire. The fairest way in all such cases would be to ask the local contractor who is preferred to reduce his tender below the

amount named by an outsider. In that way the interests of the ratepayers, which it is the duty of elected committees to uphold, would not be disregarded.

THE inaugural meeting of the eighty-eighth session of the Institute of Civil Engineers was held on Tuesday, when the president, Sir ALEXANDER KENNEDY, LL.D., F.R.S., delivered an address to the members. He took for his subject the relation of the engineer and engineering to the world at large. In relation to science he pointed out that not a few engineers spend their lives in what is really scientific work, while nominally only earning their daily bread in ordinary mechanical pursuits. He thought that the special nature of the problems with which they had to deal ought to tend directly to produce tolerant and broad-minded citizens. He was sorry that the paths of the artist and the engineer seemed too often to be divergent, but remarked that as soon as engineering works were treated on their own merits, and not as if they were mistaken imitations of other things, it would be found that they could possess even artistic as well as other merits. Everyone now would recognise that there was a dignity in a *Dreadnought* which was almost majestic, and that a modern liner formed really as fine a subject for a picture as a full-rigged ship. The proverb that art is long and life short was truer when reversed. Life continued through all the centuries; art and its "laws" changed with each of them. He spoke at some length about the relation of the engineer to nature, especially in connection with water-power utilisation and mountain railways. No apology was needed for undertakings which gave employment to hundreds of men in places where hitherto no one could maintain himself, or for substituting industrial villages for ruined huts. But the "mountain railways" of Switzerland—and of Snowdon—were merely a product of tourist madness, wholly unnecessary, serving no public benefit whatever, and in many cases, which he instanced, likely to cause irreparable damage to natural beauty. In concluding he spoke of the future of engineering, and of the possibility—which he thought a very small one—of finding anything in mechanical science corresponding to the "survival of the fittest," or any traceable lines along which mechanical evolution took place. He thought that "invention," however, formed such a disturbing influence in engineering evolution that any prophecy on evolutionary lines was impossible. It was still more useless to attempt to forestall the future by trying to do to-day what it is supposed that other people may try to do twenty years hence. The *Great Eastern*, broken up for scrap almost within hail of the *Carmania*, was a pathetic tragedy, from this point of view, in engineering.

ILLUSTRATIONS.

LONDON AND COUNTY BANK, ST. JAMES'S STREET, S.W.

PREMISES, 49 PALL MALL.

ST. MARY'S CHURCH, PORTSEA.

EFFORTS are now being made to erect new churches and to increase the accommodation of those which exist in Portsmouth, including Portsea, Gosport and Southsea. It is contemplated, we understand, to add to the church of St. Mary's, Portsea, which was erected at the expense of the late Mr. W. H. SMITH from the designs of the late Sir A. W. BLOMFIELD, A.R.A. It is therefore well to have a record of the building in its present state, for it is an admirable example of modern Gothic and is well adapted to its position. Architecturally it is the most important church in the united towns. And if alterations or additions are necessary we hope they will be carried out with becoming respect for the architect's intention.

CATHEDRAL SERIES.—MANCHESTER: VIEW ACROSS NAVE FROM SOUTH-EAST, SHOWING DOUBLE NAVE AISLE.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE opening meeting for the seventy-second session of the Institute of Architects was held on Monday evening last at Conduit Street, W., Mr. T. E. Collicutt, president, in the chair.

Mr. ALEXANDER GRAHAM (hon. secretary) announced the decease of the following members:—William John Gant, Roger T. Conder, Thos. Barnes Williams, F. W. Ledger, Charles Long and Henry William Stock.

The Statutory Examinations.

Examinations of candidates for the offices of district surveyor under the London Building Act, and of building surveyor under local authorities, held by the Institute pursuant to statute, took place on October 18 and 19. Of the seventeen candidates who presented themselves for the district surveyors' examination, nine passed, viz. Horace William Cubitt, London; William Robert Davidge, London; Percie Ion Elton, London; Herbert Kenchington, London; Gilbert Henry Lovegrove, Beckenham; William Herbert Rogers, Hampton-on-Thames; Herbert Shepherd, London; William George Shipwright, London; Collings Beatson Young, London.

These gentlemen have been granted by the Council certificates of competency to serve as district surveyors under the London Building Act.

In the examination of candidates for the office of building surveyor under local authorities the following and only candidate was examined and passed, and has been granted a certificate:—Mr. Harry Prince Healey, London.

At the R.I.B.A. special examination qualifying for candidature as Associate held in Melbourne last June, concurrently with the London examination, two candidates presented themselves and were examined, and the following passed, viz. Samuel Charles Brittingham, of the Public Works Department, Melbourne.

President's Address.

Ladies and Gentlemen,—I take the chair to-night, as president of this Institute, with a very grateful and keen appreciation of the honour conferred upon me by my professional brethren. It is with considerable misgiving and nervousness that I undertake the onerous duties of president, and these feelings are intensified when I remember the exceptional ability my immediate predecessor displayed during his term of office and the invaluable services he has rendered to the Institute. Nevertheless, I can assure you that I bring to this position an equal devotion to the interests of the Institute, an equal enthusiasm in the work it undertakes, and the same unwavering confidence in its future, believing, as I do, that it works for the welfare of the architect and the advancement of architecture.

Before bringing to your notice certain matters which I think of interest, I must ask you to forgive me if I repeat what has already been ably said. Almost every possible question connected with architecture was debated during the Congress which recently met in London, and it is therefore more than possible that much that I say has been better said before. Let me begin by calling your attention to a matter which has occupied the Institute for some time past. During the last few years we have passed through a crisis in our history which at one time threatened to involve us in a kind of party politics, with all the attendant evils that beset party feeling. During that period the question of registration became a very acute one, and it was apparent to all that the whole matter ought to be subjected to an exhaustive inquiry. Such an inquiry has been held by the committees appointed by succeeding Councils. The committee which ended its labours last session submitted an unanimous report to a meeting of the Institute, the general scheme of which was adopted also unanimously. The details, however, were referred to the Council, with a direction that they should draw up a scheme for revising the charter and by-laws, and also a draft Bill which it was proposed to submit to Parliament. The Council then appointed a committee to prepare details of the scheme. This they have done so far as the revision of the charters and by-laws are concerned, and their draft scheme is now under the consideration of the Council. We anticipate that the revision of the charter will improve the position of the practising architect. But in dwelling with equanimity on the pleasant subject of our personal welfare, I do not think we should ignore the sad condition of many of our less prosperous brethren.

This painful subject was brought very forcibly to my mind by the many lamentable cases we had to consider at

a recent meeting of the Architects' Benevolent Society. I venture to draw your attention to the regrettable fact that among 6,000 or 7,000 practising architects in the United Kingdom there are only 447 who subscribe to this deserving Society. Is it not the duty of the more successful among us to help those who are less fortunate? I feel that it must be want of reflection alone that causes so many to ignore the repeated appeals for more generous support that are continually made to the profession. I am afraid that as regards generosity in helping our unsuccessful brethren, we architects do not compare favourably with people of other professions. It may be alleged as an excuse that ours is a precarious calling, but that is merely an additional reason why those who have not prospered should receive help. How much more precarious is, for instance, the theatrical profession; yet we find that actors and actresses are more charitable towards their fellows in distress than any other profession. Actors, authors and managers devote their services and their salaries on one night in each year to the Actors' Benevolent Fund. May I suggest that those who have not hitherto subscribed should take counsel with their hearts and generously open their purses, and that some of the annual subscribers should increase the amount of their subscriptions?

I feel sure it will not be thought out of place, especially by our younger members, if I say a few words on the momentous question of public competitions. It has recently been suggested that in competitions for buildings of any magnitude the responsibility of selection becomes too onerous to be entrusted to one assessor, and that competitors would feel greater confidence in the judgment of two or more. I entirely disagree with this idea, and to illustrate my opinion I venture to remind you of the result of the competition for the proposed Peace Palace at The Hague. This competition being of an international character, it was decided to invite six architects representing various countries to act as a jury of selection. Our Foreign Office requested the Institute to nominate an architect as representative of Great Britain, and our Council did me the honour to elect me to this post. During last April I met my brother assessors at The Hague, and we forthwith embarked on the work entrusted to us. Our committee consisted in all of seven assessors, the president of the Peace Congress acting as chairman and voting with the six architect jurors. In my opinion the combined efforts of the seven jurors resulted in disastrous failure. To my mind the design placed first in order of merit should not have been placed at all. The instructions to competitors issued by the Peace committee stated the proposed limit of expenditure. Now all the assessors agreed that the cost of carrying out the selected design would be no less than double the amount specified. Nevertheless, the jury decided by a bare majority that this design should receive the first premium in virtue of the excellence of its plan. It appeared to some of us that this plan possessed undoubted merits, but that these merits existed only because the designer had utterly ignored the limitation of the proposed expenditure. He would probably be obliged to remodel his plan in order to reduce the cost to a sum approximate to that at his disposal, and the special features that had attracted the assessors would thus be either eliminated altogether or else remodelled to such an extent as to lose the characteristics which had made them specially attractive. With regard to deciding what style of architecture would be most suitable for a monument of international peace and harmony, the majority of the jury inclined towards the Dutch style of the sixteenth and seventeenth centuries. On the other hand, a minority was in favour of a style common in some degree to most European countries. This minority considered that an adaptation of Italian Renaissance would be more international in character and more suitable in every way than any treatment of Dutch architecture could possibly be. However, the wishes of the majority prevailed. In spite of this, the principal characteristics of the design finally chosen were those of a French chateau; but I venture to think that this style of architecture, as illustrated by the successful designer, is not quite appropriate to a public and international building. I have dealt fully, I fear ever tediously, with this subject, because I think the result of the competition indicates that the question of assessors requires careful consideration. Should there be one assessor or a jury of several? My experience at The Hague led me to the conviction that when more than one assessor is appointed an altogether futile conclusion is likely to be the consequence. In this case, as I have pointed out, we were six architects, with a layman as chairman.

The result of our combined labour was the choice of a design which we all agreed could not be executed under double the amount quoted in the instructions to architects. The design chosen was crowded with picturesque towers, gables and roofs, most of which were quite unnecessary. As a supplement to our report we wrote a joint letter to the permanent committee, wherein we advised that the future buildings should be monumental in character and without exuberance of ornament. We suggested that such extraneous features as towers, cupolas, &c., should be considered with the utmost reserve, and in this way our previous decision was completely stultified. I think I have shown that the final decision was a stupendous failure. It is probable that when more than one assessor is appointed the sense of individual responsibility is lessened. Perhaps each member of such a jury undertakes his arduous task with a feeling that the final result will be more or less in the nature of a compromise. In a jury of assessors there is also the possibility of a minority report, which may lead to difficulties with the employers, and perhaps to the abandonment of the awards.

To my mind the ideal arrangement for deciding important competitions is the appointment of one chief assessor aided by one, or preferably by two, assistant advisers to whom he could turn for counsel or help. The assistants or assistant should have no voice in the ultimate decision; the entire responsibility should rest with the chief assessor. Although I have shown that The Hague competition was a failure, inasmuch as the best designs were overlooked, I do not wish to infer by this that I think competitions are a mistake and that they fail to secure the best possible designs. On the contrary, I believe that it is to the interest of the public that a competition should be instituted for every proposed public building of importance. I do not deny that there may be many exceptions to this rule. The new Scotland Yard is a notable instance of such an exception; but the architect of that noble work stands by himself, as is recognised, I think, both by the public and by the architectural profession. It is said that buildings erected from competition designs fail more or less in reaching a high standard of architecture. There is, of course, a good deal of truth in this criticism, but I think it cannot be said with any approach to truth that public buildings, where there has been no competition, reach a higher standard. I think, in the interests of architecture, that every means should be taken to secure the best design possible, and as a rule this can be done by competition. Competition is also invaluable to the young architect for reasons beyond that of striving for a first prize; it gives him the opportunity of comparing his work with that of others and of taking home to himself, if he is modest, his weaknesses. Beyond this there is the chance of discovering genius which otherwise might strive in vain to make itself known.

I think it is a matter of congratulation that the London County Council have decided to institute a competition for the building of their proposed county hall. But I learn with dismay that it is their intention to make it open to architects of all nations. There is no precedent for such a course; and I think a vigorous protest should be made, in the interests of both the English public and the English architect, against a course which appears to be unnecessary and unjust, and one which no other nation would think of adopting. It is no question of dislike to meet our foreign brethren in competition that prompts this protest; it is that I feel that an international competition would be a direct slight to English art, and that it is to the English architect we must look for the production of a design that will illustrate the best traditions of English work.

I feel sure you will share my opinion that the results of recent competitions go to prove that the younger generation is fully qualified to continue that advancement in the art of architecture which we all so earnestly desire. May I none the less offer a word of advice to our younger students? All who have had experience in judging competitions must have been struck with the number of designs submitted by competitors who are evidently in the first stages of their studentship. Let me counsel such beginners to realise that the art of design must be carefully studied, and can be mastered only by continued practice. An important competition does not offer the requisite opportunities for the student to learn his craft.

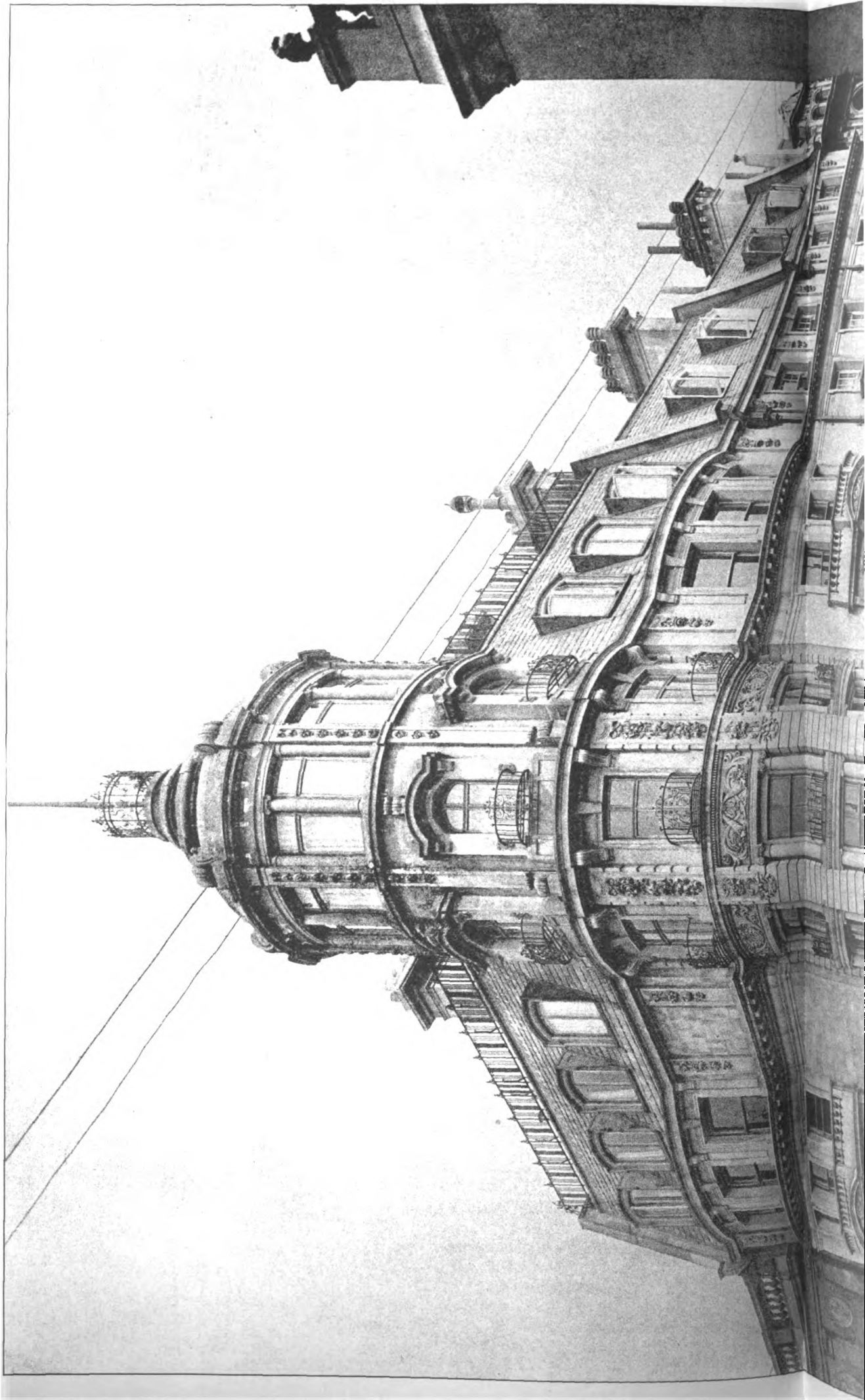
The Institute has been actively engaged in the advancement of architecture during the last session. I refer particularly to its activities during July last, when the International Congress assembled in London. Unfortunately for

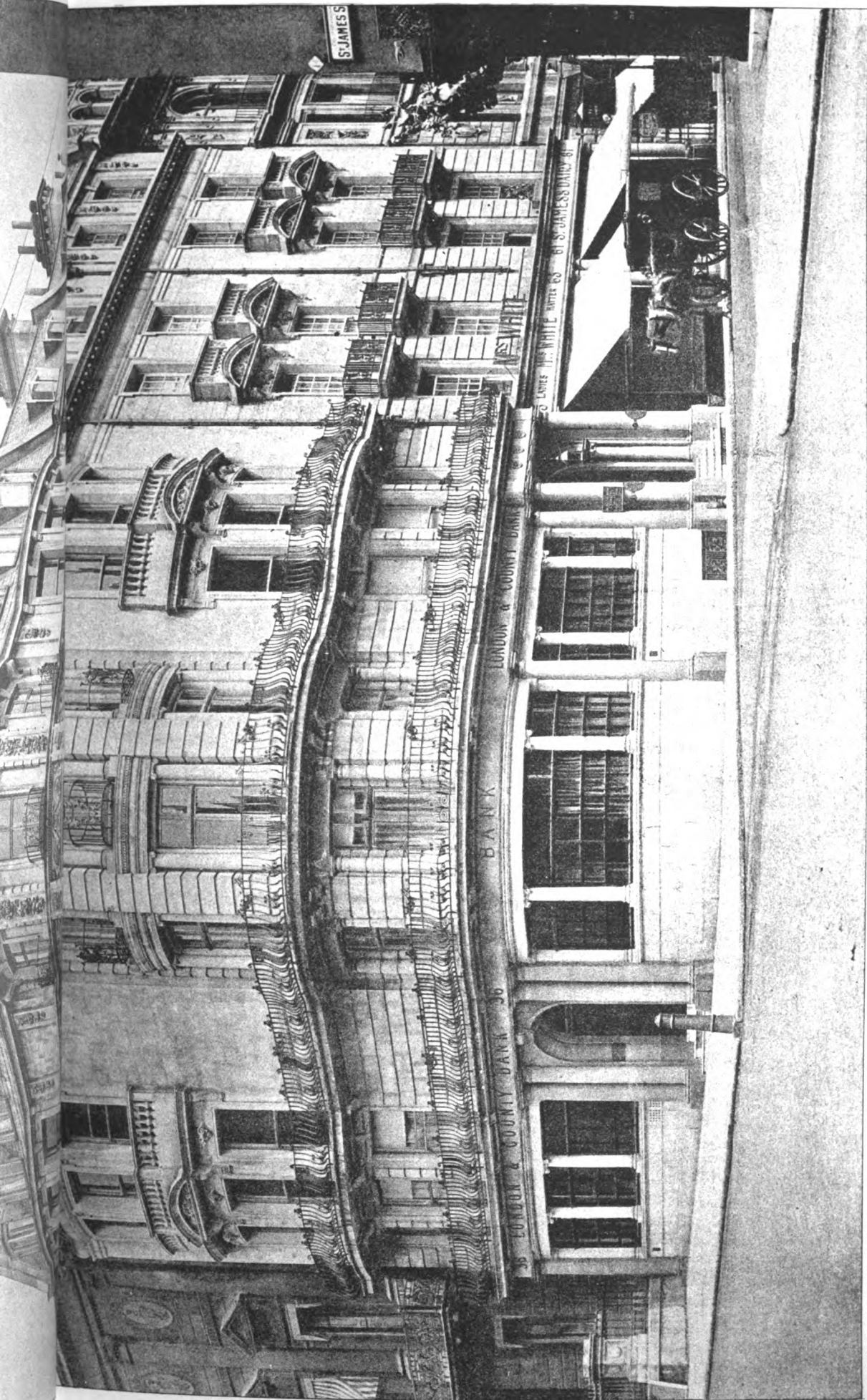
myself, I was then absent from England, and therefore cannot speak from personal experience of the brilliant success which distinguished the various lectures, receptions and excursions. It is evident that these periodical gatherings of our confrères of all nations will have very happy results for architecture and for architects. The least that can be said is that we certainly acquire a closer insight into the aims and aspirations of our foreign brethren, who, we find, are in close sympathy with many highly important subjects now engaging the attention of the Institute. During the assembly of the Congress every subject of interest, from the education of the public to reinforced concrete, seems to have been exhaustively considered. I think we may hope that such questions as the improvement of our thoroughfares, the execution of important municipal or Government work by salaried officials, the education of the public and the status of the architect will not be allowed to pass into oblivion. I have a very strong conviction that there is sufficient energy and enthusiasm among the members of this Institute to keep alive an interest in these questions, all of which tend towards the advancement of our art. That the Congress passed off so happily and was such a complete success was due to the courtesy and tact, and other personal attributes, of its President; to the unflagging energy and ability of the committee, and to the zeal of our accomplished secretary, whose services were indeed invaluable. It has been said in commendation of Count Moltke that he could be silent in several languages. I feel sure that many of our foreign brethren were thankful that Mr. Locke did not consider silence as always commendable. I believe that not the least interesting of the papers read at the Congress were those on the question of the education of the public. Perhaps I may be permitted to add a few words on this subject. It is one of such importance that I venture to reiterate what others have said.

I remember a passage in Ruskin's "Stones of Venice" which bears very directly on this question. Although there is no doubt that in the present day Ruskin is not considered such an authority on artistic matters as he once was, he certainly spoke many words of wisdom. It has been said that there are two classes of admirers of Ruskin, first, those who believe in him as an art exponent, but who think him entirely ignorant of political economy; and, secondly, those who believe him to be a political economist, but who declare he knew nothing of art. However, the words that I will now quote may be put before you, I think, without being challenged in any way. He says:—"Every man has at some time of his life personal interest in architecture. He has influence on the design of some public building, or he has to buy and build his own house. It signifies less whether the knowledge of other arts be general or not: men may live without buying pictures or statues; but in architecture all must in some way commit themselves; they must do mischief and waste their money if they do not know how to turn it to account. And it is assuredly intended that all of us should have knowledge in matters with which we are daily concerned, and not be left to the caprice of architects or mercy of contractors."

I think it may be taken for granted that public taste in painting and sculpture has developed during the last generation, but notwithstanding the advice of Ruskin, it does not seem that there has been such an awakening of public interest in architecture. It is certain that the average cultured Englishman of to-day shows no such appreciation of architecture as did his predecessors. Our ancestors sought culture in the fine arts largely through the study of literature, but more, I think, through home and foreign travel. Undoubtedly far greater numbers travel nowadays, but education in the arts is not really furthered by hurried visits to buildings and galleries, "Baedeker" and "Murray" in hand. In the olden times the grand tour was considered a necessity for every cultured gentleman. In Evelyn's "Diary" there is a most interesting account of the way in which the grand tour was undertaken by one who was *par excellence* the cultured traveller of the seventeenth century. I may remind you that Evelyn spent some years in travelling on the Continent, his travels extending from Holland to as far south as Naples. He was always on the alert to obtain introductions to collectors of art objects, and to those interested in architecture and the kindred arts, thus showing that he devoted a large part of his ample leisure during these travels to the study of architecture and the arts. He was undoubtedly more attracted by the Italian Renaissance and the French phase of that style than by Mediæval work. He speaks of the Farnese Palace as being built after "the ancient manner,

The Architect, Nov. 9th 1906.





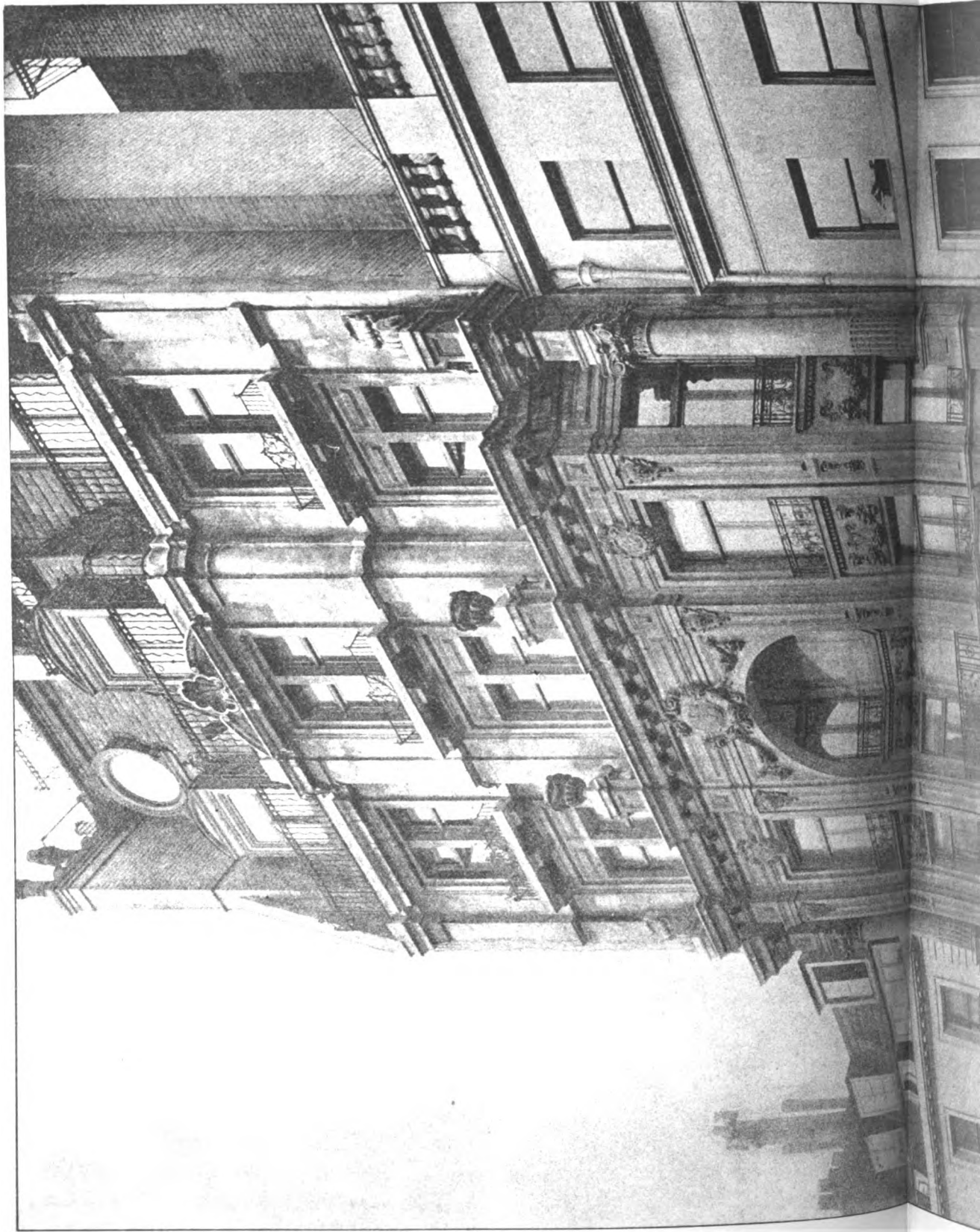
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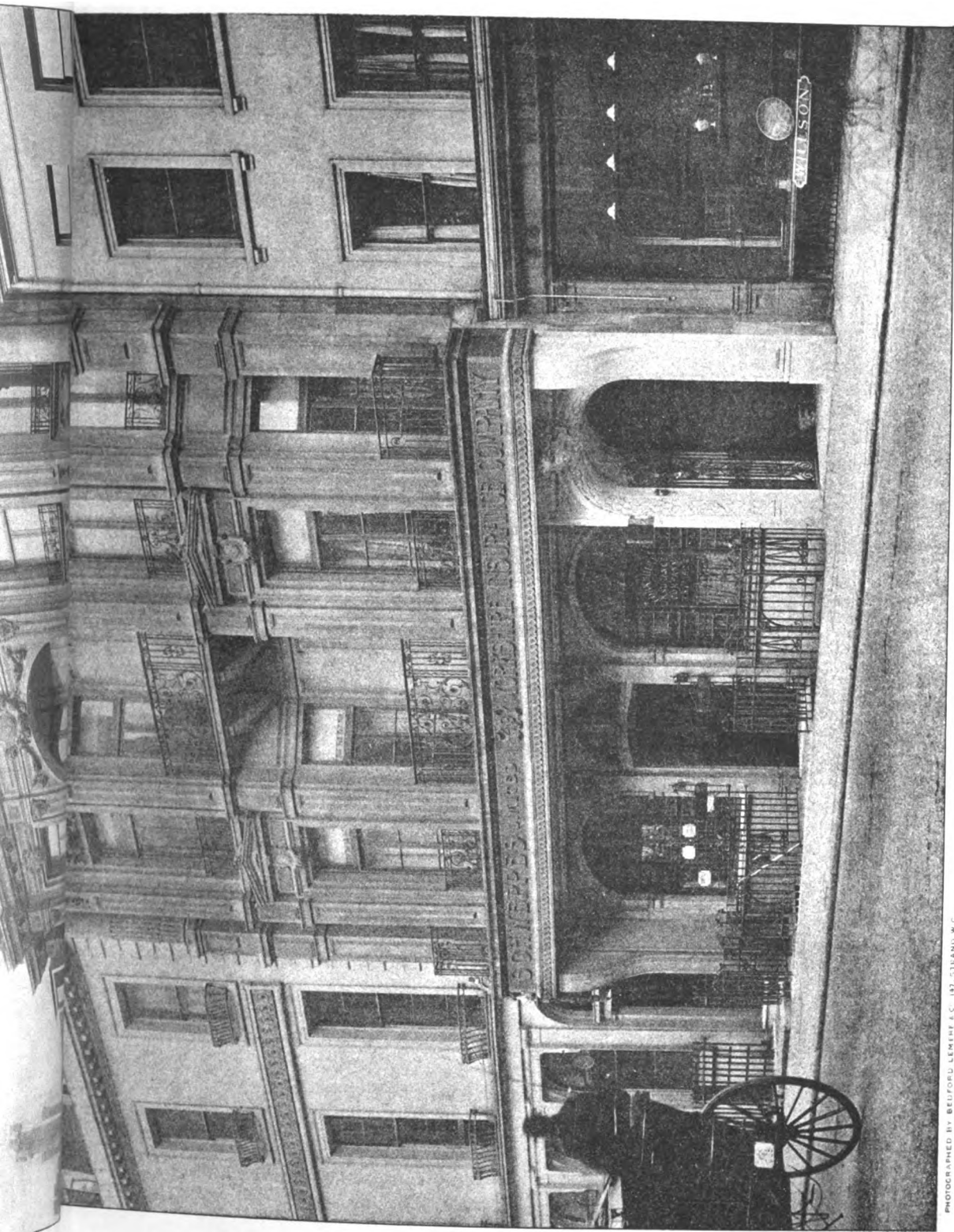
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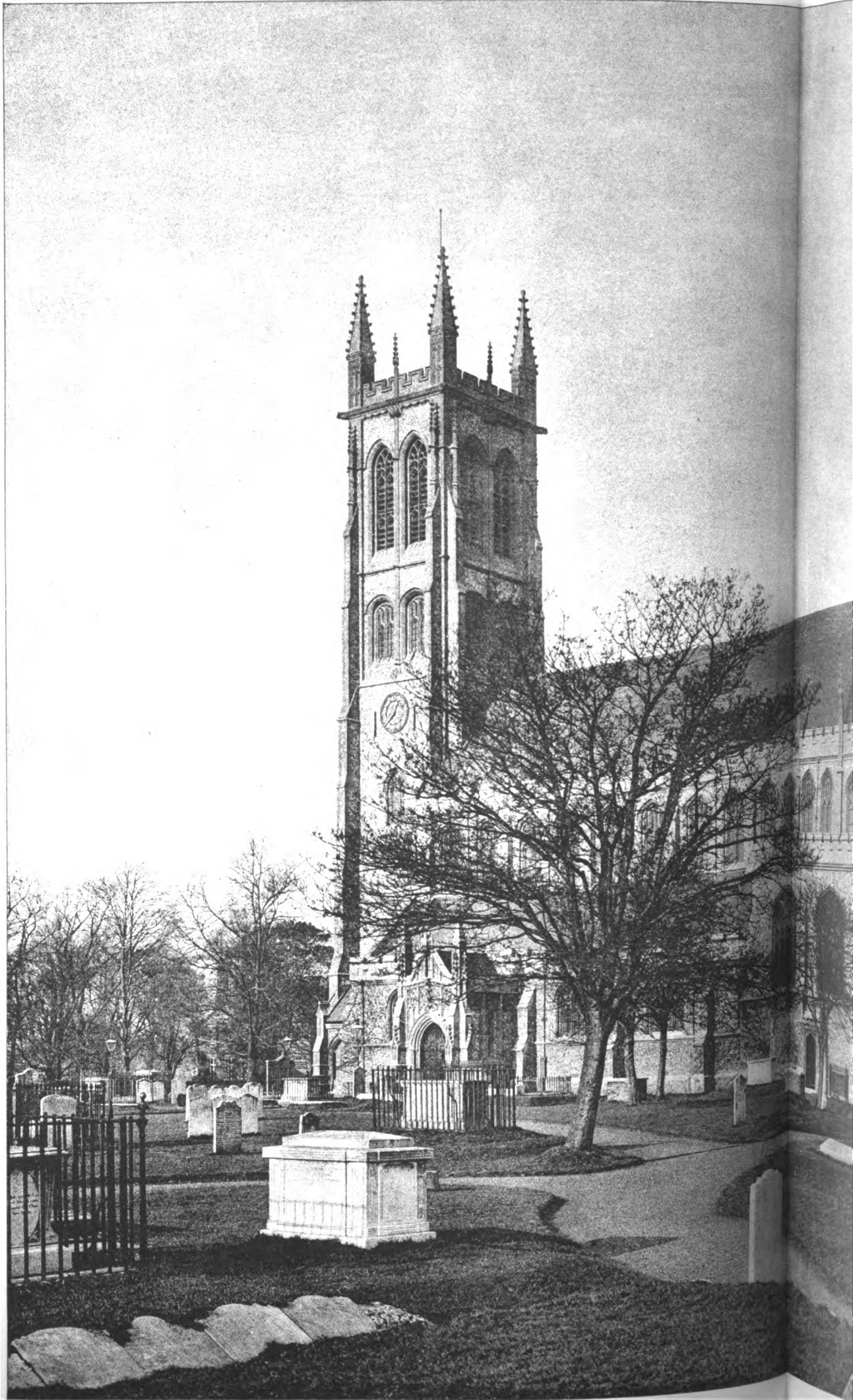




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M. E. COLLINS, Architect.



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The Late Sir [Name], A.R.A., Architect.

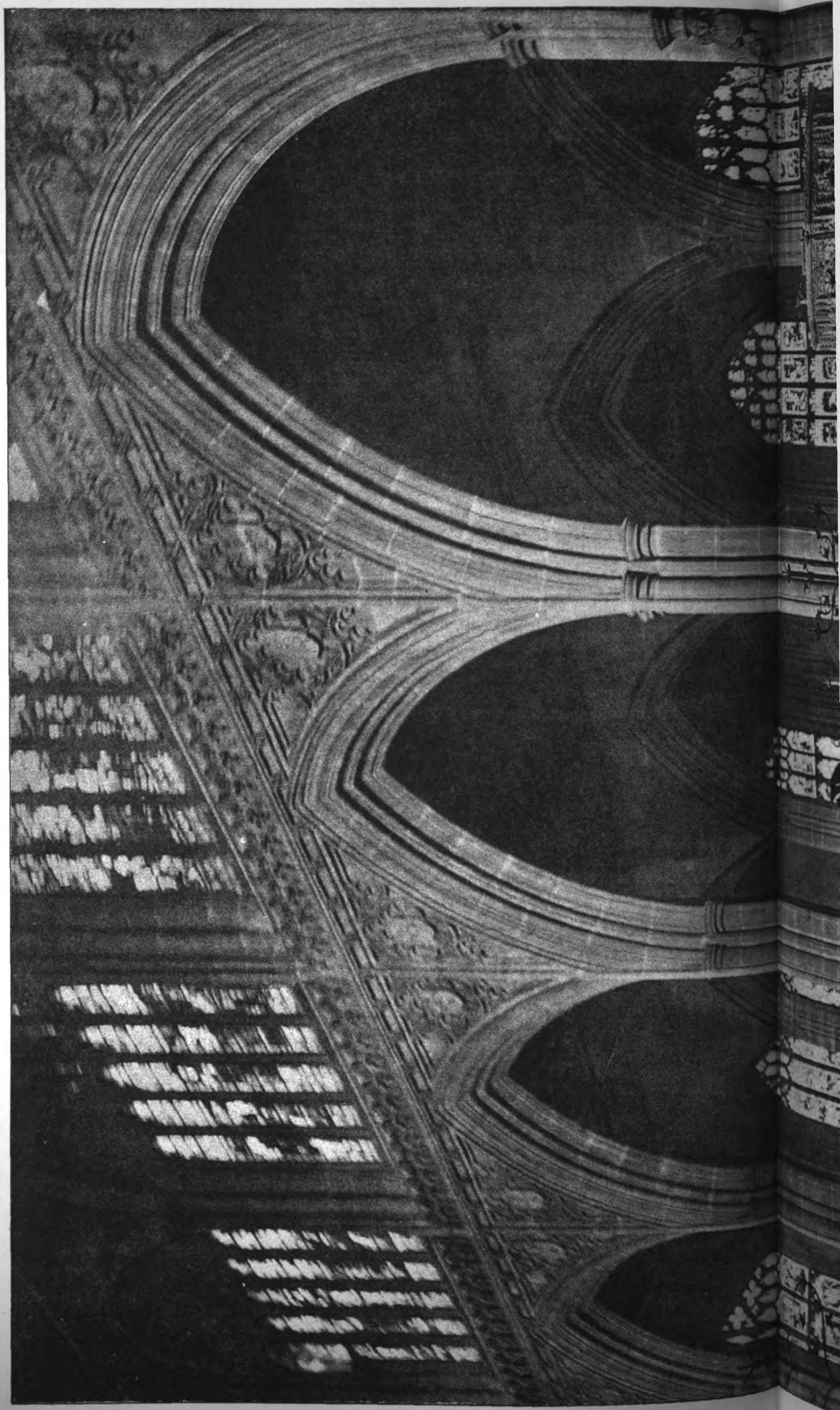
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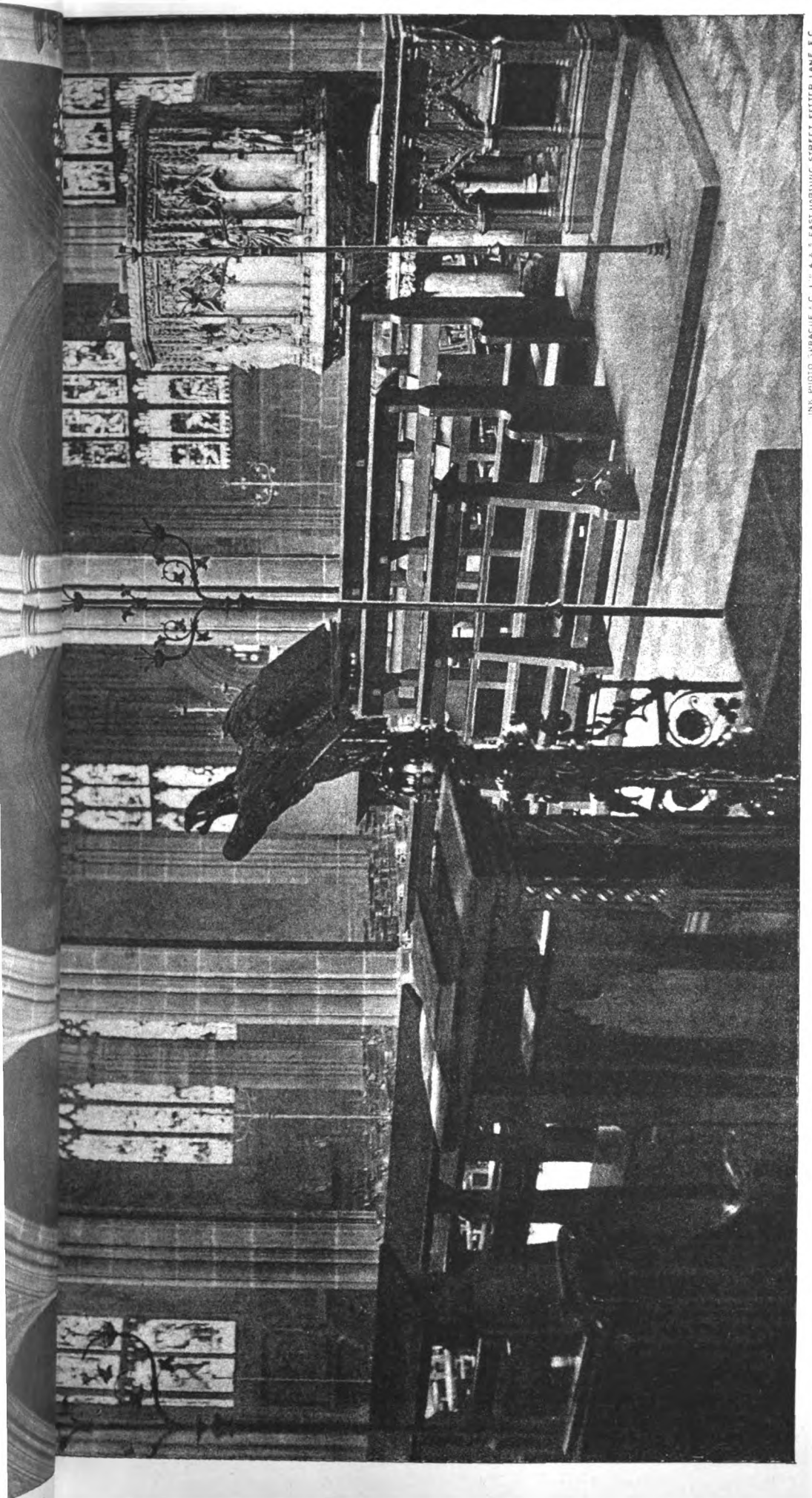


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CATHEDRAL SERIES, No. 583.—MANCHESTER: VIEW ACROSS NAVE FROM SOUTH-EAST, SHOWING DOUBLE NAVE AISLE.

and when architecture was but newly recovered from the Gothic barbarity." Nevertheless there is evidence in the "Diary" that the "Gothic barbarity" appealed to him in some degree, although he owned to a very decided preference for "the ancient manner." The grand tour, without which I believe it is impossible for the layman to make a serious study of architecture, has had a lasting influence on English style. Evelyn was a man of cultivated taste and wide knowledge, and he undoubtedly possessed very great influence in the architectural world of his day. It is certain that his influence was a powerful factor in the decision that the new St. Paul's should be built (to quote his own words) "with a noble cupola, a form of church not as yet known in England, but of wonderful grace." It would be interesting to inquire how far the taste of Charles II. was influenced by an enforced exile in foreign lands. He may have been surrounded by architectural enthusiasts; and his "grand tour" (though limited) must have had some influence on his knowledge and taste. One gathers from Evelyn and from other sources that Charles was really devoted to the arts, and this is shown by his interest in all that pertains to architecture and by his fine collection of pictures and other works of art. We have undoubtedly owed many dukedoms to his initiative; but I seriously think that his enthusiasm for architecture encouraged Evelyn and Wren in their determination to give us a "noble cupola" and a new form of church. I connect the names of Wren and Evelyn thus, not because the latter had any part in designing St. Paul's, but because he undoubtedly had some voice in the arrangement of the plan and the choice of a style. I have cited Evelyn's "Diary" because I think it is shown therein that a successful study and appreciation of architecture can be best obtained by intelligent travelling. But it must be leisured travel; it must not be for the purpose of counting steeples. I am sure that a contemplation of the actual monuments of architecture is always more valuable in the education of the lay public than any other method of study, just as it is in that of the architect himself. No doubt much knowledge may be derived from the extensive writings on the Renaissance of art and literature given us during the last twenty-five or thirty years. But a discriminating taste in works of art cannot be obtained by reading only. Knowledge derived from books must be reinforced by an earnest study of the actual works of the masters. Unfortunately too many people are content to absorb the views of critics, while they neglect a personal study of the work itself.

A question of paramount interest not only to this Institute, but to the public generally, relates to the control over architectural schemes in connection with the laying-out of new streets and the erection of public buildings. This question has constantly been before this Institute, and a variety of suggestions have been made, some advocating a tribunal of art, others an advisory board, working in conjunction with H.M. Office of Works. I believe the present First Commissioner has instituted some kind of advisory body for the purpose of dealing with the Government offices now in progress of building; but this is only a temporary arrangement. The matter is of such universal importance, and the question of want of intelligent control over public undertakings so often arises, that one cannot but feel that this Institute should give special attention to the subject. An architectural tribunal might become an influence in dealing with subjects not directly connected with street improvements or the erection of public buildings. For instance, there is one question suggested by our arts committee on which they have reported, viz. the possible substitution of stone for the present wooden pediment and dome crowning the river façade of Somerset House. It is impossible to conceive that Sir William Chambers would have erected a wooden structure where stone was so obviously the material that should be employed, had not the exigencies of the plan precluded the use of the heavier material. But in this age of steel it would be a comparatively easy and inexpensive matter to add steel stanchions and girders to the interior of the building, and to erect thereon a stone dome. This would only involve trifling alterations to the rooms under the dome. This suggestion may be criticised on the ground that it is not true construction to erect a stone dome on steel stanchions and girders. But I believe that in Sir William Chambers's time, and since, the present dome was painted to look like stone; and this was surely more in the nature of a sham than the proposal now laid before you.

That there is an interest arising in public thought on such matters as the decoration of our public buildings is

testified to by the munificence displayed by some of our citizens in providing the decorative panels to the Royal Exchange. I would, however, venture to say that had some competent authority—such as an art tribunal—been consulted, we should have had a more complete and harmonious scheme. What an opportunity for fine decoration awaits fulfilment in the panels of the Central Hall of the Law Courts! These are really better suited to the purpose than those of the Royal Exchange; they are better lighted and at a better altitude for effect; and, indeed, I believe they were designed by Mr. Street with the idea that they should ultimately be decorated by paintings. The ornamentation of these panels would be a fitting finish to one of the finest halls in Europe. But unless some public-spirited persons, stimulated and advised, shall we say, by our art tribunal, will come forward, this hall will remain, I fear, a monumental example of the want of thoroughness in completion, and of the want of appreciation of art, shown by our nation in general.

That they do these things better in France must be apparent to those who know Paris. Let us hope this was impressed on those of our municipal authorities who lately paid semi-official visits to Paris. It was evident to them, no doubt, that the Parisians complete what they set out to do; that they recognise the importance of placing their buildings in an ample space, and arrange that the surroundings shall be in perfect harmony with the buildings. A false economy of space is not the dominant idea when considering the question of improvements to Paris. The municipal visitors from London probably realised that the French people would not have allowed generation after generation to pass, and still leave St. Paul's crowded in by monstrous warehouses, as we have done. To illustrate how we conduct matters of this kind, I need only mention the work now in progress in St. James's Park. We began well: a design was selected which met with general approval. It was masterly in its conception, and we congratulated ourselves that at last we were in the right direction. We were to have a fitting memorial of our great Queen, the surroundings to which would be treated in a monumental spirit. But what is likely to happen? I am afraid the usual mutilation that ensues from the lack of funds, and I fear it is possible that a feature in Sir Aston Webb's design will be eliminated—the Stone Arcade, a feature which of all others was the one necessary to complete and give full effect to a work worthy of the nation. It is futile to appeal to any Government; but cannot a strong appeal be made, in the interests of art, to a generous English public, to assist in completing well what is well begun? The new building for the Hearts of Oak Benefit Society is a fine object lesson to some of our public bodies in well completing what is well begun. The Hearts of Oak Society, composed, as you know, wholly of working men, has shown a very broad and public spirit in the way it has completed, to the smallest detail, what it set out to accomplish. Let us hope this spirit will be maintained, and that it will not succumb to the modern curse—advertisement—and so allow the building to be defaced by monstrous gilded letters.

I hope it may not be out of place if I take this opportunity of referring to the report of the Royal Commission on the traffic of London streets. This report, issued in June 1905, called forth much criticism and much valuable suggestion from many quarters, but none more interesting to ourselves than the paper read in this room by Mr. Paul Waterhouse. It seems unaccountable that no one fully qualified to approach the subject from an architectural point of view was selected to act on the commission; at any rate, no qualified architect was consulted. Careful readers of Mr. Waterhouse's able paper must come to the conclusion that any inquiry such as the Commissioners were instructed to make should take into consideration the general architectural effect of all proposed new thoroughfares. I think that this Institute should endeavour to make itself distinctly audible when any scheme which deals with London streets is being considered. The papers bearing on this subject which have been read here show that many architects have made a study of this question. But the general public seems to regard it with indifference, and the constitution of the L.C.C. does not always enable it to take the broadest and most statesmanlike view of such matters. For instance, in laying out the Aldwych site the L.C.C. has certainly failed to procure the finest view of those great features, the churches of St. Mary and St. Clement Danes, although at the instance of this Institute some improvements were made to the original plans. In the present construction of the County Council expert qualification is not a

necessary factor. Councillors and aldermen are not elected in virtue of any special knowledge, although undoubtedly there are many amongst them who take an interest in such questions as the present, and who conscientiously study them.

In connection with this question of improvement in our thoroughfares I may refer to the collapse of the Charing Cross Station roof. When this deplorable disaster took place, necessitating as it did the reconstruction of nearly the whole roof and of a portion of the station, it was immediately suggested that a new terminus might be erected on the south of the river. A site on the south side amply sufficient for a much larger station and offices, and also for a new hotel, could have been obtained. The present space occupied by the station and hotel is of such enormous value that the railway company, had they adopted the scheme, would have been but little out of pocket. The gain to the public would have been a new bridge for foot passengers and for wheeled traffic. There can be no doubt that a bridge at this point is much needed, Waterloo Bridge being about 700 yards to the east, and Westminster about 1,200 yards to the south. I believe the directors of the company fully recognised the fact that a terminus on the south side would have been a great improvement from the point of view of the railway requirements. The vast amount of traffic could have been dealt with more easily. The chief argument that could be urged against the removal of the station was the serious objection that the public would certainly make to crossing the river by an open bridge, exposed to all weathers, instead of entering the station by its present easy access. This objection, in addition to the greater distance of the terminus from the City and West End, might have materially affected the suburban traffic, and it probably decided the directors of the company to remodel their terminus on the original site. But it is quite possible that an opposite decision might have been arrived at could it have been shown that a bridge is not necessarily an open structure.

Would it not have been worth while to consider the possibility of erecting a structure on the principle of some of the Mediæval bridges? An obvious suggestion would be a bridge of the type of old London Bridge, the great national wonder of the Middle Ages, and, even as late as the eighteenth century, the only bridge of the capital. Expense, of course, would be a serious objection, but when one considers that old London Bridge was erected by contribution in the reign of John Lackland, one wonders whether it would not be possible to achieve a similar masterpiece in the twentieth century, and by the same means. In the sixteenth century Lyly, the Euphuist, wrote from London: "Of all the strange and beautifull shewes, me thinketh there is none so notable as the Bridge which crosseth the Thames, which is in manner of a continuall street, well replenished with large and stately houses on both sides."

Another point greatly in favour of London Bridge in Mediæval times was the connection it made with the suburbs south of the water. In those days Southwark formed comparatively an integral part of London. Shakespeare would hardly have built the Globe Theatre in Southwark if his patrons had had to face the discomforts of an open bridge. It is the present want of easy and convenient communication between the north and south of the river that prevents the improvement of Southwark and Lambeth. In these localities there is a large area of very inferior property; but if they were more pleasantly accessible from the City and Westminster the congested areas on the north side of the river might be relieved by extension on the south side. In fact, with a street-bridge communication, Southwark might easily become a real part of the City and a more important business centre. Other fine and still existent examples of street bridges are the Ponte Vecchio in Florence, the Rialto in Venice, and the comparatively modern bridge over the Avon at Bath. This last example is, of course, quite a small work; but it serves to connect, as by a street, two parts of Bath that would assuredly have had a different history had the bridge been merely an open one. It may also be instanced as a successful architectural treatment, especially as seen from the river. Of course it might be objected that a street bridge or bridges over the Thames would detract from or even destroy the architectural beauty of the Embankment; and, indeed, any scheme that might endanger the grand effect of this noble work must be approached with the greatest caution. It would never do to imperil the beauty of the only noble engineering work of the last century, nor to spoil the many picturesque

views from our London bridges. But, bearing in mind the examples already referred to, I contend that the Thames might be spanned by street bridges which would not in any way detract from its present beauties. The existing bridges at Blackfriars and Southwark might be metamorphosed into stately erections, and a fine site for another "national wonder" could start from the end of Northumberland Avenue.

At the risk of being thought tedious, I have alluded to subjects which have been more comprehensively dealt with before, but which, I think, are of sufficient importance to bear constant reiteration. It is to be hoped that such questions as the education of the public and the appointing of an art tribunal are within the range of practical politics. We may, I think, assume that the important question of the higher education in architecture which will be open to the student is attracting the attention it deserves. We may anticipate that in the near future a complete scheme will be developed.

The course of study will probably cover a wider range than it has hitherto done. We may hope that it will be more thorough and more complete, and that it will to a large extent insure that all those proposing to practise as architects shall have studied the various periods of architecture and have gained some knowledge of the principles underlying style. Even if education goes no further than this, it will possibly spare us many of the efforts of those who show in their buildings that they have not been taught the first elements of their art. It will save us from the conceited ignorance which thrusts upon us so many vain attempts at originality. At the same time, it is devoutly to be hoped that education will not make us too academic, and that it will not enslave those who feel that they have a message to deliver and an individuality which they must express. Finally, it is to be hoped that it will not result in a dead level of uniformity in our streets, wearisome through too much repetition; for what is good for a hundred feet may become weak if continued for an indefinite length. The education of the architect should tend to bring us into closer relations with the sculptor and the decorative painter. The architect should study the sister arts sufficiently to gain some knowledge of the aims of the artists with whom he may have to collaborate.

Of quite recent years an appreciative sympathy seems to be growing up between the various arts, but in spite of this we still see instances of a want of harmony between architect and decorator, or between architect and employer. An example of this is found at the Old Bailey Sessions House; at one end of the hall is a mural painting which is monumental in character on a fitting and grand scale, and in perfect harmony with its surroundings. At the other end is a decoration which, however admirable in itself, does not accord well either with the architecture or with the other paintings. This incongruity must surely be attributed to the influence of the employers. It is impossible to foresee what the future will bring forth; but so much of the work of to-day is of the very highest order and worthy to be compared with the best that has been done before, that we may look forward to the future in a spirit of optimism. I think that we are all confident that there is still enthusiasm in our ranks and that our younger men are inspired by a vital desire to improve and ennoble their art.

Sir H. TRUEMAN WOOD proposed a vote of thanks to the President for his address, remarking that it had been his privilege to intimate to Mr. Collcutt the award of the Paris Exhibition, when the design for the Imperial Institute gained the grand prix. He was sure such an award was a very much greater compliment than it would be now under the present condition of the entente cordiale, for while their French friends were ready to admit the merits of the English in machinery and manufactures, they were not ready then to acknowledge English ability in art and architecture. There were one or two points in the address on which a layman could express an opinion. The education of the public had been referred to, and the speaker thought if the British public could be made to realise its incompetence in artistic matters the first step in education would have been taken. It was a hopeful sign that the architectural profession was availing itself of the materials which science had created for them, and he believed the possibilities of steel and concrete used in construction offered a great future to architecture.

Sir ASTON WEBB, R.A., seconded the vote of thanks, and in referring to the proposed County Hall for London said they must congratulate the County Council on having selected and obtained such a magnificent site. He agreed

with Mr. Colclutt in reference to throwing open the competition to foreigners, and he was of opinion that for an English hall an Englishman should be the architect. The Memorial work done in St. James's Park was still in an unfinished condition, and the speaker was not in a position at the moment, he said, to describe what would be the final form, but he thought he might say that those who had the work in charge were resolved to bring it to a worthy completion.

ISLE OF MAN CROSSES.*

THE chairman of the Manx Museum and Ancient Monuments Trustees, Mr. Speaker Moore, whose absence on account of serious illness in his family I deeply regret, has called upon me to invite your Excellency to declare this building opened and dedicated for the purpose of preserving the ancient crosses, of which so very many have been found in our parish. Our objects in providing this building here, as also the smaller structures in several other parishes in which to collect the crosses, to protect them from the weather, and to arrange them so that they may readily be examined, and, in having this little ceremony to mark the occasion, may be stated as follows:—First, the honour and glory of God, that God whom we assemble here to worship, even as centuries long ago He was worshipped here by our forefathers, the men to whom these memorials were erected. Secondly, to show our respect for those who were so commemorated, who dying in our faith were here laid to rest, as their children and their children's children, and generations of their descendants, have since been laid—in this hallowed ground to which we still bring our dear ones to their last long homes, where we too some of us hope to rest when, our work accomplished, we are gathered to our fathers; and further, to mark our respect for those who, with faith and devotion and patience and ever-increasing artistic skill, designed and wrought these beautiful monuments. Thirdly, to impress upon all who are here assembled, upon all who may learn of our proceedings this day and upon all who may hereafter come and behold this building, a sense of the priceless value to us of these relics, of our privilege in their inheritance, of the need of their protection, and of the sacred duty which devolves upon us to collect and preserve them, and to hand them on for those who come after us—that they may see them with their eyes and learn from them the many important lessons which they have to teach.

Upon these rude and weathered stones we are able to see and to touch the very handwork of those whose skilful fingers have crumbled into dust more than a thousand years ago. Could they return—picture to yourselves, they would be as much astonished at the altered aspect of the land as we should be were we able to see it as it was in their day. No roads, no hedges, no cultivated fields, no towns—woods and heather and gorse. The streams swollen with a much larger volume of water from the undrained hills, unconfined by banks, spreading over many acres of the lowlands, large lakes and swamps in the north of the island. Reeds and rushes and water-loving plants in the plains, on the hills the purple heather and the golden gorse, everywhere waste lands with woods and an abundance of water. But, standing by their little church, of which the foundations may be seen at the upper end of this churchyard, they would view the same lovely vista of hills trending inland from the high peak of Barrule; they would see the same rugged headland, at the sheltered foot of which their church nestled in the sunshine; they would look as we do on the tumbling waves and gaze upwards into the same skies, bright and clear in the noon-day sun or darkened by hurrying clouds in the storm. And with these men themselves, greatly as they differed from us, we have this thing in common—Christ's religion, with a church in which to worship Him, and this quiet resting-place for the holy dead.

Besides the great number we have in our favoured parish, there are many more of these carved and sculptured stones throughout the island; many have been lost, some have been destroyed, many have been abused and put to ill uses, and very many are broken and worn and sadly defaced. They cry aloud for protection and for more reverent treatment. They are links with the long-forgotten past, our only contemporary records of those dark centuries, our

very precious heritage. These venerable monuments speak to us of the days far off, when the Celtic inhabitants of the island, from whom mainly we are descended, speaking our language with their fellow Celts in Ireland and even in Wales, were being gently led from the rude superstitions and dark ignorance of heathendom to the light of Christianity and the higher civilisation following in its wake, the days when the infant church took root amongst us, when little keels or chapels sprang up throughout the land—through that dismal century when the earlier inhabitants were pillaged and plundered by the fierce pagan hosts, who descended upon our shores from a far-distant northern land, when this green churchyard was converted into a stronghold and defence, of which the traces still remain—through those more peaceful days when the Scandinavians, already half-Celticised by their long stay in the western isles of Scotland, came to settle friendlywise among them, mingling and intermarrying with them (so that their blood also runs in our veins), adopting their customs, adopting their religion and becoming leaders in the Church and in the State—for we read of one, Roolwer, a Scandinavian bishop, who died about the year 1060, "who," says our Chronicle, "lies at the church of Saint Maughold," his monument being, as I believe, among those in our collection—through this long eventful period till, finally, the power of the Norsemen in the British Isles was broken and, after an occupation of nearly four centuries, they returned to their own homes. After that, when peculiar monuments ceased to be erected, this special art died out, giving place to the Gothic introduced from the north of England, of which the finest remaining example is the very beautiful pillar-cross of the fourteenth or early fifteenth century still standing at Maughold Church gates.

I cannot now occupy your time by a description of the stones in our collection, but perhaps you will allow me to refer briefly to four or five of the most interesting. The earliest is probably the small slab with the simple linear cross and circle, of a type met with in the sixth century. This was found some years ago by the late Mr. Looney a little below the ground by the south wall of the ancient keel or chapel of which the foundations may be seen in the north of our churchyard. These little keels with their accompanying burial-grounds—our only material remains, besides the crosses, of the early Celtic Church—were once very numerous in the island, and it is remarkable that no fewer than ten of the crosses in our collection came from as many keels, viz. from Ballakilly, the estate close by Ballateron, Ballure, and in the other direction Ballafayle, Ballaglass, Ballagilley, Cardle, Corna and Coilleen, and the Dhoon. Of all these Ballure alone survives as a church in use. Would that it were in our power to preserve even what little still remains of these ancient buildings as we can the crosses found beside them. Another early stone is interesting as being the only one in the island which bears an inscription in the Anglian runes, such as we find used in the seventh century. On it we read the name Blagkimon, which in varying form is a known Saxon personal name. In its first syllable we have it amongst us as a surname to this day. Here, also, are two out of the only three in the island which are in Latin, one of them, erected to a bishop, bears in contracted form the words, "Episcopus Dei Insulis," the lettering and general character of the carving showing it to be probably of the seventh or early eighth century. The other stood for over fifty years on the hedge at Port-y-Vullen, having been brought from the little keel, through the site of which the road to Gob Agr now passes. When the stone had fallen from the bank (the second time within my recollection), I discovered across one edge the brief inscription Crux Guriat. It can with some certainty be dated as early as the ninth century. Another bishop is commemorated on a broken slab, which for many years served as a lintel to the east window. No inscription remains, but we see the figure of the bishop with a closed book on his breast, beside him his pastoral staff. The design and execution of this belong to the tenth century. Yet another on the monument of Bishop Roolwer, to whom I have already referred.

A stone of very great interest is that which I had the great fortune to obtain a few years ago from a house in the town of Ramsey. It is one of the four in the island bearing illustrations from the great Norse hero-Saga, the story of Sigurd slaying the dragon "Fafosi"; and, just as in Sweden a great granite boulder so decorated is supposed to have been erected to a descendant of Sigurd, so, I surmise, these monuments in Man were erected to members of our royal race, who through Olave the White, of Dublin, claimed a

* An address delivered at Maughold by Mr. P. M. C. Ker-mode, president of the Manx Antiquarian Society, before the Governor.

similar descent. Now, one of our own kings, Olave, is recorded in our Chronicle to have been treacherously slain at Ramsey about the year 1153, and this stone may have been set up to his memory at Ballure, the nearest consecrated ground. As the house where it was found was built a hundred years ago by Christian Ballure, it is easy to account for its removal there. I will refer only to two others, the latest in our collection. They are not tombstones, but small unhewn weathered slabs with inscriptions in the later runics of about the year 1200. One was found below the old keeil in Corna Valley. The inscription begins with an invocation to Christ and the great Irish saints, Malachi, Patrick and Adamnan, adding the words, "Of all the sheep John is priest in Cornadale." The other, carved by the same John, was found here during the extensive repairs in 1900—appropriately enough by a priest of our day, the present vicar of Maughold, John's official successor. It bears the words, "John the Priest carved these Runes," and this is followed by the Runic alphabet and by another in oghams.

I trust that what I have said will serve to convince you of the interest and rare value of these remains; much might be added of their artistic merits. They are our heritage, national monuments in the truest sense of the word, and it is incumbent on us to preserve them. And now, to show that we rightly appreciate our privilege in their possession—yet not as absolute owners, but as trustees for posterity—I beg of your Excellency to declare this building opened and dedicated for their preservation. I am told that I should say a word as to its unfinished state. The reason for that is that the trustees were anxious to meet the wishes of the parish in having this ceremony on the same day as their harvest festival and annual show. Personally I do not think it matters a bit whether it is backward or forward, our desire being to call your attention to the fact that this work is being carried out, and by our ceremony to-day we wish to mark the good work upon which we are engaged, of preserving all such monuments throughout the small but ancient kingdom of Man.

THE LATE J. T. MICKLETHWAITE.

IN his sermon on All Saints Day the Dean of Westminster made the following allusion to the loss which the Abbey has sustained in the death of J. T. Micklethwaite, F.S.A.:—"Yesterday we laid in the cloisters an eager, reverent, skilful, experienced worker. A learned and wise antiquary, who brought the knowledge of an architect to illuminate the problems of our monastic buildings, and had come to be a recognised authority in all ecclesiastical antiquities. John Thomas Micklethwaite studied this abbey during the main part of his life, and for the past eight years filled the very ancient office of *supervisor operum*, surveyor of the fabric of this church. He gave his whole heart to this place, and jealously guarded every fragment that could tell of its long history. He had no rival in his love for it and his knowledge of it, save our venerable clerk of the works, Thomas Wright, whom we lost a few months before him. When we think of the passing into the eternal silence of voices that alone could answer questions that again and again must be asked, we rightly call our loss irreparable. But the man who has served his generation by the will of God has done work that abides. He falls asleep as the old builders, whose work he cherished, fell asleep in the midst of unfinished tasks. But the work abides and grows. 'God buries His workmen, but He carries on His work.'"

THE CASTLE OF NEWCASTLE-ON-TYNE.

THE property and sanitation committee of the Northumberland County Council have reported that communications have passed between the Duke of Northumberland and Mr. Robert Blair, secretary of the Newcastle Society of Antiquaries, regarding certain remains of the old hall of the Castle of Newcastle which had been unearthed in operations connected with new buildings at the Moot Hall.

Mr. Blair's letter to the Duke suggested that if the County Council would instruct their officials, on the uncovering of any ancient remains, to defer demolition until they could be examined, it would be a great benefit to archaeology, and probably to the elucidation of the history of Newcastle. The Duke, in forwarding Mr. Blair's letter to the

county surveyor, said it seemed a great pity that any ancient remains which might possibly be preserved intact should be destroyed. At any rate, an opportunity should be given for recording any discoveries that might be made. The county surveyor, in reply, stated that architects, including Mr. Knowles, were on the site almost immediately they discovered a wall passing within the outside wall of the new building. Every opportunity was given them to visit the site, and immediately any fresh discovery was made verbal notice was sent to Mr. Knowles, and he measured the discoveries and took levels of them. He felt that the secretary of the Newcastle Society of Antiquaries was under a misapprehension as to what he had done in connection with ancient remains. In practice it had always been his view, as in this case, to give every opportunity to those interested to visit ancient remains before they were interfered with.

The county surveyor further reported that Mr. Knowles had prepared a sketch and requested that the area lights should be rearranged so as to leave both sides of the old walls open to view for all time. He (the county surveyor) pointed out that if this and other suggestions were carried out it would spoil the entrance to the Weights and Measures Department and destroy a light, and it would also be impossible to put in a proper and safe foundation for the building.

STRAND IMPROVEMENT.

A MEETING of the Further Strand Improvement Committee was held on Saturday at 1 Pall Mall East, Lord Kinnaird in the chair, when a letter dated November 2 was read from the Clerk of the London County Council as follows:—"I have to inform you that the Council has come to no recent decision with regard to the frontage of the Strand at the south-eastern corner of the crescent site. The improvements committee in July last submitted a report advising the Council to confirm its decision of October 20, 1903, to the effect that no alteration be made in the frontage. This report was, however, withdrawn, and the matter is being further considered by the committee. Any decision that the Council may pass will be at once communicated to the Further Strand Improvement Committee." Mr. Mark H. Judge, honorary secretary, proposed the following resolution:—"That as the whole of the middle and eastern sites between Aldwych and the Strand are still in the market, this committee hereby resolves to make an offer to the London County Council for the use of 300 feet of the frontage of the eastern site, next the Strand, for the erection of a hoarding 30 feet high, in order to demonstrate how buildings on the present line of frontage would mar what would otherwise become the noblest thoroughfare in the Metropolis, leading to and from Buckingham Palace, the Houses of Parliament, Westminster Abbey, the National Galleries, the Royal Courts of Justice and St. Paul's Cathedral; that the offer be a sum of 50*l.* for the use of the frontage for three months, and for such further period as the County Council may be willing for the hoarding to remain a rental at the rate of 600*l.* per annum." Mr. Hutchinson Harris seconded the resolution, and after discussion it was adopted unanimously.

THE EMBANKMENT TREES.

THE attention of the parks and open spaces committee of the London County Council has been directed to the fact that, by reason of the construction of tramways near the kerb on the river side of the Thames Embankment, a considerable amount of pruning and lopping of the trees on that side is necessary to allow the use of double-deck cars on the lines, and the highways committee have asked that, in view of the early opening of the tramways for public traffic, the work may be undertaken with as little delay as possible. From an examination made with the aid of a template, 16½ feet in height, with a projection of 19½ inches corresponding to the distance between the kerb and the near side of the cars, it has been found that one tree, or possibly two, near Westminster Bridge will have to be removed, and that the 165 trees, with few exceptions, will require pruning to some extent. It is, of course, difficult to state exactly what the general effect will be until the work is completed, but the amount of pruning and lopping to be done between Westminster and Waterloo Bridges will, it is anticipated, be but slight. The treatment of the trees between Waterloo and Blackfriars Bridges will, however, be somewhat more severe in consequence of the more

stunted growth of the trees. It is pointed out that the trees on the side next the road have already been pruned to accommodate the ordinary vehicular traffic, and that the additional lopping now required will necessitate some corresponding thinning on the opposite side of the trees. Moreover, in sinking the shafts in the footway in connection with the construction of the tramways the roots of ten trees have been severely cut, so that it may be necessary to replace the trees at a later date. It is proposed to make arrangements for such work as may be necessary to be done at once, but the committee express regret that the highways committee did not inform them, either during the progress of the Bill through Parliament or before operations were commenced, that it was proposed to construct the tramways so near the kerb as to affect the trees in any way. The work was commenced during the recess, and it was not until some damage had been done that it was ascertained that the proposal was one affecting the trees, the control and maintenance of which concern the parks and open spaces committee.

FRENCH ROADS.

THE American Consul-General at Paris, Mr. Frank H. Mason, in a report to the Washington Bureau of Manufactures, states that during the past summer certain American tourists, travelling by automobile through France, complained that they had been annoyed by the coal-tar on certain roads adhering to the wheels, and thereby being spattered over their car and clothing. He says the impression created in some quarters by this statement has been that tarred roads have not on the whole proved successful. The treatment of macadamised roads and streets with crude petroleum as a preventive of dust in summer and mud in winter was first attempted in Southern France ten or fifteen years ago, and appears to have been successful for the suppression of dust caused by ordinary traffic. But for obvious reasons the use of petroleum soon gave way to that of coal-tar, which has the additional advantage that, unlike oil, it hardens when exposed in a thin layer to the action of the air, covering the surface of the road with a practically air and watertight skin, which not only holds down the dust in dry weather, but prevents water from penetrating the roadway in time of rain, provided the road itself is well constructed and the tar properly applied. One of the first important experiments made by the French Department of Bridges and Roads was on the national route from Oran to Mers-el-Kebir, in the Algerian Department of Oran. The success of the system was fully demonstrated, and it has since been adopted and applied to many country roads and macadamised city streets throughout France with uniform success wherever the conditions have been normal and the work properly and thoroughly performed. Tarred roadways are not recommended for steep grades, where their smooth surface might be slippery and dangerous for horses.

DAMAGE TO WATERLOO BRIDGE.

THE highways committee of the County Council report that their attention has been directed to an accident which occurred on Waterloo Bridge on the afternoon of October 30, when a motor omnibus proceeding northwards mounted on to the pavement of the bridge on the west side and collided with the parapet, which as a result was considerably damaged. In view of the very serious consequences which might have ensued they have thought it right to place the facts before the Council without delay. It appears that the parapet was damaged for a length of nearly 125 feet, some of the granitework of the bridge being knocked into the river. Owing to the parapet of the bridge being of exceptional strength the vehicle, fortunately, did not fall into the river. This is the third occasion, within a short period, on which a similar accident has occurred to a motor omnibus on this bridge, and there can be no doubt that in each case a very serious accident would have taken place but for the reason above stated. On April 4, two motor omnibuses collided at the southern end of the bridge, and as a result the parapet was damaged for a distance of nearly 40 feet, while on October 15, a motor omnibus mounted the footway of the bridge on the upstream side and damaged the parapet. The parapet, as well as the structure of the bridge, was at the time of the accident in excellent condition, and the carriageway was relaid three years ago and was repaired about two months since, and it is clear therefore that the condition of the

bridge did not contribute to the accidents. The highways committee are of opinion that, in view of the grave consequences which might result from accidents of the kind in question, and having regard to the central position of Waterloo Bridge and the enormous volume of traffic crossing the river at this point, the question of the control of the traffic on the bridge, particularly motor-omnibus traffic, requires very serious consideration. It is therefore suggested that a statement of the facts should be forwarded to the Local Government Board, which has under consideration at the present time the question of amending the order at present in force relating to heavy motor cars on bridges, and also to the Commissioner of Police of the Metropolis.



Riddrie Competition.

SIR,—I enclose a copy of a letter which has been forwarded to the town clerk of Glasgow regarding this competition, and as the matter is of some public interest, I shall be glad if you can insert it in your valuable Journal.—Yours faithfully,

C. J. MACLEAN.

Sir,—My Council have had the conditions of this competition under consideration, and have agreed upon the following expression of opinion, viz. :—(1) The premiums offered, viz. 75*l.*, 50*l.* and 25*l.*, are inadequate, and there is no guarantee of employment given; (2) there should be an independent assessor to advise the committee; (3) the plan of the ground that is supplied to the competitors does not give any levels or the necessary information for laying out roads and forming sewers; (4) there is no indication given of what drawings are required and the scale they are to be.

As my Council understand there will not be a meeting of your committee for some time, I was instructed to send this letter at once to the public Press.—I am, yours faithfully,

C. J. MACLEAN,

Secretary, Glasgow Institute of Architects,
115 St. Vincent Street, Glasgow :

The Town Clerk,
City Chambers, Glasgow.

October 31, 1906.

Bexhill Council School.

SIR,—The following official advertisement caught my notice:—"The Bexhill education committee invite applications from certificated and trained teachers for the appointment of head-mistress at the new Council school, Downs Road, which has recently been erected from the designs of Mr. Burke Downing, F.R.I.B.A., Westminster. Accommodation 400. Mixed school, girls and infants." It is obvious that the committee attach considerable importance to the fact that their school was designed by Mr. Downing, and presumably expect that it will attract applications equally with the salary. This tribute to architectural practice opens out a wide range of possibilities. If the head-mistresses of Board schools are so intimately concerned in the design of their daily surroundings it is reasonable to conclude that the same spirit will pass down from them through the teaching staff to the pupils. These pupils will when leaving school and watchful for situations have stringent standards to apply before they are satisfied. Thus housewives when desirous of engaging a domestic may have to promise to decorate the servant's quarters according to the new-comer's fancy. The taste of one housemaid would render life to a sensitive successor a misery as long as she had to look at the same colour scheme, wall-paper, &c. It is unwise to think what will happen when the same establishment contains several servants with individual artistic temperaments. Perhaps the cook will be arbiter of taste. This suggests what may shortly happen in respect of interior decoration. Yet if the æsthetic education of the Board-school girls logically progresses (and with it the servant problem), is it not possible that they may refuse to enter service until the entire house is in harmony with their ideals? A Mary Anne style of architecture, in fact.

If all the foregoing is by way of intelligent anticipation, the advertisement quoted at the commencement of this letter is a indisputable fact. I venture to think it incomplete. Head-mistresses might be glad to know where they

can see a view of the school without journeying to the place. To satisfy them a reference should be given to the professional journal in which it appeared. Thus the Bexhill education committee should have added "vide *The Architect*, May 11."—Yours,
F. R.

GENERAL.

The King of Greece has invited M. Rodin, the sculptor, to visit him at Athens, and the invitation has been accepted.

Mr. Reginald T. Blomfield, A.R.A., formerly scholar, has been elected to an Honorary Fellowship at Exeter College, Oxford.

M. Van den Broesche, the Belgian sculptor, has died in Ghent in his fifty-second year.

M. Fritz Thaulow, the Norwegian painter, died at Vollandam on Monday in his fifty-ninth year. His weird representations of bridges and of houses on the banks of rivers were admired in recent exhibitions of the Royal Academy.

Selby Abbey was insured for the sum of 10,000*l.* This will leave a balance of 32,000*l.* to be collected by subscription.

Mr. J. Thomas Micklethwaite, to whose death we alluded last week, was buried on October 31 in the cloister of Westminster Abbey.

The Cambridge University Antiquarian Committee, in their report for the year 1905, again draw attention to the overcrowded state of their galleries. In fact, a warehouse has had to be hired in which many objects are stored out of sight. The need of a new building has become pressing. The University has a site, but beyond 1,500*l.*, either collected or promised by Baron von Hugel, the director, there are no funds for the erection of a building.

Mr. Rowland Plumb has been selected by the Edmonton Board of Guardians to judge the competitive designs for its new infirmary, which is expected to cost 200,000*l.* The architects invited to compete are Mr. Stuart Hill, Mr. W. H. Ward, Mr. Marcus Collins, Mr. A. E. Pridmore and Mr. W. A. Pite.

The Carnegie Dunfermline Trust have reported that architects had been invited to submit competitive designs for the erection of a branch library in Baldridgeburn Street at an estimated cost of 4,200*l.* Premiums of 20*l.*, 15*l.* and 10*l.* respectively are offered for the three best designs after the one (if any) which may be accepted. The accommodation to be provided is as follows:—A reading-room and a room for games, which could be thrown into a lecture hall, with about 300 places; a children's reading-room, a ladies' room, a billiard-room to accommodate two tables, a smoking-room, a library and librarian's room, lavatories, and a caretaker's house.

"A Manchester Alphabet" is the title of a brochure by Mr. Roger Oldham, and published by John Heywood, Ltd. That the city can supply twenty-six subjects for humorous illustration is creditable to it as well as to the artist and poet. It will afford enjoyment to others besides inhabitants.

At the Meeting of the York Town Council on Friday one of the members proposes to ask that a special committee be appointed to inquire into the circumstances in connection with the recent cleaning and restoration of the pictures in the Burton Art Gallery, particularly as to the alleged damage done to several of the pictures (especially to one entitled *The Drovers*, by Ansdell and Frith, and another, *The Saxon Sentinel*, by Watts), with the view of ascertaining, if possible, by whom the alleged damage was done.

The Council of the Institution of Civil Engineers on Tuesday made the following awards:—Telford gold medal to J. A. Saner, Watt gold medal to G. G. Stoney, George Stephenson gold medal to T. E. Stanton and Telford premium to Leonard Bairstow. Telford premiums to H. S. Bidwell, J. J. Webster, C. W. Methven, H. A. Mavor and Sir F. R. Upcott; Manby premium to D. E. Lloyd-Davies, Telford gold medal to G. A. Denny, George Stephenson gold medal to W. E. Dalby, Telford premiums to W. R. Baldwin-Wiseman, G. N. Abernethy, H. R. C. Blagden, M. R. Collins and James Kelly; Crampton prize to P. T. Gask, the James Forrest and the James Prescott Joule medals and a Miller prize to A. F. Harrison, Miller prizes to Ralph Freeman, A. J. Grinling, T. R. Grigson, J. D. W. Ball and Arnold Morris.

Mr. B. T. Batsford will issue in a few days a new volume of "Decorative Plant and Flower Studies" by Miss J. Foord. It will contain forty coloured plates of studies of different plants to those represented in the first series issued four years ago, and numerous sketches and studies of detail will be given in the text.

Mr. James Ransome, consulting architect to the Government of India, has, *Indian Engineering* understands, signified his intention of severing his connection with the Government of India on the termination of his present agreement, which expires some time next year. It is supposed that Mr. W. Banks Gwyther, P.W.D., Bengal, will succeed him.

The First Commissioner of Works having been asked in the House of Commons whether he would ascertain what arrangements, if any, were being made to remove the three houses at Charing Cross, the removal of which was necessary to complete the Charing Cross end of the Mall improvement, and how the requisite funds would be provided, Mr. Harcourt, in reply, said:—"I am not aware that any arrangements are being made to remove any houses at Charing Cross. This is, in my opinion, a metropolitan matter, and as such appertains to the business of the London County Council."

The Drama Society propose to give a preliminary performance at Chester on November 29 of three of the Chester Mystery Plays, namely "The Salutation," "The King's Play," and "The Shepherd's Play." Professor Gollancz, to whom the plays will be submitted for revision, has promised to deliver a lecture on the plays at Chester on November 20.

The Wolverhampton Art Gallery and Museum have been visited during the past official year on an average by 258 persons daily. The attendance on Sunday afternoons shows an increase.

The Baths and Parks Committee of the Birmingham Corporation recommend that they be authorised to obtain competitive plans for the erection of a suite of baths in Nechells Park Road at an estimated cost, including the necessary engineering-work, of 21,995*l.* 3*s.* 2*d.*, and to submit the selected design for approval. The ground plan of the baths was submitted to and approved by the City Council at its meeting held on October 24, 1905.

Banwell Abbey, in Somerset, is to be put up for sale. The stone-built fourteenth-century abbey, now adapted as a residence, contains modern accommodation, coupled with the historic chapel, cloisters and hall in the old-world grounds. The first building on the site was a Saxon monastery founded by King Alfred. This was destroyed by the Danes, but after the Conquest was several times restored by the bishops of Bath and Wells, particularly by Bishop Drokenesford in 1309, Bishop Beckington in 1443 and Bishop Oliver King in 1449.

The County Property Committee of the Cumberland County Council have passed the following resolution:—"That authority be given to the county architect to carry out urgent and needful repairs to county property under his charge which may at any time be necessary, to an amount not exceeding 10*l.*, but that all proposals for new work be submitted to this committee for approval before being proceeded with; and that if any further necessity arises to exceed the sum of 10*l.* for urgent repairs the matter must first be referred to the chairman of the committee for approval."

Mr. W. D. Caroe, in the course of a report on the condition of the parish church at Blofield, Norfolk, says:—"It is a matter of great importance that the ancient seats should be retained. These are complete, and some of them among the most interesting in the country. They hand down to us in a remarkable degree the comforts which our forefathers were prepared to accept as sufficient for their needs. That we demand more ease gives us no warrant for sweeping away excellent work coeval with the structure itself and designed for it. The present oak backs appear to me to have been skilfully devised, and if their designer had added a little more width to the ancient seat they would have been fully up to our modern demands. This addition can now be made, and at the same time a book-ledge might be added, similar to that at Hemblington. There are sixteen old bench ends still available, and these can be used in extending the seats westward. The present deal screen, which is merely an eyesore of less than no value, should be removed to admit of this. The box pews in the aisles are deal, and have no merit to warrant their preservation, while they are wasteful of space. Oak seats should be introduced to replace them and regain the proportion of the church."

The Architect.

THE WEEK.

THE judgment in the case *COLLS v. Home and Colonial Stores*, although it has to be respected, is not endorsed by all lawyers in England. It seems remarkable that a decision relating to the diminution of light in a house let at 26% a year should be delayed in the expectation that the result of *KINE v. JOLLY* would modify the important judgment which Mr. COLLS obtained. All that *KINE v. JOLLY* has taught is how easily a large sum of money can be wasted in carrying a case from court to court. The action which was delayed related to a house at Tuebrook, Liverpool. The owner brought an action against a lady who built a house within 15 feet of his own, and by so doing interfered with the light of his back parlour. It was tried before the Vice-Chancellor at Liverpool, and judgment was deferred, as we stated above. On Monday judgment was given. The Vice-Chancellor said it had been proved that the land on either side of the house had been laid out for a building estate, and that plaintiff's house must have been built under that knowledge. His visit to the premises on a dull day showed that the room received ample light for all purposes. If there was any diminution in the letting value it was not due to the light, but to the proximity of other houses. Adopting the words of the Lord Chancellor, his Honour held that the defendant had left to the plaintiff amply sufficient light for ordinary purposes according to the general notions of mankind, having regard to the locality and the surroundings, and accordingly gave judgment for the defendant with costs, except as agreed.

It cannot be charged against contractors and workmen that time was lost in erecting the new War Office at Whitehall, of which there was a private inspection on Tuesday. The building has to accommodate about 2,300 officials, and, moreover, it possesses a rather grandiose character. Yet the works have occupied little over five years. When the other buildings in Whitehall are completed INIGO JONES's Banqueting Hall must appear as a very modest example of architecture, and it may be forgotten that it is only a fragment of what was to be a noble palace. The late WILLIAM YOUNG, in his design for the War Office, showed some reverence for the old building which was to stand near it, for although in the first competition columns of immense height were in favour in order to impart majesty to the exterior, his Ionic columns are restricted to the height of two floors, and in a perspective they do not appear more imposing than JONES's. The site was rather difficult to deal with, and it must be allowed it was turned to excellent account. There is far greater variety than is seen in the Banqueting Hall, but in no part is it carried to excess, nor is it acquired by any petty details. The architect's aim was to have a striking building which could be regarded as a whole, and we need not object because he has exhibited more courage than BARRY when he was altering the Treasury buildings on the other side of Whitehall. The sculpture by Mr. ALFRED DRURY, A.R.A., is really decorative and suggestive of the purpose of the building. The interior could not be fairly judged, for everything was new. But the staircase is well adapted for the display of uniforms, and the rooms of the principal floor will gain in effect by time. Since the death of Mr. YOUNG soon after the works began, the building has been carried out by his son, Mr. CLYDE YOUNG, who has been aided by Sir HENRY TANNER. The contractors were Messrs. FOSTER & DICKSEE, of Rugby.

THE statistics of a large building are always found interesting. According to information, there were used in the War Office 25 millions of ordinary bricks,

1½ millions of glazed bricks, 26,000 tons of Portland stone (supplied from the quarries of the Bath Stone Firms), 17,000 tons of Portland cement, 3,000 tons of York stone, 9 miles of chimney flues, 17 miles of plaster cornices, 50 acres of plastering, 3,500 tons of steel floor joists, 7 acres of asphalt, 18,000 yards of mosaic and 2 acres of glazing. The principal front to Whitehall is 250 feet long, the south front to Horse Guards Avenue is 320 feet long, the east front to Whitehall Avenue is 370 feet long, and the north front to Whitehall Place is 500 feet long. The steps of the main staircase are of Pistraccia marble, with alabaster balusters and Brescia capping. The pilasters, arches, &c., are of Painswick stone. The building is heated by steam, and 250 hydrants and about 3½ miles of piping are employed for this purpose. The fire appliances consist of a complete system of mains, with 106 hydrants. For lighting there are 5,601 16 candle-power and 303 8 candle-power lamps. There are 5 electric passenger lifts, 10 hydraulic goods lifts, 2 dinner and 5 paper lifts. The length of insulated wire in the building is 104 miles, and there are 21½ miles of steel tubing, 20½ miles of wood casing and 10 tons of shot in counter-weight fittings.

At one time it would be considered strange to find architects tendering for a commission. But the world has become accustomed to so many revolutions in architectural practice, an experiment of the kind excites little attention. The education committee of the Rochford Hundred, in Essex, are about to erect a girls' school at Rayleigh, and they invited architects to state on what terms they would render their services. They received the following offers:—Mr. DOUGLAS H. SMITH, 4 per cent.; Mr. CHARLES COOKE, 3½ per cent.; Messrs. CABUCHE & HAYWARD, 5 per cent.; Mr. W. Y. HOBBISS, 3½ per cent.; Mr. W. J. WOOD (lump sum), 50%; Messrs. CLARE & ROSS, 4 per cent.; Messrs. BURLS & HARRIS, 5 per cent.; Mr. F. E. SNEE, 5 per cent.; Mr. S. I. ADAMS, 3½ per cent. Out of the list the offers of Mr. HOBBISS and Mr. ADAMS were selected for consideration. Finally the terms of Mr. S. I. ADAMS were approved. That gentleman stated that his percentage was based on the understanding that Thundersley schools were being erected at or about the same time, so that one journey would cover both; but the committee declined to be bound by such a stipulation. According to the chairman, the percentage is to be calculated on the total outlay. No objection was raised by any member of the committee concerning the arrangement, and it is to be feared that a similar process will be adopted in other cases.

THERE has been a discussion in Edinburgh concerning a new municipal art school. The inquiry, which was held in the city by a Government commission, showed that rivalry existed between the art classes of the Scottish Academy, the Royal Institution and the Heriot-Watt School. The art school committee of the Town Council have prepared a report recommending the erection of a school which would serve not only for Edinburgh, but for students of the south and east of Scotland. It would be called the Edinburgh Municipal College of Fine Arts and School of Arts and Crafts. The old cattle market in Lauriston Place is suggested as a site, and the estimated outlay on buildings and equipment is put down at 50,000/. The course of instruction would comprise painting, sculpture, architecture and decoration. There would be room for 2,000 students. The general accommodation would be 15,205 feet; painting section, 11,196 feet; sculpture, 6,830 feet; and architecture, 6,982 feet. The total area would be 66,327 square feet. It is considered that the school would enable Edinburgh to regain the position it once had acquired as a centre of art, especially as the latest methods would be employed in teaching.

HERCULANEUM.

THE announcement that the Italian Central Commission of Antiquities and Fine Arts have approved of Professor WALDSTEIN'S project for the excavation of Herculaneum shows a surprising degree of liberality. The whole history of the attempts to reveal the buried city during the last two centuries has been marked by the most remarkable dog-in-the-manger spirit known in the history of archæology. When Naples was a kingdom a fierce jealousy was displayed towards inquirers who came from other parts of Italy, and still more of foreigners. Now that Italy has become united it is felt by those who have the interests of the country at heart that the condition of Herculaneum is discreditable to the people and Government of Italy, and that an effort should be made to imitate the action of countries like Turkey and Greece. But the conditions of the acceptance of Professor WALDSTEIN'S proposal are still marked in a large measure by the old spirit. Foreigners will enjoy the privilege of contributing towards the expenses of the excavation, but the money is to be controlled by an international administration under a president to be nominated by the King of ITALY, and who doubtless will be an Italian. The execution of the work will be directed by a commission, one-half of whom will be Italian. All the information concerning the discoveries is to come from the Italian Government, and Italy is to retain possession of whatever is found. Foreigners will recognise the justice of the last condition, for it corresponds with the practice in other countries. But it is to be feared that the interference of Italians with the excavations will be prejudicial to the success of the enterprise.

It was in 1706, or exactly 200 years ago, that the existence of Herculaneum was revealed. Prince EMANUEL OF LORRAINE, who had settled at Portici, then ordered the erection of a villa. For plaster he proposed to utilise some crushed marble. He was informed that people in the town knew of the existence of a pit or well, and on descending by it they were able to find not only pieces of marble, but statues and mosaics. The Prince wisely secured possession of the well, as well as of rights of search. It was about 90 feet deep, and in passing downwards it was not difficult for a trained eye to realise the remains of different towns. The ancient city which was overwhelmed in A.D. 79 was used as a site for other cities which were also destroyed. It was therefore not strange that the city known as Herculaneum was forgotten. The Prince D'ELBŒUF, for that was the title by which he was known, carried on explorations for a few years. At such a depth the work resembled mining, with the difference that in mines there are plans to be followed and the lines of the strata serve as guides. At Herculaneum there could be no plan, and the men burrowed around, regardless of what was destroyed, so long as they obtained a statue, or a part of one, or a mosaic. The French president, DE BROSSES, who descended in 1739, said that owing to the absence of air he was unable to examine the place without going every few moments to the opening in order to continue breathing. He tells us he could discern walls which were examples of *opus reticulatum*, others adorned with mosaics, large slabs of marble and frescoes representing flowers, birds, animals and other ornamentation, but even lighter in style than arabesques. He could also see columns, bases, capitals, fragments of statues and of furniture, pieces of bronze, and in his presence an inscription was discovered which appeared to be a list of municipal magistrates. He recognised that they were in the presence of an amphitheatre or of a theatre. He was also able to perceive the remains of a street, along which were covered benches. DE BROSSES was informed that it led to some public building with porticoes which contained much fresco-painting, columns and statues of men seated in curule chairs. DE BROSSES was able to realise how imperfect was the excavation,

for in spite of all that had been done during thirty years there did not appear to be any open space exposed, for what was dug out in one spot was cast down in another. If, as he said, so much has been discovered by digging blindly (*en fouillant à l'aveugle*), it was not difficult to imagine what would be produced by methodical search. Then he mentions the statues of divinities and emperors which had been obtained, and he particularly remarked statues of the entire family of NONIUS BALBUS, which were found in one place, a family of great interest in the history of ancient art, for some of the masterpieces which were prized in Rome once belonged to them.

The discovery of the statues of the NONIA family had an unexpected effect. The Austrian Viceroy considered his master was being deprived of treasures. He therefore not only put a stop to the exploration, but demanded of the Prince D'ELBŒUF all the works of art he had taken from the subterranean city. A few years afterwards Naples obtained a new monarch. He decided to erect a palace at Portici, and ancient Herculaneum was relied on to furnish the means of its adornment. Colonel ALCUBIERRE, an officer of engineers, was appointed architect. He treated the remains with as little mercy as if they were obstacles in a campaign and his subordinates were pioneers. He succeeded, however, in revealing a theatre which at first was thought to be a temple. The news of the discovery was heard with surprise throughout Europe, and many archæologists travelled to Naples in order to see the new wonders. But the officials of the Neapolitan Government looked on the discoveries as if they were monopolies from which profit in some form or another was sure to be derived; and in consequence the advice of experts which might have been obtained gratuitously was withheld. Any further work attempted was continued in the old unsystematic manner.

The spirit which animated the Neapolitans, and which remains unchanged, can be judged from their conduct to WINCKELMANN. He was a German, but he had become an abbé and was an official of the Roman Court. He was recognised as the foremost authority on ancient art. He went to Naples and obtained permission to visit Herculaneum, but he was never allowed to go about without some agents. He made a second visit a few years afterwards, and wrote a book on the antiquities. His intentions could by an impartial critic be understood from the pages, yet when he went again to the ruins he was not accorded uninterrupted liberty in walking, for fear he was measuring the old city, and care was taken to conceal the latest discoveries from him. The King of NAPLES had, in fact, given orders that an official description of Herculaneum was to be published. The commission was given to BEYARDI. But as the introduction, which treated mainly of mythology, occupied about five volumes, the order was given to BERNARDO TENUCCI, one of the royal secretaries, and forty years elapsed before the completion of the work.

The discovery of Pompeii in 1748 and the comparative ease with which the buildings were cleared could not fail to have an effect on the excavations at Herculaneum. For about forty years they were continued with occasional intervals. But as only a few excavators could be employed the progress was slow. In 1828 the exploration was resumed and continued for about ten years. In 1866 another effort was made, but the results were unsatisfactory, and for several years it was believed either that Herculaneum was exhausted as a treasury of ancient art, or that the risks to the people living in the modern town were too great to be accepted. It requires therefore a large amount of courage in those who will accept responsibility for the proposed operations, and the whole civilised world must follow their efforts with unceasing interest. Herculaneum is to archæologists what the North Pole is to seamen. Difficult as the task is found to be in both cases, it cannot be said to be impossible.

We cannot expect that by any labour Herculaneum

will become as familiar as Pompeii. The mass of material above the old city, and the covering of streets and buildings by volcanic mud, *lava bavosa*, in a fluid state, will not allow such wholesale clearances to be accomplished as those in Pompeii. On the other hand, Herculaneum seems to have possessed a residential population who were there throughout the year, while Pompeii was for many merely a holiday or temporary resort. There was consequently a higher style of art in Herculaneum. DE BROSSES was amazed with the wall-paintings he saw, although he was familiar with the examples preserved in Rome. The President of the Royal Academy says that he knows of no work which affords such an impression of mastery over material as *Telephus Fed by the Hind*. DE BROSSES considered the *Theseus* found in Herculaneum surpassed *The Aldobrandini Marriage* in the grandeur of the figures and the skill in grouping. The sculpture is by many regarded as even more important than the paintings. The portrait statue of AESCHINES was greatly admired by CANOVA. The *Homer* is a most interesting type and evidence of the belief that when old he was poor. The fragments of the quadriga of NERO suggest that if it were not for the carelessness of ALCUBIERRE, who neglected to collect all that survived, the work would be unique. The *Mercury* is almost unsurpassed among ancient works of art. But it would require a long list to exhaust the masterpieces which Herculaneum has yielded. The discovery of Dr. HAYTER in 1802, when, aided by a sum of 1,200*l.*, he was enabled to unroll some of the manuscript rolls found in Herculaneum, suggests the culture prevalent in the ancient city. They were found several years before, but their value was unknown until it was discovered, through the efforts of Dr. HAYTER, that they were the works of some of the great philosophers. If they could have been brought to England there is no doubt more use would have been made of them. But their removal was prohibited by the King of NAPLES. Then most of them fell into the hands of the French, and only a few reached England. Whatever may have been the literary value of the manuscripts, the fact that such a large number were found in one house must compel all scholars to anticipate similar discoveries in the course of the forthcoming excavations.

One of the difficulties of the excavations has been the absence of adequate light. At such a depth torches cannot afford clear illumination. Those who take part in future excavations will not be handicapped by obscurity. There are also appliances of several kinds which are used in tunnelling, and may serve. The task will, however, continue to be onerous, for it will be still impossible to decide what is concealed by the hardened mud, and everything which is met with will have to be treated delicately. Progress must therefore be slow, and it will be necessary for the administration to be aided by more money than Italy can afford to give. Herculaneum has, however, interest for all men, and assistance will, no doubt, be sent in proportions befitting the occasion.

NEW BOOKS.

THE large volume on plastering published by Mr. BATSFORD was so exceptionally cheap, there was reason for supposing it was to be unique. But "Modern Practical Carpentry," by Mr. GEORGE ELLIS, which comes from the same publisher, is no less remarkable as a token of enterprise. In some respects it is a greater surprise. To have 1,100 illustrations, the majority of them being detailed, with about 400 pages of text, is enough to convince those who have absurd ideas concerning publishers' profits that in one important class of books the gains can only be of a modest kind. It is true that all the illustrations have not been expressly designed for the volume, but their value is not in the least diminished because some readers may have seen them before. Indeed, with an art like carpentry we

cannot expect much novelty. When the carpenters of Paris by their disputes compelled architects to substitute iron and concrete in flooring, timber construction was deprived of the possibilities of progress, for the new materials were found to be no less adapted for other kinds of construction. In many cases where carpentry could be utilised with advantage it has been superseded by iron or steel girders, and its range is therefore at present rather limited. It is consequently inevitable that, large as is the volume and numerous as are the illustrations, there are few inventive examples. The Vauxhall temporary bridge shows framing that differs little from the representations given to us of the Roman bridges. This peculiarity of carpentry has, however, an advantage, for a student can feel he is able to grasp its possibilities by attentive study. We may also say that if he masters Mr. ELLIS's volume he can overcome all the difficulties of construction which he is ever likely to meet. As a rule there is small scope for shaping material in carpentry, and what is most desirable is the ability to make suitable joints. Yet we find in the reports of the examinations throughout the country by the City and Guilds of London Institute that "the construction questions—viz. those on joints—were answered badly." In other words, teachers have neglected to make students acquainted with the most essential part of timber construction. In the new volume joints are treated with fitting importance. The work will be useful to those who design buildings as well as to workmen who have to follow drawings. All the ordinary varieties of carpentry are explained in a clear and practical style.

Many architects endeavour to become members of the Surveyors' Institution, for they are aware that with men of business the letters F.S.I. have almost equal value with those relating to the Institution of Civil Engineers. It is possible that in the examinations other subjects besides farm buildings will have to be considered. "Practical Farming," by Mr. E. T. SHEPHERD (London: CROSBY LOCKWOOD & SON) is the title of a handbook prepared for the examinations. The author has consulted the works of many writers, and the information is presented very clearly and succinctly. There is also a chapter on farm buildings. It appears to be well-adapted to serve the object proposed.

Cottages at the present time are a favourite subject with architects. "Country Cottages and Week-End Homes," by Mr. J. H. ELDER-DUNCAN (London: CASSELL & Co.) is a collection in quarto size of plans, drawings and photographs of cottages costing from 200*l.* to 3,500*l.* Numerous architects have contributed; there is consequently much variety, and clients must be difficult to please who are unable to find in the pages some building which approximates to their ideas. In the majority of instances the cost is given, in others it can be obtained on application. It is the kind of book which should appeal to Anglophiles on the Continent as well as to Americans. "Inexpensive Rural Cottages and Buildings for Small Holdings," by Mr. S. TAYLOR, F.S.I., comes from the office of the *Land Agents' Record*. The buildings are intended for labourers, workmen and for erection on small holdings. According to the author, they are unpretentious in appearance, inexpensive to erect and maintain, and adapted to meet the requirements of a large proportion of the country. The information is so ample it would not be difficult for any intelligent owner to have most of the buildings erected under his own superintendence. Mr. C. H. B. QUENNEL'S "Modern Suburban Houses" (B. T. BATSFORD) is described by him as "intended primarily for architects, builders and others interested in the development of building estates; it represents work done in recent years with a certain amount of success from the business point of view, and it is hoped that it will be more convincing than a series of suggestions or designs which have not been carried out. All the houses illustrated have been built on regulation building plots of varying width; they have been

built for sale, and they have all been sold." It would be fortunate if houses like those represented were found more often in the suburbs of London and of provincial towns. The exteriors, from the largeness of the windows and simplicity of parts, suggest spaciousness, and the oak paling is an approach to ruralism. The walls are of brickwork or brickwork and rough-cast, and there is a wise avoidance of cheap ornamentation. The majority of the houses have been erected at Hampstead, and they look equally well when seen apart or in groups.

The examples in the fourth volume of Mr. MIDDLETON's work on "Modern Buildings: their Planning, Construction and Equipment" (The Caxton Publishing Company), comprise public libraries, baths, small municipal buildings, law courts and large municipal buildings as exemplified in modern practice. The second portion consists of a treatise on steel construction by Mr. P. R. STRONG. This is a valuable feature of the work, and it includes among the diagrams copies of working drawings used for the Ritz Hotel. Mr. H. Y. MARGARY writes on wooden beams and pillars, and Mr. STRONG on fire-resisting construction. It will be evident that no pains have been spared to render the work comprehensive as a treatise on building construction.

To his cathedral series Mr. T. WERNER LAURIE has added a volume on "The Cathedrals of Northern Spain," by Mr. CHARLES RUDY, of Madrid. The author looks at things from his own standpoint, and in consequence the pages often contain statements which may at first appear startling. For instance, he says the Inquisition was not directed against the Reformation. Christianity flattered the Spaniard by placing him on an equal footing with all men. "The charm of Catholicism," we are told, "was that it enabled him to adore a local deity in the shape of a martyred saint. Thus it flattered his vanity as a clansman and his spirit of individualism." The only art for which the Spaniard seems to have capacity is music. To beauty in the plastic arts and architecture Mr. RUDY maintains he is cold and indifferent, and it is the same to him whether a cathedral is Gothic or Romanesque—all is architecture. There is consequently no pure Gothic, Romanesque or Renaissance building in the Peninsula. But the interior treasures are numerous. "The Spanish cathedral is for the foreigner a museum, a collection of art objects, pertaining most of them to the country's industrial arts, for which Iberia was first among all nations." Mr. RUDY awards deserved praise to the smiths for the *refjas* or grilles. They still seem unable to produce a bad example. The author describes thirty cathedrals existing in the northern provinces, and photographs are given of the exteriors. Mr. RUDY does not enter into the detail which we find in the late Mr. STREET's volume, for his book is intended for the use of ordinary travellers, and as much information is given about each building as is likely to be required. No Englishman should visit Northern Spain without this guide-book.

Some of the American engineering journals have succeeded in lettering and figuring their drawings with a perfection that is remarkable. In showing steel roofs, braced girders or columns they give not only the dimensions of each part, but the calculations which decided their adoption. However numerous may be the letters or figures, there is uniformity among those which are allied, and in that way the reading of a drawing becomes more simplified than might be thought possible. Mr. C. W. REINHARDT, the chief draughtsman of the *Engineering News*, has published a treatise on "Lettering" (A. CONSTABLE & Co.), in which he describes the system he adopts. The basis is a one-stroke style, which may be described as small or lower-case block or Egyptian. It does not correspond with the ordinary "stump" or italic which is familiar in this country, for there is no contrast of thick and thin lines, all the parts being uniform. The letters can be either upright or sloping. Perfection in it is much

more easily attained than with italic lettering, and words and dimensions are, however small the scale, more legible. Reproductions are also more successful when the letters are of uniform thickness. A large American work is about to be issued which also exemplifies American practice. It is entitled "Working Details," and is drawn and published by Mr. FRANK M. SNYDER, architect, New York; the English agents are the Technical Journals, Ltd. It resembles to some extent the collection of plates by JOBBINS, known as "Laxton's Examples." But the detail is more elaborated than was necessary in England. Each page measures 22 inches by 16 inches. The originals were coloured, but every page has a key explaining the hatching adopted to distinguish materials. In the specimen number there are ten plates by Messrs. McKIM, MEAD & WHITE, and other architects. As the subjects are mainly window-frames and door-frames a comparison between the different methods becomes easy. The American architects evidently do not trust a contractor's scaling, for dimensions are figured whenever there is a possibility of any being required.

"Crematoria in Great Britain and Abroad," by Mr. A. C. FREEMAN (London: St. Bride's Press, Ltd.), would be interesting if it were only as showing how a modern problem or a revival of one that was ancient presents itself to different minds. Nobody would have objected if for the crematoria established styles were ignored, and attempts were made to introduce novel forms, or to show the possibility of new and expressive styles. But practically we only have the familiar Italian and Gothic types, as if nineteenth-century imagination dare not escape from thralldom. The structures vary from temples to churches, and, indeed, in some of the English examples we see the familiar cemetery chapel with an ordinary tower to enclose the upcast shafts. We suppose people's minds are not as yet sufficiently emancipated from old associations to adopt an arrangement which would be suggestive of the vanishing of all that gave form and motion to human beings. Mr. FREEMAN presents a sufficient number of views and descriptions which testify that if novelty of design is not apparent, cremation has been adopted in many important cities on the Continent and in America.

After sixteen years a second edition of Mr. G. H. BLAGROVE's "Dangerous Structures and How to Deal with Them" (B. T. BATSFORD) has become necessary. In the interval authorities have become more exacting, and, indeed, there is very little choice left to any property-owners in the Metropolis whose buildings are declared to be dangerous. Prevention is better than cure, and Mr. BLAGROVE suggests how by timely reparation a building may be temporarily saved from condemnation. The origins of most varieties of defects are explained, and the book therefore is a supplement to a treatise on building, and its utility is undoubted.

The very cheap series of technical instruction volumes edited by Mr. P. N. HASLUCK (CASSELL & Co.) has been increased by treatises on "Sanitary Construction and Building" and "Sanitary Conveniences," by Mr. H. G. WHYATT, borough engineer of Grimsby, and one on "Iron, Steel and Fireproof Construction," by Mr. S. G. N. MANN. They are models of cheapness, and contain a surprising amount of information. There are occasional omissions which will no doubt be filled up in future editions.

The Town Hall Committee of Walsall Corporation have reported that the town clerk has been instructed to defend an action brought by Messrs. Armitage & Hodgson, of Leeds, the contractors for the new municipal buildings, claiming 2,846*l.*, an amount which had been in dispute, the committee contending that the architect had not been authorised to order the work to be done, and that they had a counterclaim for non-completion of the contract within the specified time. If necessary the committee authorised proceedings to recover from the architect all costs, damages and expenses the Council may incur.

THE ISLE OF THE SAINTS.

A LITTLE way off the south-east coast of Mull, nearly opposite Loch Buie, lies a small group of islands, barren and desolate in appearance, offering no obvious attraction to the tourist hurrying past in search of better-known objects of interest. Yet to those who know about them, these rocky islets are almost as much to be revered as the sacred soil of Iona. These are the Garveloch Isles, on the most southerly of which, the Eilean na Naomh, or Island of the Saints, are the remains of the only beehive cells now existing in Scotland. Even to the antiquarian they are often only a name, owing to the difficulty of landing on their inhospitable shores. The prevailing south-west wind with its accompanying swell makes it frequently impossible safely to get close to the islands; and even when this is accomplished, it is no easy matter to gain a footing on the slippery rocks that shelve away straight to the water's edge.

Here, then, we landed, says a correspondent of the *Glasgow Herald*, pilgrims of the twentieth century, to gaze on the relics of the sixth, and to marvel at their state of preservation after being for 1,400 years buffeted by the storms and lashed by the rains of the Western seas. The ruins of the settlement cover a good deal of ground, and are situated in a sheltered hollow on the eastern side of the island. A short distance up from the shore can be traced the remains of the wall surrounding the burial-place, and inside this is one stone at least with the incised cross still quite distinct. Near by is another enclosure with portions of ancient buildings, which were probably the dwellings of the monks, and just beside these is the chapel, strongly built of unmortared slabs of slate. Outside its wall lies the only sculptured stone to be seen, a large flat one like those at Iona, well covered with a beautiful leaf design. A little higher up than the chapel is another small building, which might have been the cell of the abbot, and on the slope leading down again to the shore are two beehive cells. They are wonderfully perfect, and it is quite easy to see their proportions and manner of building, thanks, no doubt, to the solitude and inaccessibility of the islands, which have saved these ruins from being used as a quarry, as so many others have been. The stones, like those of the chapel, are laid on each other without any mortar, but so skilfully that the rounded form of the cell is still preserved after all these centuries. The two cells are joined together by a low passage, which is probably lower now than it was originally, owing to the ground having risen round it. The peculiar interest of these ruins lies in the fact that they are the only buildings of the age of Columba now existing, and give a very good idea of what the plan of the monastery of Iona must have been, though the original buildings there were made of wood and wattles, and so have entirely disappeared. The monastery on Hinba is believed to have been the first founded after Iona, and Columba himself had a cell there, though it cannot be identified with any of those we have described. From passages in Adamnan's narrative it seems to have stood on higher ground than the monastery, and possibly being more exposed has more quickly fallen into decay. The settlement, according to Skene, "seems to have been especially connected with the penitential discipline of the order, and a place of retirement for those who wished to lead a more solitary life. Thus we find Columba on one occasion visiting Hinba, and ordering that the penitents should enjoy some indulgence in respect of food, which one of the penitents in that place, a certain Neman, refused to accept." I am afraid there are not many among us nowadays who would wish for a more solitary life than that of Iona, or in any case who would not thankfully grasp at any "indulgence" in diet or penance.

On a knoll above the landing-place, and overlooking the monastery, is a small enclosure of rough stones, within which are two upright slabs of slate, standing as if marking the head and foot of a grave, on one of which is an incised cross. Skene makes no mention of this, unless we are to identify it with "an elevated piece of level ground where the fragments of a cross were found," which is supposed to be the spot on which Ernan, the head of the monastery and uncle to Columba, died. Local tradition, however, asserts that this enclosure is the burial-place of the mother of St. Columba, which makes it very interesting. Being quite apart from the ordinary burying-ground of the monastery seems to mark it as the grave of some one of importance; besides which it is improbable that in any case a woman would be buried within the monastery bounds, even though she were the mother of the founder. One could not easily

find a more peaceful spot for one's dust to rest in, all its associations being hallowed by the thoughts of the pious recluses who sought a retreat there, and there is a dignity and pathos about the little enclosure, with its simple cross, that appeals to the imagination. It seems as if those who have strenuously lived and worked in any place left the impression of their thoughts and ideals behind them, and in the atmosphere of Hinba and Iona surely something lingers of the mystic purity and spirituality of the souls who sought a refuge there long ago from "the world, the flesh and the devil." In these days of feverish haste and "crowded life" it is good to turn aside to such haunts of peaceful memory, where the relics of the deathless past speak to us "things unutterable" that go to our "soul's soul."

THE CHURCH OF SAN CLEMENTE.

ALL visitors to the Eternal City know San Clemente—the beautiful basilica not far from the Colosseum, whose curious frescoes are among the sights of Rome, whose equally curious history goes back to the early days of Christianity, when Clement was accounted among the "fellow labourers" of St. Paul, and rose to be the third successor of St. Peter. But for more than thirty years, says the Rome correspondent of the *Morning Post*, no one has set foot in the oldest and lowest part of the building, the portion which lies beneath the two successive churches. Among the last persons who descended into that now impenetrable recess were King Edward VII. and Queen Alexandra, then Prince and Princess of Wales, whose visit is commemorated by two photographs, one presented by them and dated 1872, the other representing the late Father Mullooly in the act of showing them the place. Shortly afterwards water began to enter the chambers at the base of San Clemente. The municipal drainage scheme for the adjacent Via di San Giovanni had failed to take into account the fact that the lowest part of that edifice lay at a considerable distance beneath the level of the drain pipes. Accordingly the water rapidly covered the basement, as it also covered the substructures of the low-lying Colosseum, and, while the latter was speedily drained, the basilica has ever since remained standing in several feet of water, more in winter, less in the dry summer months.

Now, at last, a scheme has been prepared by Mr. C. A. Mills, an English gentleman resident in Rome, for the drainage of the church at a cost of about 1,500*l.* by means of pipes laid some 30 feet or 40 feet below the road and connecting with the municipal drainage near the Colosseum. The municipality has approved the scheme; two committees, one of residents in Rome, the other of various distinguished persons in the British Empire and America, have been formed, and people of all religious opinions have consented to join in a work which promises to be of the greatest archaeological importance.

The Pope has bestowed a warm encomium on this proposal to rescue the substructures of the church from destruction—for they are of tufa and are being gradually affected by the action of the water—and to make the oratory and house of the saint once more accessible to the public. Anglicans and others are anxious for the recovery of this valuable fragment of Early Christian life and for the preservation of the frescoes in the second church, on which the damp is having a gradual but fatal influence. Archaeologists are desirous of seeing what King Edward VII. was almost the last to see—the now submerged Temple of Mithras, established perhaps in the desecrated oratory of Clement after his exile, a shrine larger than that at Ostia, and one which still has the altar and the statue of the god in their original places, just as they were discovered by the late Father Mullooly in 1860. There, too, are portions of an ancient wall, possibly that of Servius Tullius, one of whose gates, the Porta Querquetulana, mentioned by the Elder Pliny, is known to have been situated between the Esquiline and the Cælian, of which Querquetulanus was an older name. Thus the Rome of the kings and of the emperors, the worship of Christ and the cult of Mithras, the house of the noble Clement and the oratory where he prayed after his conversion, all meet at this subterranean spot.

The historic importance of San Clemente has been further increased by Mgr. Wilpert's recent investigations of the frescoes in the second church. That learned scholar has shown in a pamphlet published three months ago that Father Mullooly's surmises as to the subjects of some of the

dim paintings on the walls were inaccurate. He believes, for example, that in the two frescoes, which have hitherto been supposed to represent the Martyrdom of St. Catherine and the Council which Pope Zosimus held in this church in 417 for the condemnation of the Pelagian heresy, we have two-thirds of a magnificent Last Judgment, dating from the middle of the ninth century, and therefore two centuries older than the oldest known picture of that scene, that which is preserved on the island of Reichenau, in the Lake of Constance. Mgr. Wilpert asks, Who was the author of this fresco, and what did he copy? One may reply, May he not have been the famous Methodios, one of the two apostles of the Bulgarians, who, together with his companion Cyril, came to Rome at that very period, bearing the relics of San Clemente, exiled and martyred seven centuries earlier by Trajan on the shores of the stormy Euxine? We know that Methodios converted Prince Boris of Bulgaria to Christianity by means of a most realistic picture of the Day of Judgment which he set before the eyes of the terrified monarch. Is it not conceivable that this was the model and its artist the painter of the Last Judgment still to be seen at San Clemente? While San Clemente is closely connected with the conversion of the Bulgarians—an event which profoundly influences to this hour the politics of the Balkan Peninsula—it is also intimately associated with Ireland. When in 1873 the law for the suppression of religious houses passed the Italian Parliament the Irish Dominicans of San Clemente were able to show that they had been in possession of that edifice, together with San Sisto on the Via Appia, since the reign of Charles II. Accordingly San Clemente was spared, and a genial Irishman is still its rector.

THE MILAN EXHIBITION.

THE following awards for engravings, etchings and lithographs have been given in the decorative arts court of the British section at the above exhibition:—

Grand Prix.—“Collectivity” of the International Society of Sculptors, Painters and Gravers.

Separate awards received by members of the I.S. of S.P.G. exhibiting in the “Collectivity”:—Diplôme d'Honneur.—Sir Charles Holroyd, A. Legros, Joseph Pennell. Gold Medal.—Sidney Lee, Frank Mura, A. W. Seaby. Silver Medal.—Morley Fletcher, Oliver Hall, A. S. Hartrick, L. H. Shannon, E. J. Sullivan. Bronze Medal.—H. M. Livens.

Separate awards received by other artists exhibiting with the Society in the above “Collectivity”:—Grand Prix.—F. Brangwyn, Lucien Pissarro. Diplôme d'Honneur.—Alfred East. Gold Medal.—E. S. Lawrenson, Arthur Rackham, Charles Ricketts. Silver Medal.—J. D. Batten, Ollson-Nordfelt. Bronze Medal.—Henry Becker. Hon. Mention.—Robert Spence.

The following awards have been bestowed on British exhibitors at the exhibition, exclusive of those in the scholastic court:—Grand prix, 99; diplomas of honour, 53; gold medals, 100; silver medals, 53; bronze medals, 20; honourable mention, 8. The general average for the whole exhibition was four awards to every five exhibitors, but this was exceeded in the British section, the average being 1.09 award per exhibitor.

TREATMENT OF STONEMWORK.

AT the last meeting of the Sheffield Society of Architects and Surveyors Mr. W. J. Hale read a paper on “The Architectural Treatment of Stonework.” It was explained that any treatment of materials, to be satisfactory, must take into account the nature, qualities and limitations of that material. The first thing, therefore, is to consider the composition and special characteristics of stone. The most common building stones found in the Sheffield district are sandstones. Limestone, which is also used to a less degree, consists practically of grains of silica or carbonate of lime, cemented together by a matrix of silica acid, or carbonate of lime, or carbonate of magnesia, and therefore depends for cohesion upon the power of the cementing material. Two characteristics which make stone useful as a building material are its weight and its power to resist a crushing force. One of the charms of stonework lies in its capacity to receive the impress of the individual man's power and thought. Its surface can be made to reflect his mind by the manual labour he expends upon it, and the monotony of a modelled and cast material is avoided. Although stone is granular it is generally more or less laminated, and care

should be taken to place the blocks in the building so that the edges only may be exposed to the weather, otherwise the stone will more easily decay and the surface peel off. Jointing should be carefully considered, acute angles avoided and right angles used where possible.

The arch utilises in its shape and design the prominent characteristics of stone, its weight and its power to resist crushing force, and the introduction of this feature caused one of the greatest changes in architecture. A further development of the arch is the groined or vaulted ceiling, which relies for stability upon the same qualities, and has also certain fire-resisting powers, the absence of which in the wooden roofs of the nave and choir of Selby Abbey we must all deplore. One method of beautifying the stone is by mouldings, i.e. the working of surfaces or edges of the stones with ridges and hollows of various forms, in order to obtain parallel lines of light and shadow, and, as variety is the object here, it is well to get variety also in the size of the light and dark strips.

One of the problems of the day with regard to architecture in stone is the modern street front. Surely the craze for carrying tons of stone on sheets of plate-glass has gone far enough. Any building, to be satisfactory, must not only have supports strong enough to carry the superimposed weight, but the supports must look strong enough for their burden. Any treatment of stone should in the first place be examined as to whether or not it takes advantage of the inherent qualities of the material, and secondly, as to whether it satisfies man's trained artistic perceptions. If it stands these tests, then, although the particular feature may not be capable of defence on strictly utilitarian grounds, still it has justified its existence.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

THE annual general meeting of the above Society was held at the Society's rooms on the 8th inst., when the secretary read the fortieth annual report of the Council.

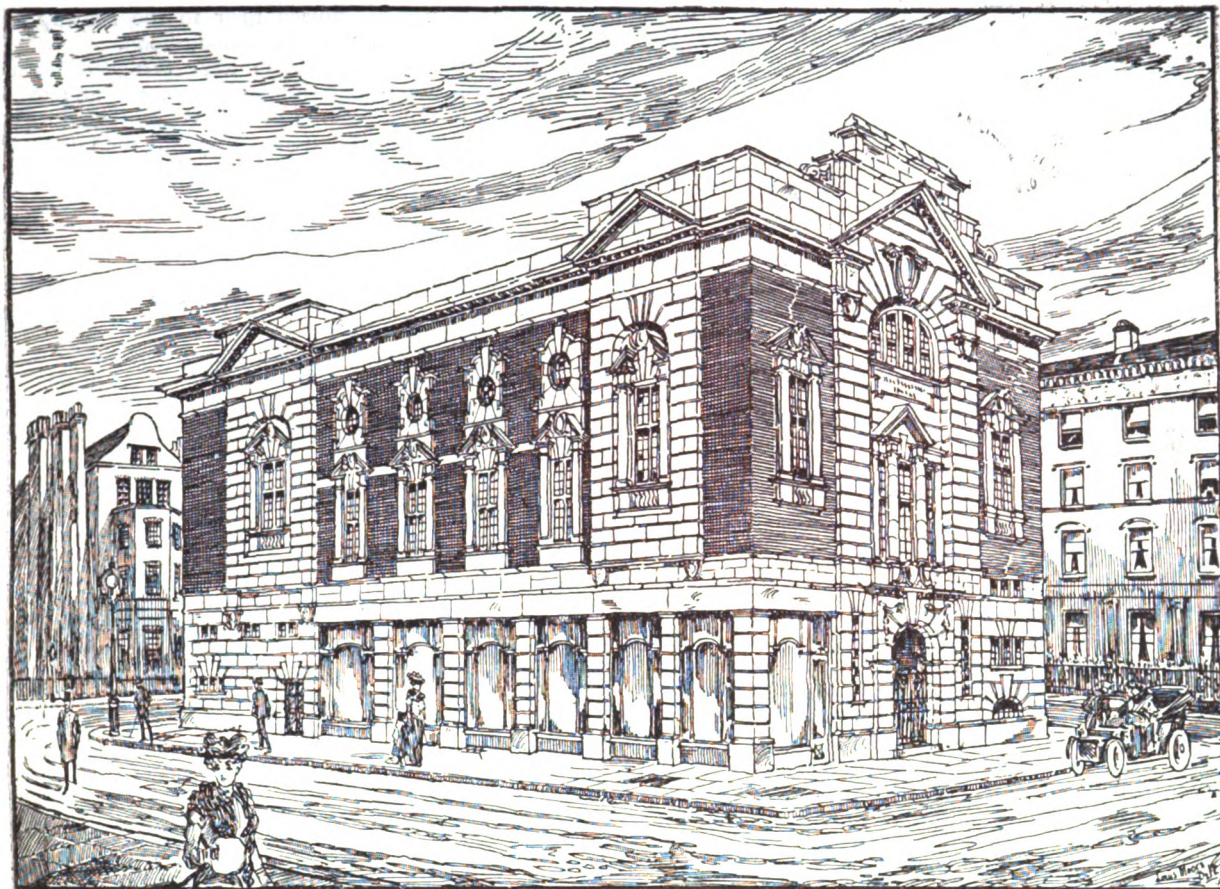
The total membership on April 30, 1906, was 174—namely, 29 honorary members, 77 members and 68 Associates—as against a membership of 174 last year. During the year the following members have been elected:—Members: Messrs. G. A. Beaumont, F. E. P. Edwards and R. F. Farrar. Associates: Messrs. N. Fisher and C. Hardman.

During the year 1905-6 there have been nine general meetings and fourteen Council meetings. Mr. Oglesby resigned his office of hon. secretary to the Society on August 15, 1905, and the Council, in accepting his resignation, expressed their thanks for the efficient manner in which he had discharged the duties of the office.

The Society's silver medal and prize of five guineas given by the President for the best set of measured drawings was awarded to Mr. W. P. Rylatt. The prize of three guineas offered by the Society for sketching was given to Mr. W. P. Rylatt. The prize of three guineas offered by the Society for the best set of designs for subjects selected by the Council was awarded to Mr. H. Carnelly. The prize for construction, of three guineas, offered by the Society was awarded to Mr. W. P. Rylatt. The prize for an essay of two guineas offered by the Society was awarded to Mr. W. Whitehead. The Halden prize, of the value of four guineas, was awarded to Mr. W. Whitehead. The School of Architecture, under the auspices of the Society, in conjunction with the Leeds Institute and the Leeds University, is proving of great advantage to the Associates in preparing them in the subjects required for the R.I.B.A. examinations. In May the local Associates of the R.I.B.A. petitioned the Society to express to the R.I.B.A. their great indignation at the present large influx of members to the Royal Institute direct, which was supported by the Council and forwarded to the R.I.B.A.

Competitive Designs were recently obtained for the Jeppe High School, Johannesburg, and Johannesburg College. The awards are as follows:—1, design No. 4, Mr. John Ralston, Pretoria; 2, design No. 6, Messrs. Watt and partners, Pretoria; 3, design No. 19, Mr. E. C. Choinier, Johannesburg. Johannesburg College—1, design No. 8, Mr. John Ralston, Pretoria; 2, design No. 26, Messrs. W. Leck & F. Einley, Johannesburg; 3, design No. 39, Messrs. Macintosh & Moffat, Johannesburg.

LONDON'S NEW CONCERT HALL, GREAT PORTLAND STREET, W.



AS we have already announced, a successor to St. James's Hall is to be erected. The London County Council have granted the necessary certificate for its erection, the contractors have already cleared the site, and building operations have begun. The site secured for the purpose is that of the disused and now demolished St. Paul's Church, which occupied an "island" space in Great Portland Street, a few yards from Queen's Hall. St. Paul's Church was presented by the Duke of Devonshire to the State in 1764, and was erected on a site of the "Marylebone basin," which was a reservoir of water for the supply of that part of the Metropolis. As a place of worship St. Paul's has been deserted for the last two years, and Lord Howard de Walden bought the edifice from the Ecclesiastical Commissioners, thus purchasing what his ancestor had presented as a gift to the State. The main entrance to the new hall will be in Great Portland Street. The approach will lead through a large vestibule, on one side of which is the box office, on the other a cloak-room for men, a spacious smoking lounge and lavatory accommodation being provided underneath the vestibule. From the vestibule the main staircase will lead to a grand foyer on the first-floor level, from which doors open into the hall. The lower part of the walls of the entrance, vestibule, staircase and foyer will be lined with marble. A separate entrance and staircase lead from the Great Portland Street end of Gildea Street to the balcony, in addition to which there will be four exits from the hall at the end further from Great Portland Street, thus assuring ample means of entrance and egress. The hall will comprise two levels, the area or floor space seating about 600, and the balcony seating about 600, making a total of 1,200 seats, without reckoning the orchestra and platform at the end of the hall, which will accommodate a full-sized choir, and not including the space allotted to instrumentalists. At the back of the orchestra will be the organ. The orchestra is approached by two separate staircases, quite distinct from those leading to the hall itself. Retiring-rooms for artists, both men and ladies, and for the chorus adjoin these staircases. Caretaker's rooms and offices for management and staff are placed in the upper part of the building.

It need hardly be said that every effort is being made to render the acoustic properties of the hall as perfect as

possible. Special attention, too, is being paid to the questions of heating and ventilation, to insure that both the audience and the artists may rely on even temperature in all weathers, with no risk of draughts. The doors and internal fittings of the hall will be of mahogany, and copper is extensively introduced in the fittings and in the rail which protects the front of the balcony. The decorations will be found to differ considerably from those generally adopted in places of public entertainment. The treatment throughout is on simpler lines—plain panelling, with broadly treated mouldings taking the place of enrichments and ornamentations in relief on ceilings and walls. The hall will thus depend greatly for its effect on the colour scheme which is now being designed for it. The concert hall forms part of a scheme which provides for spacious show-rooms on the ground-floor fronting Great Portland Street and the adjoining Langham Street on the south. The exterior design of the building is Classic in detail; the frontages will be of brick with Portland stone dressings. The architects for the general scheme are Messrs. Joseph & Smith, 83 Queen Street, E.C. The architect specially retained by the promoters to advise as to the constructions, arrangements, fittings and decorations, and all other points of detail which have, in a building of this description to be specially considered, is Mr. Arthur Blomfield Jackson, 3 New Square, Lincoln's Inn, W.C., who was formerly in partnership with the late Mr. C. J. Phipps, who made the plans of the Queen's Hall, and with whom he was associated in the designing of His Majesty's Theatre. Since Mr. Phipps's death he has been engaged as architect in connection with many buildings of a public character, amongst which may be mentioned the following theatres, the work in some cases amounting practically to rebuilding, St. James's, Savoy, Shaftesbury, Lyric and Garrick.

A New Library is proposed to be erected at the Sheffield University. An octagonal skeleton has been put up to show the effect the contemplated building is likely to have on Weston Park, which adjoins. It is feared that some of the trees in the corner will have to come down on account of lighting requirements.

NOTES AND COMMENTS.

THREE weeks ago we referred to the dissatisfaction of the members of the Liverpool Academy at the manner of selection adopted by a committee for the exhibition at the Royal Institution. The style of painting which found approval was only supported by a minority of the members. The paintings to be seen are therefore not representative of the art of Liverpool as a whole. The selection committee was, however, elected by the members, and it could not therefore be considered as inspired by the views of outsiders. It cannot be said that the discontent has come to an end, for last week the following resolution was adopted by a majority of three:—"We consider that the members of the selection committee have by their wholesale rejections outraged the good feeling formerly existing amongst the members of the Academy, and have made the exhibition one which does not represent the general body of the members and associates."

THE invasion of the sea, although it is deplored, does not strike the public mind with sufficient force when the loss of land is confined to fields along the coast which are not always cultivated, and which it would be costly to make fertile. But when an important resort like Brighton is threatened, then the danger appeals to thousands. Rottingdean is close to Brighton, and a great many people walk or drive to it every year. For some time past the cliffs have been succumbing to the waves, and a great many tons of chalk fall. The authorities have two alternatives in dealing with the matter. They must either adopt a costly system of protection at the spot which appears to be most dangerous, or they must divert the road and leave the cliffs to their fate. Coast protection has of late years given rise to many forms of groin. The county surveyor for East Sussex considers that the OWEN-CASE system of ferro-concrete is best adapted for use at Rottingdean. Each groin would have to be 400 feet in length, and as it is proposed to place them about 500 feet apart, twelve would be required. As each is estimated to cost 354*l.* 10*s.*, the groins alone would amount to 4,254*l.* It is also recommended to give a batten of 1 in 6 to the cliffs, and that work would cost 3,000*l.* The engineer's fees and contingencies may be calculated at 746*l.*, making the total cost 8,000*l.* That is a large sum to be expended for the preservation of little over a mile of cliff. The subject was discussed on Tuesday, when it was found that there was a good deal of opposition. The battening of the cliff was thought unnecessary by some members, while others held that the number of groins should be largely increased. Eventually it was decided to refer the subject back to the committee, especially as it was expected that the Royal Commission might make some recommendations about constituting a special authority for dealing with the coast.

ILLUSTRATIONS.

THE LONDON COUNTY COUNCIL FIRE BRIGADE STATIONS,
BRIXTON AND HERNE HILL.

THE transformation which has taken place at Herne Hill during recent years is of a very remarkable character, and a notable addition to the new buildings which have sprung up in a neighbourhood, that within the memory of many now living was quite of a rural character, is the fine fire-brigade station situated at the lower end of Herne Hill, near to Half Moon Lane and contiguous to the South-Eastern and Chatham and Dover Railway Station. One side of the erection abuts upon the district postal sorting office, while a block of flats almost adjoins on the other side. It will be remembered that what was known as the Abbey stood close to the site formerly, and the house where JOHN RUSKIN lived for many years is but a few yards distant, while his name is perpetuated in connection with the narrow thoroughfare, formerly known as Love Lane, but now designated Ruskin Walk.

The other building, of a similar character, is situated in Gresham Road, Brixton, on a plot of land where once stood an iron church near to the railway line, and in a densely populated neighbourhood.

Both fire brigade stations were designed by and erected under the superintendence of the architect to the London County Council, Mr. W. E. RILEY. They are faced with Portland stone as regards the lower part, while the upper portion is of fine quality red bricks, and the roof is covered in with Welsh green slates.

HOUSE AT CHAPELTOWN, LEEDS.

CATHEDRAL SERIES.—MANCHESTER: SOUTH-EAST CORNER, SHOWING OLD CHAPTER-HOUSE.

THE earlier of the two chapter-houses of Manchester Cathedral was one of the works which RALPH LANGLEY had executed. He was appointed to the office of warden in the cathedral church in 1465, and he caused several important changes to be undertaken in the cathedral. The chapter-house is partly octagonal, and it is lighted by four windows. From its position the chapter-house was likely to have served as a sanctuary.

DETAILS OF OLD BEAUPRE, GLAMORGANSHIRE.

OLD Beaupré Castle, or Manor House, is situated about fifteen miles from Cardiff, in the south of Glamorganshire. The greater portion is in ruins, but the most interesting details are to be found in the beautiful porch and the entrance gateway shown on the accompanying drawing. There is an inscription on the porch which states that "RYCHARDE BASSETT, having to wyf KATHERINE, daughter to Sir THOMAS JOHNS, Knight, bwyllt this porch with the tonnes (wedding dowry) in Ano 1600. His yeres 65, his wyf 55." Over the centre of the entrance gateway is an inscription in Welsh, "Gwell-ang-ay-na-chwilydd, 1586." The porch is described in GWILT's Encyclopædia, and is three storeys in height. The house formerly belonged to the CECILS, but has been in the possession of the BASSETTS for a great number of years. A portion of the buildings, consisting of about half a dozen rooms, are occupied by a farmer, who acts as caretaker, but the remainder of the buildings are in a ruinous state.

BURFORD PRIORY, OXON.

A SMALL priory or hospital existed at Burford as early as 1291, but it was rebuilt in the reign of King HENRY VIII. by HARMAN, the king's barber. It then passed into the hands of Sir LAWRENCE TANFIELD, who built a handsome and commodious residence in the Elizabethan style, occupying more than twice the space of the present building, but a small portion of the earlier edifice built by HARMAN was allowed to remain. After Sir LAWRENCE TANFIELD died it belonged to the LENTHALLS, who lived there from 1636 to 1808. The building was again altered and enlarged in 1808. Sir LAWRENCE TANFIELD, knight, was at one time Lord Chief Justice, and in Burford Church is a beautiful monument erected to his memory. The building is not at present occupied, except by a caretaker, most of the floors being missing, and some portions of the plaster ceilings, which are of beautiful design, having fallen down. The chapel is of the most peculiar design, the windows being filled in with tracery, but the detail and mouldings are Classic. The arcade shown in the drawing leads from the reception-room to the chapel, and the flat roof over was used as a private way for the family from the ball-room on the first floor to the gallery. The drawing is by Mr. W. EATON, A.R.I.B.A.

THE building containing the London and County Bank, St. James's Street, S.W., of which an illustration appeared last week, is known as "Connaught House." The bank premises on the ground floor, as shown in our illustration, were designed and carried out by Messrs. THOMPSON & WALFORD, of Leadenhall Buildings, E.C., the bank architects.

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1. The first part of the document is a list of names and their corresponding addresses. The names are: J. A. B. C. D. E. F. G. H. I. J. K. L. M. N. O. P. Q. R. S. T. U. V. W. X. Y. Z. The addresses are: 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

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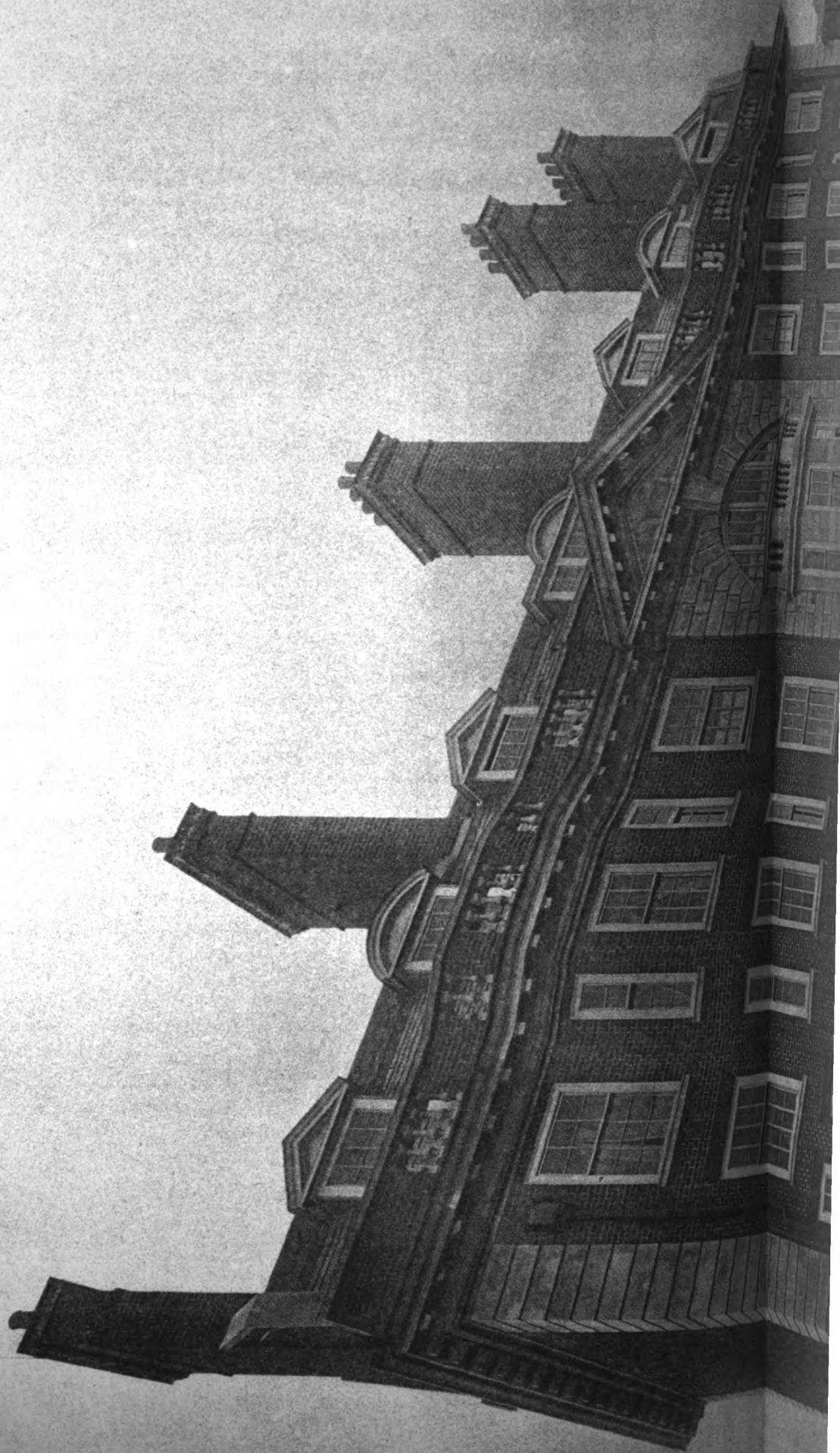
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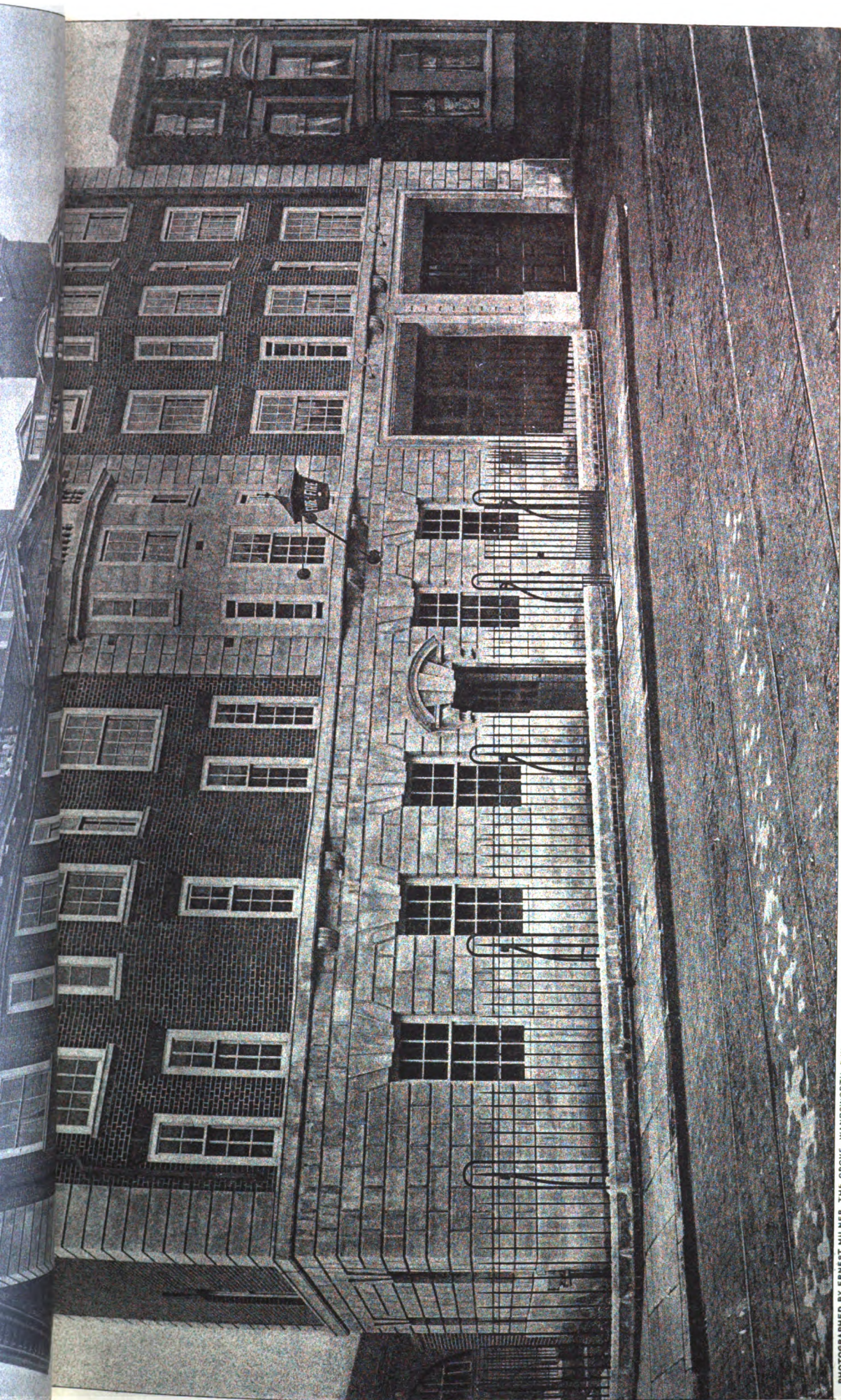
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The Architect, Nov. 16th 1906



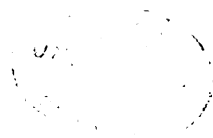


PHOTOGRAPHED BY ERNEST MILNER, THE GROVE, WANDSWORTH, S.W.

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LONDON COUNTY COUNCIL FIRE BRIGADE STATION, GRESHAM ROAD, BRIXTON, S.W.

W. E. RILEY, F.R.I.B.A., Architect.





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HOUSE AT CHAPELTOWN, LEEDS.
PERCY ROBINSON, F.R.I.B.A., ARCHT.

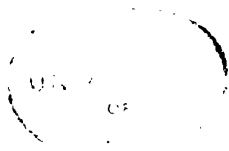
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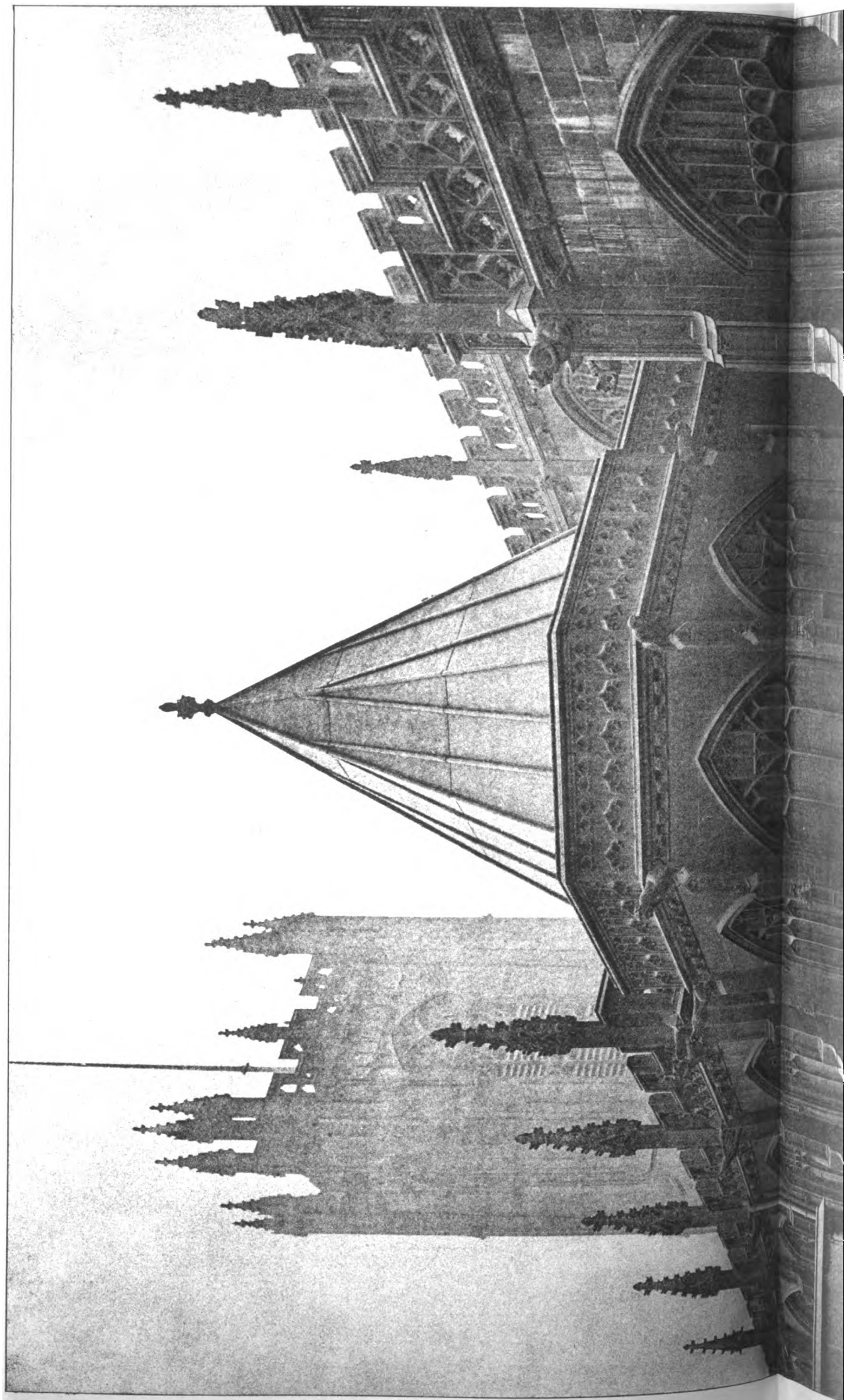
PHOTOGRAPHED BY ERNEST MILNER. THE GROVE, WANDSWORTH, S.W.

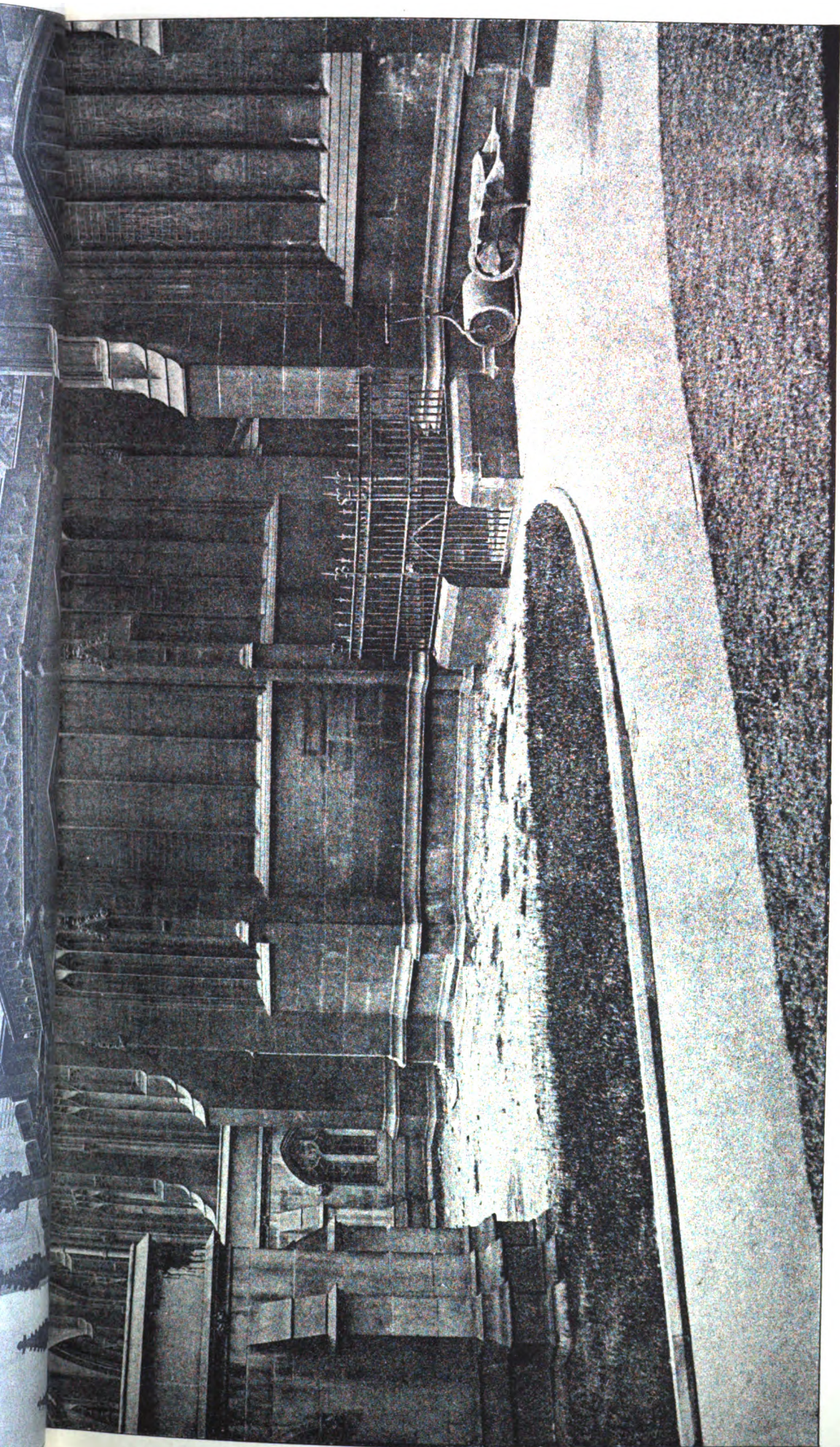
INK PHOTO. BRIDGE & CO. 4 & 5 EAST HADDON STREET, FETTER LANE, E.C.

LONDON COUNTY COUNCIL FIRE BRIGADE STATION, HERNE HILL, S.E.



The Architect, Nov. 16th 1906.



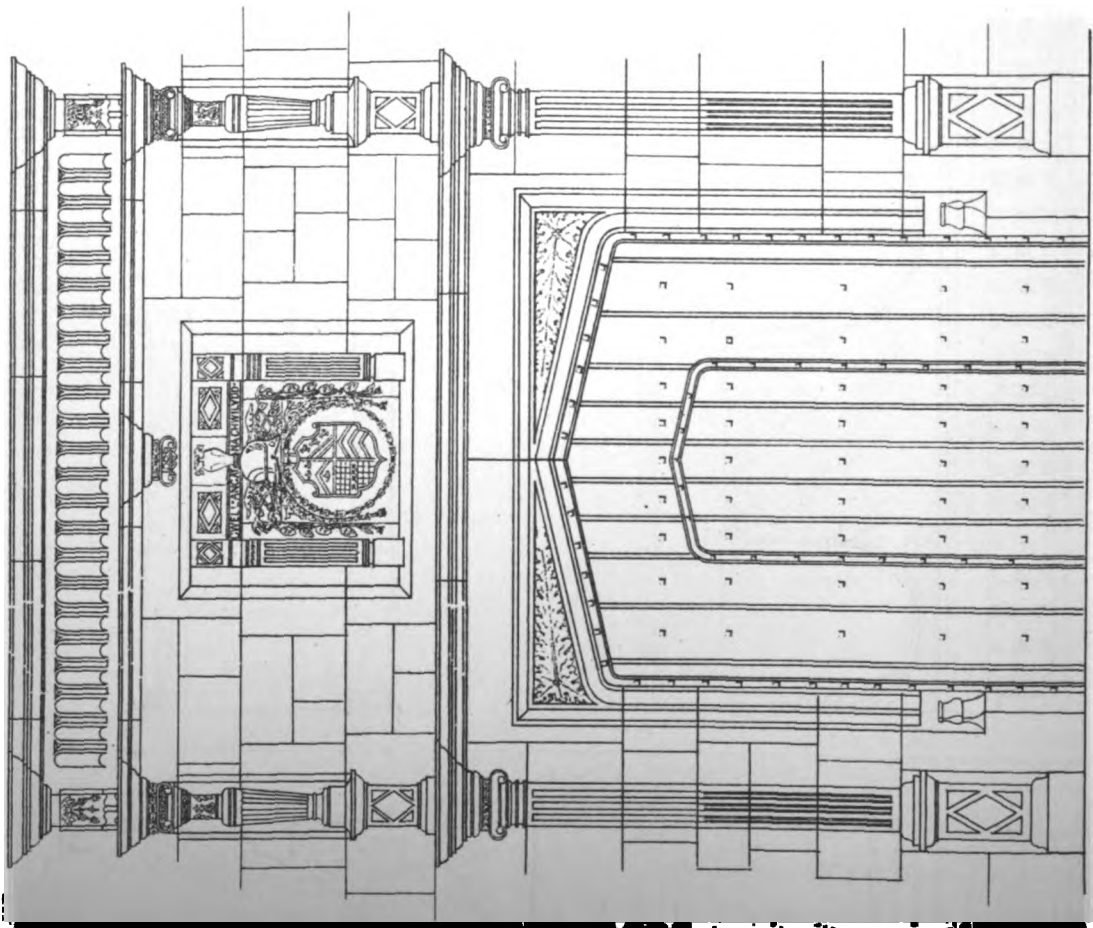


IN. PHOTO. J. P. MACQUE. S. C. L. 4 5 EAST HINDING STREET FETTER LANE. E. C.

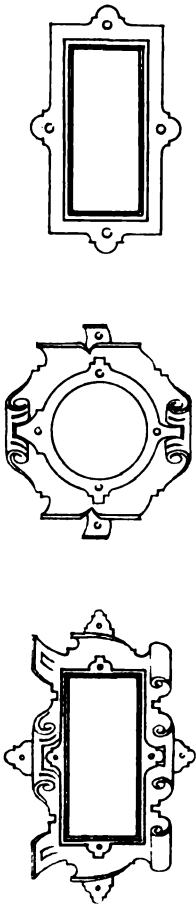
CATHEDRAL SERIES, No. 584.—MANCHESTER: SOUTH-EAST CORNER, SHOWING OLD CHAPTER-HOUSE.



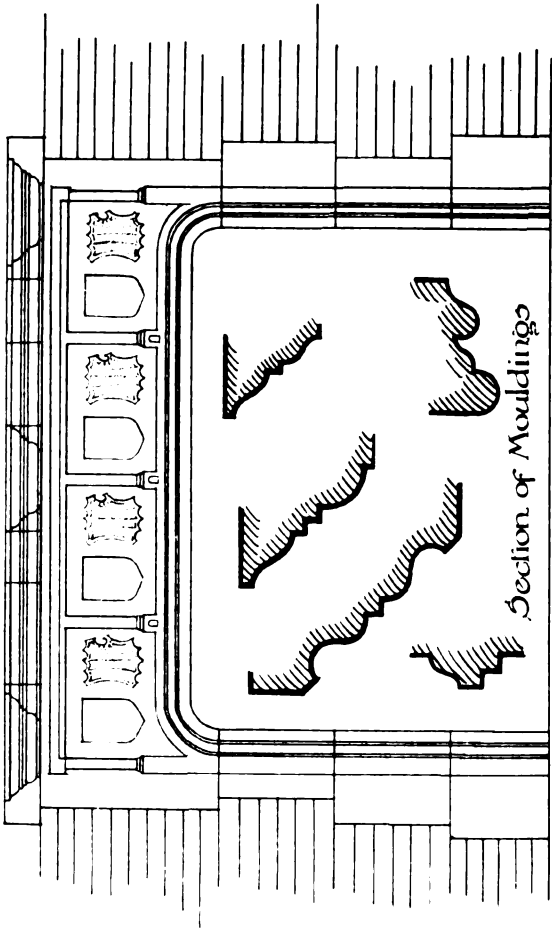
DETAILS OF OLD BEAUPRÉ Glamorganshire



Elevation of Front Entrance

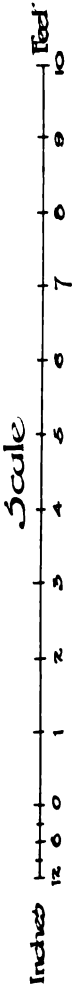


Panels to Porch



Elevation of Fireplace

Section of Mouldings



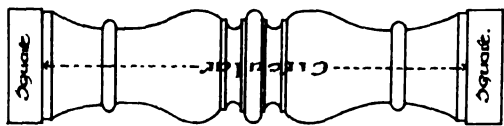
Measured and drawn
by W. Eaton & R. D. A.

PHOTO LITHO SIMPSON & CO. 1, 2 & 3 EAST HARDING STREET, LONDON, E.C.

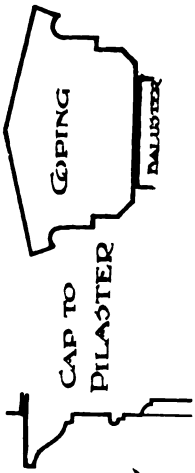
BURFORD PRIORY · OXON

ARCADE FROM RECEPTION ROOM TO CHAPEL

Feet



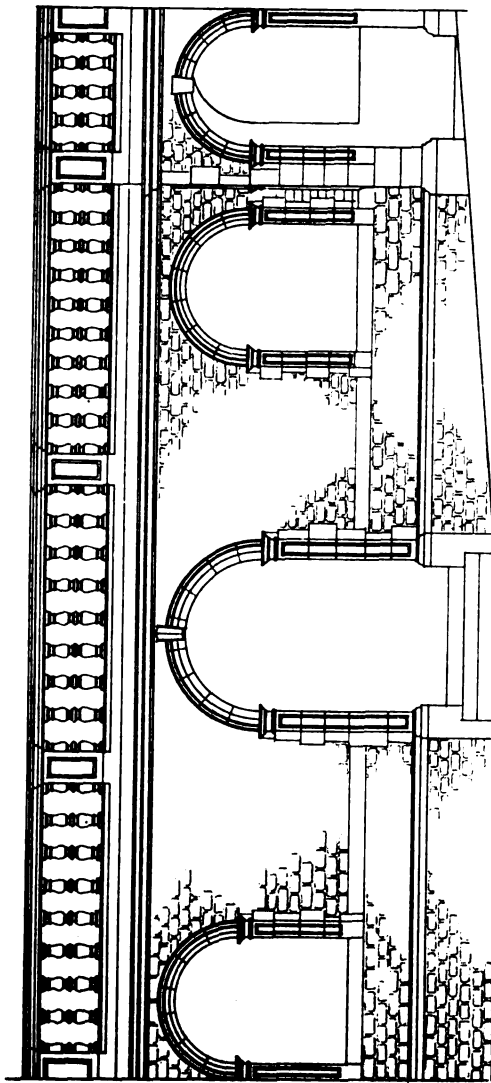
BALUSTER



CAP TO
PILASTER

COPING

BALUSTER



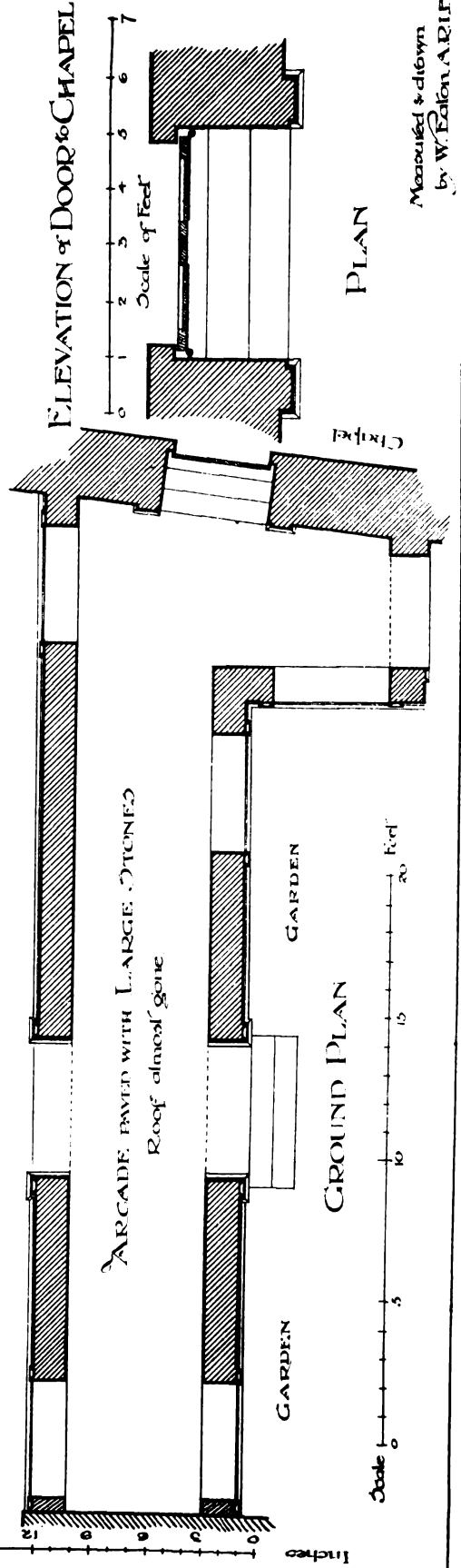
ELEVATION TO GARDEN

SCALE



KEY STONE
CORNICE

PLINTH



GROUND PLAN

Scale 0 5 10 15 20 Feet

ELEVATION OF DOOR TO CHAPEL

Scale of Feet 0 1 2 3 4 5 6 7

PLAN

Measured & drawn
by W. E. ALLEN A.R.P.A.

(100)

THE SOCIETY OF ARCHITECTS.*

I GREET you for the second year in succession on being elected by your unanimous vote to fill the highest office in the Society. I appreciate to the fullest extent the compliment implied and the honour which you have conferred upon me. Looking forward with certainty to your active co-operation in the interests of the Society, I anticipate that the forthcoming year will be one of pleasure and profit to all concerned. We as a Society are essentially a progressive body; not content with a mere existence, we are constantly developing and continually growing in numbers and influence, so that every year brings greater responsibilities to those charged with the administration of our affairs. The annual report is still fresh in our memories, and I need not therefore be retrospective; rather I would endeavour to show in what directions we may in my opinion still further extend the sphere of utility of our Society. It is very possible that my views, which are of course personal and are not intended to bind the Council in any way, may not meet with universal approval, but those who do not agree with me will at any rate feel that these views are put forward with a genuine desire for the welfare of the Society and with a view of inviting criticism. If you do not like my proposals, have you anything better to suggest? That is the test, and that is what I want—to get at something which shall help us as a Society, not only to benefit ourselves, but in some measure the general body of practitioners and the community also.

The Need for Wider Representation.

In the first place, it is obvious to me that, gratifying as our rapid growth in membership has been, we ought to be in a much greater degree representative of those whose interests we seek to serve, if we are to use to their fullest extent those powers conferred upon us by our incorporation, and which are extremely far-reaching. That there is a very large field for our operations in this direction is shown by the fact that a comparatively small proportion of the architects of the United Kingdom are attached to any architectural body, though the majority of them are, it is understood, in favour of some form of registration or federation—that is, the binding of themselves together for the advancement of their art and for mutual support and assistance.

We have recently set our house in order by so revising our articles of association as to place us in a position for dealing with schemes of development in many directions, and it should not be difficult to evolve some plan which would result in placing the Society in the forefront on this question of representation. This, of course, cannot be done without considerable expenditure of time and money. We have during the last few years been liberal in our donations to deserving objects and institutions outside, yet within the scope of our Society, our contributions amounting to several hundreds of pounds. I venture to suggest that we should for a time, while not losing sight of obligations in the directions indicated, devote whatever reasonable sum may be necessary in extending and consolidating the Society itself, with a view to materially extending the benefits of membership and of attracting to our ranks those who so far have held aloof from any architectural institution.

We have to remember that there are two sides to the question of membership in a society, viz. how it will benefit a member and how a member can benefit a society. It is naturally the first question which appeals most strongly to a potential member when it comes to the point, and we must be in a position to emphasise the fact, that not only does every fresh adherent bring us one step nearer to the realisation of our ambitions as regards federation, but that such adherent will himself secure certain privileges.

Affiliation with a properly constituted body such as ours, is in itself of value, seeing that a member thereby becomes one of a corporate body possessed of powers collectively, which can be utilised in the interests of a single member, but which he individually and alone is unable to exercise. This, however, to the popular mind, is a more or less abstract privilege, and does not appeal to a candidate in the same degree as tangible advantages, such as the prestige of affiliation with a Society with a membership running into thousands, permanent and convenient headquarters, a good loan library and other privileges which will occur to you.

The principle which should guide us in formulating some comprehensive scheme is, I think, to be found in the

Registration Bill which we are promoting. There it is provided that persons who can prove certain qualifications are entitled to be thereby recognised as architects, and presumably, therefore, fit for membership in any institution or body of architects, presuming, of course, that the qualifications required of him under the Bill are such as would admit of this.

Let us apply this principle to ourselves. Here we have a Society whose regulations set forth that persons possessing certain qualifications are eligible for membership, subject to the approval of the governing body, and after that to the exigencies of the members' ballot. I think we ought, first of all, to take steps to make these regulations and the work of the Society known to such as are fully qualified, and to cordially invite their co-operation in its work by becoming members. Do not let me be misunderstood. I am not advocating the throwing open of the Society's doors to all and sundry, but I say distinctly, if a man is qualified by our rules, and of good standing with members in his district, we are not fulfilling our duty if we do not at least give him an opportunity of becoming acquainted with our objects with a view to securing his adherence.

It is extremely probable that there are many unattached architects of good standing and reputation among their fellow men who would be glad to give their adherence to our Society were an invitation extended to them, and I cannot see anything derogatory in such a course. We are founded for certain specific purposes which cannot be fulfilled unless we secure the support of all those who are qualified for membership. If, for instance, we are to make any practical progress with registration (to take only one subject) we must have at our back the united force of a large majority of the profession expressed in membership of the Society, and not merely an expression of friendly support from gentlemen sitting on the fence. My proposal, to put it briefly, is that pending statutory registration we should take steps to enlarge our borders so as to become, by force of numbers, the recognised registering body for the profession. I hope my remarks may not be misconstrued; my meaning is, that whilst our Council should continue to exercise due vigilance and discretion as in the past in admitting members, we ought also to use every legitimate means in our power to extend our membership. This is where the ordinary member's opportunity comes in of doing practical service to the Society by his personal influence.

It is a very encouraging sign when members in far distant lands adopt in a practical manner the principles of federation under local government, and band themselves together with a view of promoting the interests of their Society in the locality concerned. This is what has happened in South Africa, where a branch of the Society has been formed, with a centre at Johannesburg, which has had powers delegated to it sufficiently wide to admit of its rendering the Society and the profession locally the utmost service.

There is hardly a corner of the Empire where architects foregather but you find amongst them a member of the Society, and there is little doubt that, as time goes on, the good example set by Johannesburg will spread to other parts of South Africa, and from there to further parts of the Empire and distant lands.

The Society of Architects has outgrown the expectation of its original promoters, and it is a pleasant reflection that where legislation has been required to benefit the members of our profession this Society, ever since it came into existence, has been foremost in every progressive movement.

In my opinion the time has arrived for us to seriously consider the desirability of making application for a charter as well as altering our style and title, and, under certain reservations, making examination obligatory as a qualification for membership.

I sincerely hope that all the members of the Society may be disposed to favour development on these lines, and be prepared to use their best endeavours in conducting and carrying through the necessary details.

My earnest wish is that our Society will do all in its power to more unite our members throughout the British Empire, and that at no distant date it may take its place, by favour of His Most Excellent Majesty King Edward VII., among the Royal Societies of the United Kingdom. This would probably meet with the approval of our members practising in the United Kingdom as well as of those in the British Dominions beyond the seas.

Registration.

Continued effort on definite lines must bring success. Keep to the path, do not be led away by side issues.

* Presidential address delivered by Mr. A. E. Pridmore on the 15th inst.

Remember that no scheme of registration which does not embrace the whole profession will be of the slightest use.

A proposal which has for its basis the restriction of Parliamentary powers to any single institution cannot, under the present condition of things, have the least chance of securing the approval of Parliament, which, in my opinion, would not grant a monopoly, whereas the principle expressed in the Society's Bill is one which, I venture to say, would meet with general approval. Now, as ever, the opposition, so far as our Society is concerned, is from within the profession and is confined principally to questions of detail. The principle has long been admitted and acted upon by all concerned, and while there always will be differences of opinion on minor matters, it is satisfactory to feel that much of the old misunderstanding has been lived down, and there appears to be every prospect of further favourable development in the future. In the meantime, it only remains for us to go on with our Bill.

The Coming Generation.

An important part of the Society's work is its sphere of utility to the younger members of the profession, and it is common on such occasions as the present to paint in more or less glowing colours an attractive picture of architecture as a profession, and to endeavour to inculcate high ideals and aims in the minds of those who are on the threshold of their career.

I thoroughly sympathise with those who by such means seek to uphold the traditions of a great profession, but I think it would be much kinder to the rising generation to plainly point out that under the present want of system the profession is overcrowded to such a degree that many able men find it extremely difficult to make a living, and I should strongly advise parents or guardians to think twice before launching their sons or daughters into it. Unless persons have a special aptitude for the work, it would be much better for all concerned that they should turn their attention to some other calling where their abilities would have wider scope and more hope of reward.

I know of course that in theory "artists" are or are supposed to be above such petty considerations as money matters, and that no one should enter the profession of architecture unless impelled thereto by the love of his art; but we have to take things as they are, and it is undoubtedly a fact that a very large majority of persons enter the profession with the same honourable object as they would take up any other calling, viz. the making of a livelihood.

While persons continue to flock into the profession as at present, so long there will be a wide field for an institution which will cater for their special needs, and it should be for us to consider and formulate some comprehensive scheme for meeting them.

We have already done something in the institution of valuable studentships and scholarships, and a circulating technical library, but a very great deal remains to be accomplished before we can hope to do more than touch the fringe of that large field which should form a valuable "feeder" to the Society.

Qualification by Examination.

In connection with this, I might refer to our qualifying examination for membership, the requirements of which are of so high a standard that, although we get very many inquiries for the syllabus, comparatively few find themselves able to take the examination without some years of careful preparation, and a still smaller proportion succeed in satisfying the examiners at one sitting, while many are relegated wholly.

Where, as in our profession, tests of proficiency are voluntary, and are not essential as a qualification to practice, there is very little inducement beyond the stimulus of self-improvement for a candidate to sit for an examination which, whether at the Institute or the Society, is merely a qualification for membership. The latter, under certain conditions and limitations, is also obtainable by other means, and until registration is accomplished, and a test of some kind is compulsory on all who propose to practice, there will always be those who will not trouble to sit for a voluntary test, or who, having done so and been relegated, will not proceed further, but are content to commence practice with very little training. The consequence is the profession is crowded with mediocrity and the properly qualified man has to suffer accordingly.

Here, again, is an opportunity for us. Let us in this, as in the membership question, actively adopt the principle of our Registration Bill, and devise some wide system which

will ultimately result in attracting every architectural student to the Society's examination as a matter of course. Possibly some scheme of graded certificates of proficiency issued under the auspices of the Society would prove of value; indeed, the Council have before them at the moment a proposition by the secretary the principle of which they have adopted, and which, when the details are worked out, will probably be found to solve to some extent our difficulties in dealing with this important problem. Here again, our members have an opportunity of forwarding the interests of the Society in a practical manner by encouraging and giving their pupils and assistants, as a matter of course, an opportunity of availing themselves of such privileges as the Society is able to offer.

Sociability a Factor in Architecture.

Before leaving our Society's affairs to touch briefly upon matters of wider interest, I would like to insist upon one aspect which to my mind is somewhat overlooked. I refer to the question of sociability as a factor in architecture.

The ordinary meetings, while pleasant enough in their way, are necessarily, or I would rather say unnecessarily, stiff and ceremonious, and while we may go away from them edified and instructed, we are not as members of a Society, brought very much nearer to each other in the bonds of acquaintance or friendship. The time for mutual intercourse is brief, and we have no opportunity for getting to really know each other.

I think much of the distrust and apathy which undoubtedly prevails in the profession is due to our insularity, and it is a matter of common experience that a closer acquaintance with our fellow men usually results to our profit in many ways; for instance, the friendly exchange of ideas and experience on points of practice is most helpful.

In the States I understand that the periodical gatherings of members of the various architectural societies, or "chapters," as they are called, are frequently preceded or followed by a social function, and that with no loss of dignity or efficiency; in fact, it has been found that the attendance at the meetings has largely increased where provision has been made for mind and body at the same time.

Meetings in this country are generally held about 8 P.M., with the result that when a man closes down for the day he has usually a couple of hours or so to put in somehow and somewhere previous to the meeting, and he probably solves the problem by going home, or he stays in town and drifts into some other more attractive centre for that evening.

Now if the meetings were held somewhat earlier, it would be possible to adjourn at a reasonable hour and spend some little time in friendly chat. This system would also have the advantage of catering for those who come from a distance and who have to catch an early train.

It is, I think, generally admitted that the value of the recent successful architectural congress, and of many other similar gatherings, lies in the opportunities given for social intercourse, which probably do more to achieve the objects which the promoters have in view than any other part of the proceedings.

In a Society where the members are so widely separated as is the case with ours, it behoves us, I think, to do all we can to give our members an opportunity of meeting together on the lines I have indicated.

I do not wish to labour the point unduly, but we have, as a Society, certain objects to carry out which we can only successfully do by personal co-operation, and how can we secure this unless we make opportunities of getting into close touch with each other?

Keeping Abreast of the Times.

There is one other point I would like to mention, the necessity for an architect in active practice to keep abreast of the times on the latest details of construction and materials, important legal decisions and other matters. How is a busy man to do this when all his time is taken up in the infinity of details which go to make up a practice of any dimensions?

The tendency of the day is to specialise, and there are in every branch of the profession men who have made a particular line their exclusive study, and who would probably be prepared, on terms, to give other architects collectively the benefit of their experiences on the lines of the "post graduate" lectures which are so successfully given in connection with other professions, notably the medical.

I should think there are many architects, whether members of the Society or not, who would be glad to avail themselves of such opportunities of obtaining the latest information on technical and scientific details or problems.

I hope that some of the ideas which I have ventured to put forward for your consideration may be developed and realised to some extent, at any rate, during my second term of office, and that we may look forward at no distant date to the time when the Society may be the centre of much practical assistance to its members.

Benevolence and Charity.

I spoke just now of apathy in the profession, and I think I was justified in doing so when I consider the attitude adopted by the profession towards such an object as the Architects' Benevolent Society. Architects have been individually passing through a time of great difficulty and depression; the population is not increasing at the same ratio as heretofore, and therefore, proportionately so many extra buildings are not required for housing. It is estimated that there are over 60,000 houses to let in the London district, which does not allow of numerous new buildings being erected, that will show a reasonable profit on the outlay. Architects, on the other hand, are becoming more numerous, and where sufficient work is to come from is a serious question that they will have to face. Registration would have a restrictive effect, and prevent overcrowding and consequent distress. Architects, however, are not unmindful of their obligations to their less fortunate brethren. Why then is it that the Benevolent Fund is not supported by more than one-quarter of the profession? Would it not seem that this is due to the fact that the work of the Benevolent Society is practically unknown, or that it is too limited in its scope? If so the remedy evidently lies in reorganisation on a more liberal scale.

The benefit of the Fund might be extended to include not only those in immediate distress, but also those who may wish to make provision against contingencies, such as sickness and temporary loss of employment. This would be a real boon to many, and it would appeal to every grade. It is stated in the report of the Benevolent Society that the expenses incurred in the present method of making the Fund known are not justified by results. Then why not try another way which would cost practically nothing? For instance, at every social function or other suitable occasion the charity box might go round, and similar boxes be permanently placed on the premises of the various architectural societies. It appears to me to be false modesty to hide the fact that in our profession, as in others, there is a great deal of poverty and distress, and why should we hesitate to put forward the claims of the Benevolent Fund at all proper seasons? Some years ago it was proposed to hold a festival dinner, when our Society appointed stewards who would doubtless have taken up a welcome addition to the funds, but for some reason the function was abandoned. I hope, however, it may be revived, and that on every possible occasion the claims of the Benevolent Society may be remembered.

Salaried Officials and Private Practice.

Just now there is a revival of the outcry against the principle involved in salaried officials undertaking private practice, more especially the carrying out by them of large public buildings. No doubt there is a real grievance here, but it is aggravated where a local authority places its architectural work in the hands of an official whose training has not been in any sense architectural. In such cases the local authorities endeavour to appeal to the ratepayers, as against the architects, on the ground of an apparent saving in the rates in having no outside architect's fees to pay, whereas, as a matter of fact, it is very often the case that the building is found to have cost a great deal more than would have been the case by employing an outside architect. The latter is often in the unfortunate position of having to contribute to the support of a department which is robbing him of his legitimate field of operation, and he suffers as a ratepayer as well as an architect.

It is, of course, to some extent the architect's own fault, as even local authorities could be dealt with under an Act of Parliament. The outcry is against the system, and not against the individual, who would frequently prefer not to have the additional responsibilities thrust upon him and who is often placed thereby in a very difficult position in regard to his relations with his brother professionals in the district.

The bitter cry of the architect is heard not only in

England but in Ireland, where, however, steps have been taken in the right direction by the insertion of a clause in the Labourers Act which prevents the employment of an unqualified person as architect for the purposes of the Act. Grateful as we are for the concession, it does not go to the root of the matter, and nothing short of registration will protect the architect from unfair competition by public bodies as well as individuals, or the public from having thrust upon them buildings which can in some instances only be characterised as monstrosities.

Light and Air.

An important decision of the House of Lords on "light and air" was given on October 25 last in the action of *Jolly v. Kine*, the parties in this case being the owners or occupiers of two adjoining plots of land forming portions of a building estate situate at Acton, in the county of Middlesex. The arguments were chiefly based on the well-known case of *Colls v. the Home and Colonial Stores*, at the conclusion of which, it will be remembered, Mr. Colls was presented by the Society with a tangible token of their appreciation of his efforts on a question of principle. The Lord Chancellor, in *Jolly v. Kine*, expressed his profound regret that, in a matter comparatively small, such enormous costs had been incurred. It behoves architects, therefore, to be very careful and cautious when even a trivial question of "light and air" is raised by a neighbouring owner or occupier, as it might land a client into a serious position. The case is too long to refer to at length in my address, and those interested in legal matters should read the report of the case in full.

Some years ago the Society petitioned the then Lord Chancellor (Lord Halsbury) with a view of obtaining an amendment of the law on the lines which are found to work so well in Scotland, where it is possible to ascertain exactly beforehand the limit to which an adjoining owner can go, so saving the consequent risk and expense of an injunction.

Possibly an interview with the present Lord Chancellor might do something towards bringing about a more common-sense method than at present prevails in England.

Selby Abbey.

I am much grieved that one of the noblest Norman abbeys in our land, and which I visited during the present year, has been destroyed by fire. The loss of Selby Abbey is a sad and national disaster; however, let us hope that measured drawings have been made of all its beautiful details, and that the abbey may be wisely restored in all its pristine grandeur. Our historical buildings should now be carefully surveyed so that fire may not rob us of any other architectural treasure, and it would be well if some more definite arrangements than at present prevail in some districts could be made for their safeguarding from damage by fire or other cause, and that those who have charge of these buildings should see that they are insured to their fullest value.

Public Street Improvements.

The London County Council has decided to erect new offices on the Surrey bank of the Thames, and architects will be invited to submit competitive designs. I sincerely hope that many of our members will compete, and that one of them will be the architect entrusted with the erection of this important building.

The Strand widening cannot at present be properly called an improvement; the wretched appearance of the old buildings on either side of Kingsway for all this time is one of the most miserable sights of London. Probably nothing much will be done in the way of development until the impossible restrictions and stipulations are removed, as no one would venture to invest huge sums of money and at the same time be under the control and caprice of the Council.

Public confidence in the London County Council has been rudely shaken, and will not easily be restored in connection with schemes for public improvement of any magnitude.

The flanks of street buildings which soar higher than adjoining buildings are often ill-considered, and a street is sometimes shorn of its beauty by the ugly flank of the higher building. In some cases "light and air" are responsible for this, or the architect had counted on the adjoining lower building being some day rebuilt as high as the one he has erected, but this does not always take place, and so the unsightly flank of perhaps a very handsome frontage may remain an eyesore for a generation to gaze upon.

Government Control of Art.

Recently, I accompanied the Lord Mayor of London on his visit to Paris, and was delighted beyond expression with the magnificent streets and majestic public buildings. Paris is in appearance quite a new city when compared with London, and the law evidently allows the Parisians to acquire properties for public purposes with much greater facility than here, and hence the splendid manner in which the streets are planned. I went to Paris as a member of the Court of Common Council of the City of London, and also as President of this Society, and in the latter capacity received a most cordial reception from most of our eminent and distinguished *confrères*. Art is much revered and appreciated in France, and a Minister of Fine Arts is appointed to preside over its destinies—we might do well to imitate and have our art treasures and historical monuments controlled by the Government. A visit to Paris next summer by the Society would be a highly interesting outing, and is worthy of being carefully considered at an early date in order to learn if the suggestion meets with the general approval of the members.

Our Art.

The architect of to-day can hold his own with the greatest men of the past, and our builders can build quicker and better than of old, as evidenced by many of our new public buildings. As an artist the architect of to-day is far in advance of the painter or sculptor, his production rightfully receiving the well-earned encomiums of an appreciative public to a greater degree than ever before. We may compare some of our buildings to-day with the monumental Egyptian, the refined Grecian, the stern Roman, the picturesque Mediaeval, the palatial Renaissance, and feel that as artists we are not decadent, but are daily adding dignity to our cities and towns.

There are encouraging signs on every hand that the public is growing more and more discerning in the matter of architecture and the public taste more cultivated, and we, and those who are to follow us, must be prepared to rise to the occasion, so that we may leave lasting memorials of our art, not forgetting that beauty in architecture is one of the most valuable assets which a community can possess. What is it that attracts people to the continental cities and centres, but the opportunities of seeing art treasures housed in magnificent buildings? There is nothing in the world which appeals more to the best instinct of the mind, or which awakens nobler thoughts and aspirations than the contemplation of some striking erection or group of buildings, and in various parts of the kingdom our predecessors have left us many noble specimens of their art.

Only to few it is given to rear the stately buildings which shall be the pride of Englishmen now and always, but we all share in that love of our art which is the distinguishing characteristic of every architect, and hence we find ourselves to-day banded together in societies and institutions, each working towards the same end, if by different ways, hoping for the day when all these active agencies may be united in one common bond with but one aim, the true advancement of our art.

FILING DRAWINGS.

IN the offices of American architects and engineers the system of filing and indexing drawings and other documents connected with works is carried to an extent beyond that adopted in England. The numerous patented cabinets, drawers, &c., give efficient aid in the arrangements. The Chief Engineer of the Board of Water Supply, New York, has issued a volume on the subject for the use of his assistants.

In the first place, standard sizes have to be adopted not only for drawings, but for field notes, diagrams, specification forms, calculations for details, letters, reports and official communications. Filing is to follow a prescribed method. The following directions are given about filing and indexing drawings, and they are worthy of attention in offices where a large number of drawings must be preserved:—

One man in each office shall be held responsible for the proper filing of the drawings, and he alone should be allowed to put away drawings. In each office all drawings received from other offices should pass first through the hands of a designated man, possessed of sufficient knowledge, who will see that each drawing is properly introduced into the system of filing and indexing or otherwise

attended to. Drawings are to be filed in the plan cases provided for the purpose and indexed on 3 by 5-inch cards, which will be kept in convenient cabinets. Cases and drawers will be numbered.

Besides bearing a case and drawer number to show where it is filed, each drawing will be given an accession number which will distinguish it from all other drawings and consequently be the convenient and certain designation for the drawings in computations, correspondence or conversation. Accession sheets will contain complete description and record of every drawing made or acquired by an office of the bureau for permanent filing. There is a double space across the accession sheet for each drawing.

An accession number shall be given to a drawing as soon as it is well started, at any rate as soon as any computations are made relating to it. The exact title and description can be filled out on the accession sheet when they are determined. This applies to the paper drawing. The tracing of a drawing is given the number already taken, unless the drawing contains important matters not traced, or is traced on more than one tracing, or the original paper drawing is kept permanently, in which case a new number is taken for the tracing. The paper drawing should be endorsed:—See tracing of same number, or Traced partly as Acc. —, as the case may be. If a drawing is revised, the new drawing should be given a new accession number and date and marked, Revised from Acc. —, and its predecessor should be marked, Superseded by Acc. —. The same notes should be written in the accession sheet under remarks and on the index cards.

Temporary accession sheets, properly numbered on the line for each drawing, will be kept in each drafting office, on which the draftsmen can make entries as needed. When a temporary sheet is filled, a new sheet properly numbered in advance will be substituted. The filled sheet should promptly be checked and corrected, and then sent to headquarters or some other office having a large flat-plate typewriter, where it will be neatly copied in triplicate. One copy with the original will be returned, the second sent to the appropriate department office and the third retained at headquarters. These copies will be kept in suitable loose-leaf covers. After filing the final accession sheets and copies, the temporary sheets may be destroyed.

As soon as a drawing which is to be kept permanently in any board of water supply office is received from some other board office, it is to be indexed under its original accession number and not reaccessioned. Each drawing therefore will bear but one accession number by which it can always be identified in whichever office it may be.

The accession number is to be put in ink on each drawing in its lower right corner. The entry is to be made on the accession sheet, as directed below.

Under Title, write the title of the drawing in full, excepting the two lines which appear on all drawings made in board offices:—City of New York. Board of Water Supply. Under Description, write briefly enough about the drawing to tell what it shows. Do not repeat what is in the title, but supplement it. Abbreviations which can be readily interpreted may be used here. In the column headed Purpose of Drawing, use the following abbreviations:—L, land plan or map; P, preliminary drawing or study; C, contract drawing; W, working drawing; E, estimate cross-section, progress diagram or similar drawing; R, record drawing (of completed construction work); Z, foreign drawing used for reference. Under Kind of Paper and Size in Inches, use the following abbreviations on the upper line and on the lower line write the outside dimensions of the drawing:—W, white paper; B, brown paper; T, tracing cloth; T P, tracing paper; W P, white print; G P, gray or green print; B P, blue print; Black, black print; Lith, lithograph; Cr-Sec, cross-section paper or cloth; T Cr-Sec, tracing cross-section paper or cloth; Pro, profile paper; T Pro, tracing profile paper; Neg, Vandyke negative; M, mounted on cloth (to be written after other designation).

The different departments will be designated by letters in filing, indexing and accessioning drawings, and will have colours given for distinguishing index cards. Foreign drawings, meaning those originating outside of this Board's jurisdiction, will be designated by an X. Divisions will use their department colours and be designated by letters. Each department office and each division will accession all its drawings independently, each having a series of numbers beginning at 1; but each department office will place before the number its department letter. Each division will place its division letters before its number. Thus:—491, S 5440

and F 721 indicate drawings originated in the headquarters, southern aqueduct and filtration department offices respectively, and NE 299 is the accession number of a drawing originated in one of the offices of the esopus division of the northern aqueduct department. Division offices will supply section offices with accession numbers by sending temporary accession sheets properly numbered in advance. Section office drawings will be accessioned as though they originated at division offices; that is, a section office will not have an independent series of numbers, but will use blocks of numbers in the division series.

Computations.—For survey computations, such as stadia notes and traverse tables, and for estimates for payments under contracts, special sheets are provided.

Each assistant engaged upon general computations will be furnished with an individual computation cover holding standard punched computation sheets $8\frac{1}{2}$ inches by 11 inches in size, with printed blank heading. All general computations must be made in ink on these sheets, using one side only, except as otherwise directed by a department or division engineer. The margin on the left of each sheet must be kept blank. This will make it possible to get a print of any sheet if needed, and thus save copying. Computers are expected to provide themselves with fountain pens for black and for red ink. Corrections shall always be in red, no erasures being made. Carter's Raven black ink is suitable for obtaining blue prints.

A carefully selected and classified list of subjects for file numbers of computations has been prepared. This classification of subjects, with an explanation of its use, will be issued as a separate publication, and assistants should study it so that computations may be made exactly in accordance with it. In this system numbers and letters are used to designate subjects and the nature of computations upon them. The list thus becomes an index showing the order of filing of computations, differing from the usual index in that it exists before the matter to be indexed is composed and constitutes a mould in which the matter is cast. The index therefore exists early in the work, instead of being delayed in formation until it is of little use.

In order that the index shall remain a true one, however, it is necessary that it shall be rigidly followed, even when seemingly strained. To keep the work uniform a competent engineer should be designated in each office to supervise the selection of the file numbers and do the filing.

Before beginning any computation the "file No." given in the index of subjects should be ascertained and inserted in the sheet, after which, under "Subject," should be written the classified subject and subdivision and, briefly and clearly, the nature of the computations. If the list of subjects seems inadequate or inapplicable in any case the attention of the engineer in charge should be called to the matter so that a suggestion for improving the list may be sent to headquarters and necessary additions or modifications made.

When as is usual a number of computations of various sorts are necessary to solve a comprehensive problem, the individual computations should be general in their application and elementary so far as possible, so that the individual computations may be useful in solving other problems. For such cases the results only need be collected and used in solving the specific problem. In order, however, to show under what conditions the individual computations have been made, a reference to the main problem that occasioned them is to be placed, by subject and by file and accession numbers, after the heading "Made in Connection with —"

In the space for "Acc. No." on each computation sheet is to be placed the department and division letters, followed by a hyphen, the letter denoting the computer and the figures giving the serial number of the computation sheets used by the computer in question.

In each office, in addition to the engineer in charge of filing of computations, a man is to be designated to keep a stock of numbered sheets for each man belonging to the office. This rule has been found necessary to insure against duplication of numbers and uncertainty as to the next consecutive number. Temporary men or men doing little computing need not be given letters but may use sheets belonging to the men under whom they are working.

The signature of the person making the computation and of the one checking, as well as the date on which the computations are made, should be inserted in the places provided on each sheet. In writing the date the month should be indicated by the first three letters of its name and not by a figure. In case it requires more than one sheet to complete a computation on a given subject, the sheets are

to be numbered consecutively 1, 2, 3, &c., in the space, Sheet No., and the whole number of sheets in the computation is to be inserted; but if one sheet only is used, these spaces should be filled with a dash.

Sufficient explanatory notes should be inserted to make each computation perfectly clear, and whenever data are taken from another sheet its file and accession numbers should be given in brackets. The letters indicating department and division should be omitted unless the reference is to a sheet of another department or division. Whenever referring to a drawing, use its accession number. A summary of the principal results of a computation should be made when it is evident that such a summary would be convenient for reference.

Under no condition shall a sheet be destroyed. If for any reason a sheet should become useless the prefix X, meaning superseded, is to be inserted before the file number and the sheet turned in with the other sheets at the proper time. "Superseded" should also be written or stamped in red across the face. Superseded sheets are to be filed in a separate book.

During the day while computations are being made or checked, assistants may, for convenience, remove the sheets from their individual computation books, but at night all sheets must be returned to the covers and fastened in. Avoid, so far as possible, having sheets with computations lying around loose. Suitable binders or covers are provided for the permanent filing of computation sheets, in which completed sheets will be arranged according to the system. Each binder should be plainly marked so as to show the file numbers included in it. These will be distinguished as reference computation books.

Whenever sheets have been completed and checked, they must be turned in promptly to the engineer in charge of filing computations, who will file them in reference computation books. Sheets which have been thus filed should seldom be removed, and then only under such regulations for refiling correctly as the engineer in charge of filing may find suitable. Sheets fastened in covers must be turned with care to avoid damage.

If it should be found that an error has been made in any computation, the engineer in charge must be notified at once, so that the mistake may be rectified in all places affected. Be accurate, systematic and neat. Do not waste time on unnecessary refinement. Do not use more decimals than the accuracy of the data and the necessities of the result make advisable. Use slide rules, computing machines, logarithms and diagrams whenever their use will economise time and secure sufficient accuracy. Checking, especially of important computations, must be done independently. Going over the other man's figures is not checking. Errors in data, methods, deductions or judgment must be detected as well as blunders in mathematics.

Make it a rule to use tabular form for computations whenever possible. A little preliminary thought will usually show a method of tabulation and the computation will be more quickly done, more likely correct and much more easy of reference, besides enabling additions to be made to widen the scope of the results. Mathematical work which can be done by slide rule or computing machine should be left off the sheets. The tabulation will indicate the process followed. Be brief. Use judiciously abbreviations which are sufficiently self-evident. Do not repeat unnecessarily. Do not waste time stating matters of common knowledge such as value of P and what it means, or deductions of formulæ which can be readily found in text-books.

IVORY IN THE ARTS.*

THE history of ivory carving goes back to the most remote antiquity. Centuries before the Christian era we can point to examples in the days of the earliest dynasties of Assyria and Egypt. Far earlier still, recent discoveries in the cave dwellings of the south of France have placed us in possession of the work of a people who existed at so remote an epoch that we cannot assign them any definite date in the countless ages which have passed since man existed, but must content ourselves—at least in this brief survey—with the appellation prehistoric. The earliest classical writers and the pages of Scripture teem with references to the use of ivory, its profusion and the esteem in which it was held as a decorative material. Most

* From the Cantor lecture, by Alfred Maskell, F.S.A., published in the *Journal of the Society of Arts*.

familiar of very many in the Bible which I might quote is the reference to the great ivory throne, overlaid with pure gold, made for King Solomon by the skilled workmen of Hiram, king of Tyre, of which it is said that "there was not the like made in any kingdom." And again, in Ezekiel, "the company of the Ashurites made their benches of ivory brought out of the isles of Chittim." We have not many remains of the work of the fine periods of ancient Greek and Roman art, but of the time of the Consulates of the Roman Empire there have been preserved somewhere about fifty of the remarkable ivory plaques called consular diptychs, which are a unique and valuable contribution to the history of those times. Then, again, after the establishment of Christianity and during the centuries of unrest and strife which we are accustomed to call the Dark Ages—when there is an almost complete absence of monumental sculpture, and a default in almost every description of learning and art—at least an absence of examples—it is to ivory that we owe the uninterrupted preservation of types and traditions from Classic times to the Renaissance. It will be best—as our time is limited—to take each section separately, with a few words of introduction as we proceed. You will bear in mind that I shall confine myself to salient points and typical instances.

The caves of the Dordogne have yielded the remarkable examples of the work of our prehistoric forefathers, of which I shall show you a few specimens. Who they were and at what date this people existed is a question impossible to answer. The investigations of geologists can deduce only some shadowy period in the distant ages of a far-off antiquity in comparison with which the building of the earliest of the Pyramids—and that is at least a thousand years before the time of Abraham—is almost recent. It is certain that the climate of their days was very different from that of Southern Europe now, and there appears to be some evidence to connect these cave-men with the present Esquimaux. Certainly they lived at an age when the mammoth and elephant and the reindeer roamed freely over those regions which are now part of civilised France. Many fragments of carvings and engraving on ivory and bone have been found. The first which I throw on the screen shows you—if you look carefully—a sketch of a mammoth drawn upon a slab of ivory, the product of that very animal. Here are some more sketches on reindeer-horn and ivory. It is impossible to help characterising these designs and carvings as absolutely artistic in conception and execution. The intuitive knowledge of these primitive peoples who in other respects were not removed from savages is nothing less than natural genius, with an innate comprehension of that which usually requires years of training and cultivation. Art is, after all, a convention and not a direct imitation of nature. Yet here we find, at a remote period of man's existence, this uncultivated savage instinctively adopting a convention, a system, a mannerism which no previous evolution could have led up to. It would not be surprising if we found of their handicraft that they had a taste for modelling in some plastic material—for instance, this figure of a seal—still our admiration and astonishment would not be so excited as when we are led to examine these examples of absolutely clever and artistic sketching. They are not drawn as a child would draw them, nor even in the manner which a sailor uses when he engraves figures of men and women, ships and animals in outline on sperm-whale teeth. Here is a specimen of such an engraved tooth. They are drawn by the hand of a genius who in his way had nothing to learn, but from whose work his fellow artists uncounted generations later could derive much profit.

I leave with regret these extracts from the notebooks of our primitive ancestors. Many more exist of almost equal interest upon which much might be said. The question arises—and it is a natural one—are they genuine? I can only say that so far they have been subjected to the most searching investigations of numbers of distinguished men, amongst others, Sir John Lubbock, now Lord Avebury, and though forgeries of such things have been made, as of everything else, these, so far as we can be certain of anything, are authentic.

The history of ancient Assyria is almost entirely wanting, and of its civilisation and magnificent cities there remain only mounds, and heaps of debris covering the ruins which for three thousand years and more remained unknown, until in our own days our countryman, Layard, at length unearthed them. Most people are acquainted with the marvellous and gigantic monuments, the huge winged bulls dug up by him, now in the British Museum. But how many

notice the two small cases close by, containing about a hundred fragments of beautiful ivory sculpture from the same excavations? Many of them were in such a fragile condition that they separated into flakes and almost fell to pieces, and probably all would have done so before long had it not occurred to their discoverer to restore to the ivory the gelatinous matter which had dried up in the course of centuries. This was successfully done by boiling in a solution of gelatine and alcohol. Here are some examples. I may say that in the case of many of the specimens time and perhaps fire have considerably altered them, so that some resemble ebony, basalt, sandstone, even opal, rather than ivory. Their age? Well, perhaps as old as Nineveh itself, say 2,000 years B.C., and there are fragments of a similar kind from Abydos, which are possibly 2,000 years older still. It gives terribly to think, as the French say, does it not?

Diptychs were a kind of writing tablet, used by the ancients and indeed throughout the Middle Ages down to almost recent times. They were covered on the inner sides with a thin layer of wax, on which the writing was made or erased with a metal point or style. It was the custom of the consuls on their inauguration to present such tablets to distinguished personages, and these presents were usually of fine ivory, often sculptured with the figure of the consul himself. From about fifty to a hundred examples—ranging from the middle of the third to the middle of the sixth century A.D. are known, and as their date is certain, and the subjects of great interest, their historical value would be difficult to overestimate. The money value, should one hitherto unknown turn up, would be, I think—in more senses than one—a subject for speculation. Here are some casts of a few of these magnificent slabs of ivory, and I show others on the screen. Diptychs were also used for private purposes. This is an example of one of the finest known—a Roman diptych of the third century—now in the Kensington Museum. They gave 400*l.* for it in 1865. The value of all works of art has of late years, as you know, risen in an inordinate degree. What such things as these and the Mediæval ivories we shall come to presently would realise if now in the market it would be difficult to say. I should think for this piece 10,000*l.* would be ridiculously within the mark.

For many centuries, up to the fourteenth, in all matters relating to art the Church was predominant. Religion formed the central interest of peoples' lives. Art was the monopoly of religion, and so far at least as our immediate subject is concerned, it would be difficult to find much more than a dozen examples of decorative sculpture the subjects of which are other than sacred ones. But many of these things are of exceeding beauty—with a certain mannerism about them no doubt—yet admirable in their grace and refinement, full of suggestion and delicacy, charming in their elegance of treatment, of the expression of the figures and drapery. Here is first a beautiful example of minute workmanship, a panel perhaps of a casket or a book-cover, French work of the fourteenth century. And here is still more microscopic work, a veritable *tour de force*, for this little book-cover measures only 6 by 4 inches and yet depicts with admirable art no less than thirty distinct episodes from the Gospel narratives. The next is a rare example of English ivory sculpture of the fourteenth century—rare because we have few examples of English work, and rare on account of its beauty of design and execution. This is an example of the devotional diptychs of the fourteenth century of which many beautiful examples have come down to us. I shall have more to say about them and their workmanship in my third lecture. Such things as these are the outcome not of a commercial spirit or enterprise, not even of the purely æsthetic spirit which governed the artists of the Renaissance, but of the enthusiasm of pious minds, the noble expression of innate and fervent devotion. We must not forget also their teaching value. These diptychs and triptychs were, it may be said, the illustrated books of instruction of the time. Nothing is more wonderful than the way in which, in the compass of a few inches, whole histories and episodes of the scriptural narratives were compressed in the most vivid and telling manner. This is one of the many charming statuettes of the Virgin, which French art especially has handed down to us. And here are beautiful examples of fourteenth-century pastoral staves or croziers. Observe the elegant proportions and sweep of the volute, somewhat small and contracted, and diminishing from the point where it springs to where the curve begins. It is to me unaccountable that the light and

graceful ivory should not be more used for bishops' staves at the present time. It is in every way appropriate and convenient.

The exclusiveness of art for church purposes in the Middle Ages was not, however, absolute. Here is a casket or workbox of perhaps the eleventh century, with classical designs borrowed from earlier sources. And here are some examples of mirror cases, closing in much the same way as our ivory pocket mirrors or puff-boxes of the present day. The scenes upon them illustrate the old romances and episodes of social life. Combs also our ancestors thought it worth while to decorate. These are some specimens: Italian and English of the fourteenth to sixteenth centuries. And, of course, the elephant's tusk naturally suggested itself as a material for hunting horns and drinking horns, such as the next slide shows. When we leave the fifteenth and early sixteenth centuries and their pious usages, we are met by entirely new fashions. Whatever may have been the case with other arts, art in ivory declined. We come to the periods nicknamed Baroque or Rococo. In Germany these styles, together with appalling little nudities, ran riot, yet, especially in Flanders, some exceptions to the general decadence will be found to justify the attention which may be given to them. These are some plaques from a set in the Kensington Museum attributed to one of the best of the Flemish artists, François Duquesnoy, generally called Fiammingo. And this is a very fine tankard—from the Jones collection—the finest that I know in ivory, probably by Fay-d'Herbe.

Finally, for work of this period we have this fine coin cabinet, entirely of ivory. The style and taste may not perhaps be of the very highest; still, for the period it is at any rate a worthy, even admirable, example. Ivory furniture also, in the shape of couches and chairs, is interesting and unusual, and I think our great upholsterers would do well to reintroduce it. These are two chairs from the Jones collection in the Kensington Museum. They are Indian made, after Chippendale or Adam, or French models. Such specimens are not, however, inexpensive. Mr. Jones gave 600*l.* for two of these some twenty or more years ago. The art and industry of India, China, Japan and the East generally there is no time to-night even to describe and illustrate shortly.

It would not be difficult to run on with illustrations of this kind until your patience would be exhausted and your eyes weary. There remain but few words to add to carry us on, for the time being, to the modern use of ivory for decorative purposes and sculpture. I have found that a great many people otherwise interested in the arts are quite unaware that sculpture in ivory in this present twentieth century is worthy of any consideration, or, in other words, that it is practised by artists of distinction. I think I shall be able in my third lecture to dispel this misconception. Meanwhile I will put on the screen—as a fitting finish, I may hope—this reproduction of the work of one of our best-known artists. It is the "Lamia" of George Frampton, now in the Vivian collection.

If I have covered, though briefly, a large extent of ground, if very much more of equal interest remains for us to follow, and if I have succeeded in interesting without sometimes wearying you, and have been able to put before you a little information which, if not altogether novel, may be new to some, I shall have justified my opening remarks, that there is much indeed to be said on the subject of ivory and its uses.

SELBY ABBEY.

AFTER as close an inquiry as was feasible by the Bishop of Beverley (acting as Archdeacon of York), Lord Wenlock and Mr. E. C. Brooksbank into the causes of the fire which broke out in Selby Abbey on the night of the 19th ult., their report has been issued. Information as to the first discovery of the fire was given by Mr. Sykes, who lives in a house at the north side of the abbey. He was at his house door at 11.55 and saw nothing unusual. At about 12.10 his wife aroused him with the information that there was a big light in the church. The light appeared to be shining on the Liversidge window, in the north choir aisle, next to the Latham chapel, which serves as the organ chamber. But when he left his house to give the alarm, he saw that the fire was in the organ chamber itself. There appears to be no doubt whatever that the fire originated in the organ or in its immediate proximity. The verger who has charge of the abbey during the day it appears left at five

o'clock on October 19, having locked all the doors which were not already secured. In the church were Mr. J. H. Compton, the organ-builder, and James Taylor, a youth who was assisting him. Mr. Compton had a privilege key, by which he could let himself in and out of the abbey through the north-west door. A workman named Ernest Wolfe, employed by Mr. Compton, was at this time at his tea. But he returned shortly and remained till eight o'clock, when he finally left. Mr. Compton and James Taylor stated that after the departure of Ernest Wolfe they worked together till 10.30. They then put out all the gas lights in the abbey and removed the wax candles, three in number, which they had been using in the organ. Two of these were then extinguished. They spent about twenty minutes more, partly in the blowing chamber, partly in and about the organ, and then, extinguishing the last candle, they left the church and locked the door. It appeared that on two occasions when he came into the church from the outside Mr. Compton experienced a slight smell of burning, and James Taylor noticed it also. It was in the north aisle of the nave, which is separated from the organ chamber by the whole breadth of the north transept. Mr. Compton endeavoured, without success, to discover the cause of this smell, and James Taylor said that the smell seemed to him more like that of the blacklead or varnish of a stove than the smell of burning wood. About 8.30 Mr. Compton and the youth thought they heard footsteps in the south choir aisle. They searched the church eastward of the tower without finding any person, and concluded that they had been mistaken in the supposition that the sound proceeded from footsteps. Both these witnesses declared that the interior of the organ was entirely free from shavings or other loose inflammable material. But it was admitted that there were some paper packages containing metal pipes resting on the bellows. It was admitted by Mr. Compton that naked candles in metal candlesticks, without any shades or protection, were used within the organ; but he declared that he was certain that not more than three such candles (which were wax candles) were in use on the evening of October 19, and that he knew that they were all removed and carefully extinguished. There was a small temporary gas stove used for boiling glue standing upon the stone floor about 5 feet from the organ. It was fed from a jet within the organ, the gas being conveyed by a tube with indiarubber connection.

From the evidence of other witnesses the following facts were established:—

1. That on a Sunday in August, about 10 A.M., a paraffin lamp was found alight in the organ, standing on one of the pipes. The presumption was that it had been left burning the night before.

2. That on several occasions the workmen were observed smoking when at work. The witness did not assert that they were in the organ when he observed them, but they were near it, and engaged in work connected with the organ. It is fair to say that Mr. Compton denied all knowledge of such action, which was entirely contrary to his orders, and he stated that neither he nor James Taylor ever smoked.

The possibility of the fire being due in some way to the action of the blowing apparatus had been suggested, and this matter was very carefully considered, and Mr. Cousins, the manager of the firm which supplied it, was examined at some length. A personal inspection of the apparatus and the building containing it was made by those conducting the inquiry, with the result that they found the apparatus uninjured except in a place where some burning had evidently been caused by the fall of material from the burning building. They are convinced that the fire was not directly or indirectly attributable to the blowing apparatus or to the gas-engine.

The above statement of all the facts which were elicited by the inquiry is followed of necessity by the declaration on the part of those who conducted it that they were unable to say in what precise manner this disastrous fire originated. They cannot insist too strongly, however, on the need for greater care in the employment of lights within an organ. The evidence in regard to the paraffin lamp and the fact that candles exposed to draughts were used without any protection in an organ largely constructed of perfectly dry wood are both significant. It is said that organ-builders always use unprotected candles. But a practice is not the less dangerous because it is customary, and if it is dangerous it is reprehensible. It should be added that much greater caution ought to be used in regard to the pos-

session of matches by persons engaged in the building or repair of organs.

The circumstances of the fire show how absolutely important it is that means of access to the abbey should be obtainable close at hand at all times. Much valuable time was lost in getting at the fire because the verger, who had the key, lived at a considerable distance from the church. Again, if after the discovery of the lamp in August the precaution had been taken of keeping someone in charge of the building during the night as well as during the day until this somewhat dangerous work was completed, the fire would probably not have occurred. It appears to be absolutely essential that when work of any kind is being done in or about the abbey some responsible official should always inspect the premises thoroughly after the workmen have left the building.



John Evelyn.

SIR,—The remarks of the President of the R.I.B.A. in his opening address, as to the great diarist, lead me to state that this year is the bi-centenary of his death, which occurred February 27, 1706.

A new edition of the "Memoirs" is appropriately just published (Macmillan), with a learned preface by Mr. Austin Dobson. The three volumes are enriched by many illustrations and reproductions from old prints of places and people. To Evelyn's artistic and antiquarian tastes we owe the preservation of the Arundel Marbles, now in the University Galleries, Oxford. His minute notes of many seventeenth-century buildings in London throw much light on the architectural taste and style of that time and are replete with references. By them we re-picture old London, in many ways a more attractive city than to-day. His visits to St. Paul's with Sir C. Wren and others just before and again after the Fire of 1666 are historic pages indeed. His keen perception of arts and letters would alone make his fame, while the colloquial and fascinating style of the Diary will always attract the student of past times and events and the connoisseur of artistic treasures. I am glad to note that the recently formed John Evelyn Club at Wimbledon retains the memory of this writer, and has for its objects the preservation of any historical or local landmarks likely to be obliterated.—
Yours, &c., S. W. KERSHAW, F.S.A.

Banwell Abbey.

SIR,—I find no trace of such a monastery in Somersetshire among the abbeys. Your informant obviously means Banwell Priory, one of the "greater" priories; so there are two mistakes in the two words of the title.

When will people call religious houses by their proper titles? This is the third time within a few months that a monastery has been wrongly classified in the architectural Press, viz. Bolton, Nuneaton and Banwell (or Banwell). Someone will be referring to Glastonbury as a priory next.—Yours faithfully,
JOHN A. RANDOLPH.

P.S.—Banwell Priory, however, is in Cambridgeshire; but I can find no trace of Banwell in my lists of abbeys or priories, greater or lesser. "Mystère!"

GENERAL.

Mr. Alfred Brumwell Thomas is to receive the honour of knighthood in connection with the King's birthday. Among his public buildings are the town halls of Woolwich, Stockport and Belfast. The last was won in public competition in 1897, in which the late Mr. A. Waterhouse, R.A., acted as assessor. The building was opened on August 1, having cost 300,000l.

A Memorial, in the form of an ancient preaching cross, from the design of Mr. W. D. Caröe, is about to be erected in Chevening churchyard to the memory of the late Earl Stanhope.

The Collection of "Photograms of the Year," issued by Dawbarn & Ward, Ltd., will gratify all lovers of photography. The number of plates is surprising in a volume which costs only 2s. They all exemplify the latest efforts to bring photography into closer relation with general pictorial work, and the success is encouraging to amateurs.

Professor Boyd Dawkins and Professor Capper have been appointed as representatives of Manchester University on the art gallery committee of the Manchester City Council.

The Society of Arts will hold the opening meeting of the one hundred and fifty-third session on next Wednesday, when an address will be delivered by Sir Steuart Colvin Bayley. After Christmas papers will be read, among other subjects, on "Smoke Prevention in Factories," "Mediaeval Stained Glass: its Production and Decay," "Engraving and Photogravure," and "The Underground Water Supply of the Thames Basin." Mr. F. Hamilton Jackson is to deliver three Cantor lectures on "Romanesque Ornament."

Mr. A. R. Stanning, the arbitrator in the case of the Letchworth Garden City Company and the Great Northern Railway Company, has issued his award. It amounts to 2,818l. in respect of the 14 a. o. r. 21 p. of land which the railway company are acquiring from the Garden City Company, the claim for which amounted to 13,145l.

The Glasgow Dean of Guild Court granted permission on the 8th inst. to the Corporation of the city of Glasgow to erect a public library, to be known as the Mitchell library, at the corner of North and Berkeley Streets and North Street and Kent Road.

The Holman Hunt Exhibition at the Leicester Galleries, Leicester Square, must close on the 17th inst. in order to make way for a series of water-colour drawings by Mr. Arthur Rockham, illustrating Mr. J. M. Barrie's story, "The Little White Bird; or, Peter Pan in Kensington Gardens."

A Brighton and Hove Archaeological Club has been formed for the purpose of fostering an interest in the antiquities of the county, with a view to the proper recording and preservation of the same; to promote excursions to places of archaeological interest, visits to private collections, meetings for the reading of papers, and, largely, the study of the prehistoric camps and fortifications, of which so many are to be found upon the Sussex Downs and which have never been thoroughly studied and investigated.

The Durham Education Committee report to the County Council that in response to an invitation for competitive plans for the new school at Consett they have received fifty-four sets of plans. These have been carefully examined by the school buildings sub-committee, and subject to the conditions of the competition being fulfilled, they have made the following selection:—(1) Mr. W. H. Knowles, Newcastle-on-Tyne; (2) Mr. J. Garry, West Hartlepool; (3) Messrs. Clark & Moscrop, Darlington. The committee invited thirteen architects to submit competitive plans for their new school at Greenside, and received plans from eleven of them. Subject to the conditions relating to the competition being fulfilled, they have selected the design of Mr. J. Morson, of Durham.

The Council of the University of Liverpool, at a meeting on Tuesday, accepted offers from Sir J. Brunner, Bart., M.P., to endow a Chair in Egyptology, and from Mr. John Rankin to increase the endowment already provided by him for a Lectureship on the Methods and Practice of Archaeology to the amount required for the endowment of a professorial chair in that subject.

The Liverpool Cathedral Committee, after consideration of the terms of the will of the late Mr. Wm. Imrie, announce that about 70,000l. will possibly accrue to the cathedral fund under the terms, but that the amount will not fall into the fund for many years. The money is not expected to be available for the portion of the cathedral now under construction.

The Ulster Architects' Society have resolved "That a committee, consisting of the members and Associates resident in Derry and neighbourhood, be formed under the auspices of the Ulster Society of Architects, and that such committee be empowered to nominate one of its members who shall have a seat on the Council of the Ulster Society of Architects."

The Dean and Chapter of York have, since the fire at Selby, revised the rules to be adopted by the officials in case of fire. Canvas hose has been entirely substituted for the old leather hose, which has become old and worn. Additional hydrants have been placed in the north transept and engine-house, and chemical extinguishers in the organ loft and Bible Library. A ground plan has been prepared showing the exact position of each hydrant within and without the minster, and all these have been submitted to the Yorkshire Insurance Company and approved.

The Architect.

THE WEEK.

It is with unfeigned regret we have to announce the death of CHARLES LOCKE EASTLAKE, who died on Tuesday at his house in Leinster Square. His position was peculiar, for he might be considered as serving as the representative of the much-desired union of all branches of art. The consequence was that different views were taken of him and his work by different people. Some considered him as an official who was long connected with the National Gallery. To others he was in his right position as Secretary of the Royal Institute of British Architects. Many looked on him as an industrial artist who designed chairs and tables, curtains, pottery and plate. Finally, he could be esteemed as an author of valuable books relating to the arts. In our time there was no better example of versatility than was afforded by CHARLES LOCKE EASTLAKE. His life was a busy one and was fairly well rewarded. But those who knew him must have often wished he had confined himself to one class of work, when, if the course was less safe, it would have been an increase of renown. He was born in Plymouth, a town from where several artists came. At the desire of his uncle he entered the office of PHILIP HARDWICK as a pupil, and he also joined the Academy schools, where he gained a silver medal. Then he thought he was better fitted to be a water-colour painter, and he studied for three years on the Continent. In 1866 he was elected secretary of the Institute, and during the ten years he held office everyone was satisfied with his genial spirit. He had never been a Government official, and it was not until his successor was appointed that a circumlocutory system became established in Conduit Street. Old members still speak with regret of those days. In an early number of the *Cornhill* he wrote an article on the fashion of furniture, and it led to a proposal that he should write a book "Hints on Household Taste," which is interesting, although it shows the influence of the then prevailing Gothic spirit. Another admirable book of his was "The History of the Gothic Revival." LORD BEACONSFIELD is credited with skill in discerning character, and his appointment of CHARLES EASTLAKE as keeper and secretary of the National Gallery was evidence of his perceptive power. While at Trafalgar Square, by his marvellous tact he succeeded in prevailing on the Trustees to adopt several improvements. To magazines and journals Mr. EASTLAKE was a voluminous contributor, and it could be said of him that whatever he touched with his pen he adorned. His busy life has come to an end, and although he never attempted any ambitious performance, there is no doubt about his rendering genuine service to all the arts.

THE decision given in *JOHN GREENWOOD, LTD. v. HAWKINGS* demonstrates that in order to render sub-contractors liable for compensation to injured workmen it is advantageous to make assurance doubly sure by having a special agreement on the subject, in addition to the provision furnished by the Act. While engaged in rebuilding the Guildhall Tavern one of the workmen was killed. Messrs. GREENWOOD, as the undertakers, had to pay 200*l.* compensation and other expenses to the man's representatives. Accordingly they claimed, in return, to be recouped for the outlay. Messrs. GREENWOOD had taken the precaution to seek an indemnity from the sub-contractor by which they were to be indemnified from all claims under the Workmen's Compensation Act. The document was not, however, signed, although the work was executed. No doubt the man had regarded himself as the contractor, for he

had been engaged by the architect to execute the ornamental stonework. The defendant did not reply to some correspondence, and Mr. Justice BIGHAM declined to admit that the neglect arose from pressure of work. Judgment was accordingly given for the plaintiffs for the full amount. If the indemnity was not sought it is possible that the case would have had a very different result. But as the letters written by Messrs. GREENWOOD, which were not answered, were before the Court, it could easily be seen that the defendant had formed an incorrect notion of his position. Whether agreed to or not, the request for indemnity has a legal value which cannot be gainsaid.

PEOPLE who visit Portsmouth occasionally and who are gratified by the correspondence in the levels of land and water are not aware of the inconvenience which arises every year through that condition. In several parts of Portsmouth the arrangements for drainage are rendered useless through the immense pressure offered by the mass of the sea. One of the impediments to the extension of the town arises from that cause, as it is feared that no arrangements could be made at a reasonable rate which would comply with the requirements of the local authorities. Mr. J. H. STREET appears to be an especial sufferer. He is the freeholder of a large area of building land which he is anxious to develop. In December last he deposited with the engineer of the borough, in accordance with the by-laws relating to new streets and buildings, plans for seventeen proposed new streets to be constructed in the borough, and covering a large area of land. The works committee, having given the matter consideration, appear to have reported that they disapproved the plan unless the Town Council took power to determine the level of the streets, which they recommended should be 9 feet above Ordnance datum. At the meeting of the Council held on January 9, the report was adopted. The Portsmouth Council have the privilege of dealing with everything which does not exceed 30 feet above the Ordnance datum, and Mr. STREET was informed that his roads must be at least 9 feet above that datum. That would mean that the houses would be built in hollows, or that the level of the whole of the building sites should be raised. Mr. STREET endeavoured to have an appeal brought before the Local Government Board, but they declined. He then appealed to the King's Bench. Their Lordships came to the conclusion that the Local Government Board was right in declining jurisdiction, and leave to appeal to a higher Court was refused. It is stated, however, that there will be an appeal, and unless there is one it is not easily imagined how the estate can be laid out in building sites.

THE Tribunal of Appeal have pronounced a judgment which is likely to give rise to some amazement in the ordinary courts. Regent Street and Piccadilly are being transformed, and among other changes it was proposed to erect a building 110 feet 6 inches high beside the Vine Street police station, which is to some extent used for clerical purposes. The streets about this part of London are very narrow. It might be supposed that with so important a subject the usual procedure would be adopted by taking an action for interference with light and air. But the parties hold under the Commissioners of Woods and Forests and are subject to an agreement not to institute such actions. Care was therefore taken in the argument of counsel to avoid all points of law. It is difficult to obtain sites in the neighbourhood of Regent Street, while for many reasons it is a convenience to have a police station close to the thoroughfare. No doubt the police station will be less adapted for residential purposes than heretofore. The Tribunal of Appeal, however, declined to depart from the decision of the Building Act committee, and a sum of 120 guineas costs was allowed to the hotel syndicate.

ENGINEERING: ART, NATURE AND LAW.

THE address of the new President of the Institution of Civil Engineers—Sir ALEXANDER B. W. KENNEDY—is calculated to create an interest among others besides the members. During several years he has practised as a consulting engineer. In consequence he has become acquainted with the details of various branches of engineering, yet at the same time it is difficult to determine of what particular branch he is the representative. As a result of his own practice there is a breadth of view in his remarks by which they are distinguished from those of his predecessors. Most of them were specialists, and they did not hesitate about devoting their address to an abstract of the latest information about railways, bridges, telegraphs or waterworks. Sir ALEXANDER KENNEDY, on the contrary, discoursed on some of the relations of engineering to other things.

Young people talk so glibly about professions at the present day, it is difficult to say what the term means. The President, as an arbitrator, has an aversion to loose expressions. "I am not sure," he said, "what authority is entitled to say whether engineering is or is not a profession. It must be a very young one certainly, if it is one at all." But calling engineering a profession has not prevented men who claim the title from acting unworthily or improperly, in a way that would be impossible among lawyers or doctors. He also considers it is unfair for men to act as contractors and consultants at the same time, and he declared that so far as he knew every such attempt ended in failure. There is excellent advice in many parts of the address which engineers should lay to their hearts, for it has been derived from the author's own practice.

It is, however, from the observations of a wider scope that the address gains its unique character. The members must have looked at one another with amazement when they heard the President commence to speak about the points of contact between the engineer and the artist. For a number of years critics have been asking whether any beauty can come out of Great George Street. While the Lambeth Suspension Bridge and the Charing Cross roof were allowed to exist in the vicinity of the Institution, the answer must have been in the negative. And yet such indifference to beauty of form was comparatively modern. TELFORD contributed articles on architecture to BREWSTER'S Encyclopædia, and although they were without novelty they at least testified to his respect for Roman work. Waterloo Bridge and London Bridge are creditable to RENNIE. His Southwark Bridge is also an excellent example of construction, but it has suffered through the prejudice against cast-iron. The President was able to say that in his apprenticeship days he found the bed-plates, entablatures and other large castings were finished with mouldings derived from Classical models. The change really dates from the incoming of wrought-iron as a material of construction. The experiments for the Britannia Bridge demonstrated that the graceful curves which TELFORD introduced into the Menai Bridge were of no account. It was not necessary to give an arched form to wrought-iron bridges. And, indeed, it was soon found that everything added to the straight beam was a superfluity meaning an addition to the load to be carried and extra expense. One notorious example of an "ornamental" wrought-iron bridge is to be seen spanning Ludgate Hill.

The President asked pertinently what objection can there be to a long, straight line? It was employed by the Greeks and other great builders. We must not expect a civil engineer to be satisfied with repeating a formula such as "the curved line is the line of beauty," unless he can discover why the curve should have the preference.

Nothing is easier than to repeat that axiom, as if it contained the pith of the science of æsthetics. But when the grounds for its adoption are investigated they are far from being clear. Sir ALEXANDER KENNEDY would see something to approve in the Cannon Street Bridge if it were not for the balls surmounting the piers. But he recognises, and for that architects will be grateful to him, that the artist can serve the engineer. For co-operation there must be breadth of view. When the Thames Embankment was first opened critics sneered at the work, and at the repetition of the lions' heads which were without much use. But it is now realised that the Romans never erected a quay wall to surpass it, and it is superior to the quays at Paris. Again, such a colossal fortification as the *Dreadnought* must impress all observers, for countries where art is cherished are willing to imitate its lines. The great reservoirs of the Birmingham Waterworks can also be truly described as having grandeur. To ornament them would be to deprive them of their character, for in their simple majesty they are almost comparable with the hills around.

Sir ALEXANDER KENNEDY is an ardent mountaineer, and, like all men who are smitten with the love of the Alps, he cannot shut his eyes to the results of the greed which tries to cover salubrious spots with gimcrackery structures, in order that profits may not be delayed. One unhappy case is referred to. Through the persuasions of some English physicians St. Moritz became a favourite resort for invalids. The President does not exaggerate the aspect of the place when he says:—"St. Moritz itself, spread in all its hideousness about a lovely lake side, is nothing less than a scar on the face of the earth—an absolute shock when you first catch sight of it suddenly. In this, happily, we engineers cannot be held responsible. I would gladly believe that Swiss builders employ no architects, if anyone would only say so authoritatively."

As we have pointed out, the President has gained reputation as an arbitrator. What he says concerning the relations of engineers to the law may be accepted as representing his professional experience. He considers that if work were carried out faithfully and in accordance with the contract deed, there would be less demand for the services of a lawyer at a later time. He advises that the engineer should carefully go through the drawings and specifications, and examine them from the contractor's point of view in order to find out if anything doubtful has been allowed to slip in. The engineer should define exactly the results which he wishes to attain. On the other hand, it is possible to have an excess of detail. No greater mistake can be made, or any mistake more likely to lead to vexatious litigation later on, than a crowded specification with detailed particulars which every competent contractor would carry out in his own way. The President is strongly opposed to the practice of making the engineer the arbitrator in relation to his own specification, for his attitude should be that of a judge rather than that of a party to the dispute.

The President was for some time Professor of Engineering in University College, London. He is therefore qualified to speak on education, as on other subjects, with the confidence of an expert. The engineers have ways of their own, and when they attach no value to classics it may be taken for granted that the advantages of the modes of education based on Greek and Latin have not been apparent in English offices. Science should have precedence, and the engineer ought to have the earliest opportunity of freeing himself from youthful leading-strings. One mistake of young engineers is that they believe in half a dozen different ways of doing everything, but a little experience soon teaches them that other people are able to obtain similar results by quite different methods.

The whole address is well deserving of careful study by everyone connected with any branch of construction. We find at the present time that engineering construc-

tion is a familiar phrase to people who a few years ago could not comprehend what it signified. Instead of adopting venerable formulæ to determine the size of walls and beams, those parts have now to be subjected to the same modes of calculation adopted for bridges. It remains to be seen whether the engineers will be satisfied to allow themselves to be regarded as mechanical assistants or calculating clerks. But whatever may arise, everyone will echo the wish of the President that engineers ought to be able "to set the world at large an example of tolerance and broad-mindedness as citizens which would not be easily reached by any other class of the community."

"SERIOUS AND WILFUL MISCONDUCT."

IT is well known that the Workmen's Compensation Act operates as an insurance to the workmen to whom the Act applies against the risks of injury and death incident to their employment, and that the burden of thus insuring their workmen is placed by the Act upon the employers. If a workman has been killed or injured in the course of his employment, whether by his own carelessness, or by the carelessness or deliberate act of another, or by sheer accident, the employer is liable. The only defence based upon the conduct of the workman which the employer can make is the defence that the injury was due to "the serious and wilful misconduct" of the workman himself. The question of course arises, What acts of the workman will amount to misconduct so serious and wilful as to deprive him or his representatives of the benefits conferred by the Act upon him or them? This question has recently been discussed by the House of Lords in the case of *JOHNSON v. MARSHALL, SONS & Co., LTD.* The facts of that case were as follows:—The appellant's husband was a workman employed by the respondents. He was found fatally injured in a lift on the premises of the respondents. The lift was not loaded, and on the lift there was a notice to the effect that no one was to use it unless in charge of a load. The County Court judge gave judgment against the appellant on the ground that the injury was caused by his serious and wilful misconduct. The Court of Appeal reversed that decision, and the House of Lords have upheld the decision of the Court of Appeal. It is clear from the words of the Act that the decision of the House of Lords is correct, because under the Act the employers are obliged to prove that the accident was attributable to the serious and wilful misconduct of the workman. In this case the only thing proved was simply the fact that the man was found fatally injured in an empty lift to which was affixed the above-mentioned notice; and as Lord ROBERTSON said, nothing was really known as to why or how the man came to be in the lift. The other Lords, however, were inclined to base their decision upon a very large interpretation of the meaning of the words "serious and wilful misconduct." The Lord Chancellor said:—"No doubt it was misconduct to enter the lift when not in charge of a load, for that was a disobedience of orders lawfully given. It was 'wilful' in the sense that the man presumably entered of his own accord, but the word 'wilful,' I think, imports that the misconduct was deliberate, not merely a thoughtless act on the spur of the moment. Further, the Act says it must be 'serious,' meaning not that the actual consequences were serious, but that the misconduct itself was so. If a servant was found once using the front door instead of the back door, contrary to orders, it would be misconduct no doubt. Could anyone say it was serious misconduct? So here the lift was intended for use by workmen in charge of a load, forbidden by workmen not in charge of a load. The offence was not that the man used it, but that he used it without a load. I cannot agree that a lift is an appliance so dangerous that the use of it, when believed to be in a proper condition and intended for use, does in itself amount to serious misconduct." Similarly,

Lord JAMES OF HEREFORD said, "If there was a load in the lift the danger of its use could not be diminished—possibly it might be increased. No result producing injury to anyone could be anticipated by the use of the lift by the individual workman." It would therefore appear that in order to exempt the employer from liability the workman's act must be both deliberate and of such a character that any one could see that the doing of it was attended by serious risk. "The class of misconduct," said Lord JAMES OF HEREFORD, "might well be represented by such instances as if a workman, whilst working in a mine on certain seams of coal struck a match and lit his pipe, or if he walked into a gunpowder factory with nailed boots, refusing to use the list shippers provided for him." The deliberate breach of a rule made by the employer, even though the breach of the rule (as was decided in *RUMBOLL v. Nunnery Colliery Company*) amounted to an offence against the Coal Mines Regulation Act, 1887, is not necessarily serious and wilful misconduct within the meaning of the Act, because the immediate consequences of breaking the rule will not probably be serious. It seems to us that this interpretation of the words "serious and wilful misconduct" goes far to render the effect of these words nugatory. If employers, responsible for the safety of their works and workmen, make rules of discipline, it is difficult to say that it is not serious and wilful misconduct to deliberately disregard them. As Lord ATKINSON well put it in this case:—"The necessity which undoubtedly exists for the strict observance of rules and regulations amongst the hands engaged in factories and other establishments where machinery is used, and the grave dangers which might result if a general laxness of discipline were permitted to prevail, tend to render important, breaches of rules adopted for the conduct of business which in other places and under other circumstances might fairly be regarded as trivial." It may be that it is not every breach of a small rule which will amount to serious and wilful misconduct. But it may equally well be that systematic breaches of small rules may lead to the breach of more important rules; and, regarded from this point of view, some breaches of small rules may amount to such misconduct. As the law stands the employer may make his rules; but though he is the best judge of the rules essential for the conduct of his business, he has no means of bringing before the Court all the circumstances of his business, without a knowledge of which it is impossible to fairly decide whether a breach of any, and if so of which, of his rules will amount to such serious and wilful misconduct that it will deprive the workman guilty of breaking them of his right to compensation. The Court, knowing little of the business, decides each isolated case on the facts. It cannot consider the general bearing of the rules and the possible consequences of continued breaches. What is wanted is some form of procedure by which an employer could get from a competent Court a declaration that certain of his rules are so important that the breach of them will be considered serious and wilful misconduct of the workman. Such declaration ought to be made either if the breach of the rule is obviously dangerous, or if a set of rules are so systematically broken that a continuance of the practice would tend to a general laxness of discipline. Such declaration should of course be notified to the men, who should be represented in proceedings taken to get such declaration. As matters at present stand it is wholly impossible to say whether the Courts will hold any particular breach of any particular rule to be serious and wilful misconduct within the meaning of the Act. And it is clear that this uncertainty must go far to render useless the single clause inserted in the Act for the protection of the employer. We hear much of amending the Workmen's Compensation Act in the interests of the men. Some such amendment as this is obviously needed in the interests of the employer.

FLOWERS AND DECORATION.*

WHEN BACON declared that in the stages of civilisation the appreciation of architecture and the power to "build stately" came before the ability to "garden finely," thereby showing the latter to be the higher refinement, he was not thinking merely of the setting out of the 30 acres which should be the minimum size of the setting for a noble house, for he expressed the opinion that "in the royal ordering of gardens there ought to be gardens for all the months of the year, in which severally things of beauty may then be in season," and he gave a list of the plants most suitable for the various months of the year. The lavish outlay which would result makes the adoption of BACON's theories impossible to the majority of people. Nevertheless, there has been no decline in the popular love of flowers. On the contrary, it has increased.

The instinctive pleasure felt by man in looking at the works of nature inevitably made its imprint on his artistic efforts, and most especially in architecture. The Egyptians saw the lotus, the papyrus and the palm from early childhood, and the forms became part of their lives, which lacked all the multitude of objects flooding the present-day juvenile mind. Assyrian ornament was even more limited. During subsequent centuries the same process has been in operation until it has reached a higher development than ever before, and has created a necessity for such a book as "Decorative Plant and Flower Studies." Miss FOORD produced in 1901 a series of forty coloured plates intended to serve as practical working studies for artists and designers. Although in her drawings of flower forms she was rigidly exact, it was never done with a view to satisfy the botanist or the horticulturist. The necessity of supplying full details of all the parts of the plant prevented any great sacrifice of exactitude for the sake of decorative effect.

Such a book as "Decorative Flower Studies" has the obvious fault of seeming incompleteness. It is impossible that everyone should be contented with a selection of any forty subjects when there is such a vast number to choose from. Consequently Miss FOORD has produced a second series of plates. We expect that there will be a demand for a third and a fourth. The individualistic character of the work is suggested by the fact that although well-known designers, art masters and others were asked to contribute suggestions, Miss FOORD "felt very strongly the difficulty and undesirability of drawing subjects which, while suggesting beauty to some others, have not perhaps appealed in the same way to me, so that through me they carry no message. On the other hand, I have included certain flowers which may have been deemed unimportant, but whose decorative value has impressed me in the fields and hedges and in humble kitchen gardens." For instance, the meadow cranesbill grows wild in the British Isles in fields, hedges and waste grounds, and is a plant which few would regard as a source of inspiration. The corn sow thistle is said to be so familiar and so commonly slighted as an undesirable weed that, perhaps because of its very abundance and familiarity, its beauty is but little recognised. "Yet few of our wild flowers are more perfect in graceful form, not merely in the flowers, but in the beautiful symmetry of the buds, and especially the closing blossoms, and in the variety of line in the tall upright stem and the long undulating spiny leaf." The words are amply supported by the coloured plate showing the head and flower of the plant, a general sketch of it, and the studies of its growth and detail. Barley is scarcely less familiar, but it possesses more obvious picturesque possibilities than the thistle.

Miss FOORD has had the same intentions in preparing the second series as the first; the studies are in no wise offered to students as a substitute, relieving

them of the necessity for drawing directly from nature. They will serve as models and should be incentives to craftsmen to bestow an infinite care on preparing for future work. The book has considerable use for the practised designer, who may be at a loss for a suitable *motif* and be temporarily unable to make independent research. The authors of the books usually consulted heretofore in such an emergency have been ignorant of the special needs of such a man and can rarely afford satisfactory assistance. The methods adopted by Miss FOORD are thus described:—

It is not the aim of these drawings to give a naturalistic pictorial view of the plant, but rather that by simple and severe treatment of line the whole strength, delicacy and character of the form should be expressed, as is most necessary for all practical purposes, retaining as much as is possible of the grace and charm of the flower; the colour being merely implied or suggested by flat washes which should give an impression of the subject as seen in light and air, and not merely a map of the local colour. Care has been taken to make the sketches of detail as full and complete as possible, and in giving a small drawing of the whole plant, to find a typical example; this, however, was not always easy to determine, plants of the same species varying so much in character and growth under different conditions. In all cases the subjects are drawn as they grow, the line being absolutely as in nature, such decorative effect as they may have being due to careful selection and placing on the page and not to any sacrifice of the form, and where any adjunct is given it is given not merely to form a pleasing page, but to show further the habits and scale of the plant in its almost invariable environment.

Each of the forty subjects is accompanied by an explanatory account calculated to arouse an intelligent interest in the mind of the reader. The endeavour to assist the designer has prohibited anything in the nature of botanical technicalities and inspired the printed matter with a charming personal element. Barley, or *Hordeum*, was largely used by the Roman gladiators, who were in consequence known as *Hordarii*. From this source we derive the word "horde." The foxglove, it is suggested, was called originally "folks' glove," or "the fairie's glove;" that name is among a list of plants made at the time of EDWARD III. Another explanation is that it commemorates FUCH, a German botanist of the sixteenth century. The broom is found in Mediæval decoration and was frequently introduced in heraldry. French pilgrims adopted it as a token of humility. Perhaps it was an artist of that country who represented it on the tomb of RICHARD II. in Westminster Abbey, where the plant is shown with empty pods. The Hollyhock was familiar to Greeks as well as Romans. PLINY described it as "that rose which hath the stalk of a mallow and the leaf of a pot-herb." The oleander was a favourite flower in both countries. The arbutus or strawberry-tree is found in Southern Europe, and is rarely seen so far north as this: an exception is the south and west of Ireland, where it is plentiful. It may have been brought over by the monks of Muckross Abbey, near Killarney. A more poetic explanation is found in a Mediæval legend which states that the plant was mysteriously deposited at the feet of an Irish monk in Kerry who had fallen to sleep, grieving for the happy days he had spent in a Spanish monastery.

Miss FOORD is, in addition, essentially practical, and she has regarded her forty subjects from that standpoint, giving to each a brief descriptive note in simple words, mentioning its appearance and growth and any peculiarities. Nothing is superfluous. The page of details is conspicuous for its clearness and arrangement, avoiding the frequent fault of overcrowding. The same spirit marks the coloured plates, which, we are told, have been reproduced in Paris by a stencil process, under the direction of M. E. GRENINGAIRE. Some may see an advance on the high standard of draughtsmanship attained in the first series. At any rate, no one can gainsay their claims to beauty and the beneficial effect the book may have on the applied arts

* *Decorative Plant and Flower Studies, for the Use of Artists, Designers, Students and Others.* By J. Foord. (London: B. T. Batsford.)

THE NEW SESSIONS HOUSE, OLD BAILEY.*

THIS, the latest notable addition to the remarkable buildings of the City of London, has recently been the subject of private views to various bodies, and on Thursday, the 8th inst., the citizens of the ward of Farringdon Within were invited by the Alderman, Deputies and Representatives in the Court of Common Council, and were received by Mr. Deputy Cuthbertson and Mr. Councillor Ritchie, chairman of the City Lands committee.

As a monument of English architecture at the beginning of the twentieth century the New Sessions House occupies a very high position and adds largely to the reputation of the architect, Mr. E. W. Mountford, less perhaps for the success of the external treatment, which, it must be admitted, is somewhat open to adverse criticism, than for the masterly planning and the interior effects, enhanced as these are in a remarkable degree by the collaboration of great decorative artists in painting and sculpture—Sir W. Richmond, R.A., Professor G. Moira and Mr. F. W. Pomeroy, A.R.A. There are few finer pieces of architecture in England than the central hall on the first floor, or court level, with its grandly-domed square compartment in the middle and two square wings on either side, also covered with domes. In these wings are the work of Professor Moira and Sir W. Richmond, the former having painted the decorative subjects in the three lunettes, that at the southern end representing Justice seated before the Cathedral of St. Paul and surrounded by prominent men of the day, whilst those at the sides have for their subjects, on the one hand, Moses as the founder of ancient law, and, on the other hand, King Alfred as the first lawgiver of England. These decorative pictures were painted by Professor Moira in his studio and then fixed in position. Sir W. Richmond, on the contrary, is even now engaged on his share of the work in the lunettes of the northern wing, and is painting on the actual wall surface *in tempera*. One lunette only is practically finished, the subject being supposed to be women and wine, showing a group of dancing girls with garlands. We have not heard what subjects are intended for the remaining lunettes, but presumably they may also be associated with the primal causes that lead prisoners to the courts below.

On the pendentives of the great central dome is seen the grand sculpture of Mr. Pomeroy, work that will maintain his position amongst the great sculptors of all time as long as it remains in existence. The subjects in the four pendentives are Justice, Temperance, Mercy and Charity, and were sculptured in position out of the solid Ancaster stone used in the construction, and under especial difficulties caused by the dim light that the presence of the builders' scaffolding entailed. Mr. Pomeroy is to be congratulated on the skill that, in the face of great technical disadvantages, has enabled him to produce such remarkable work.

Not only has Mr. Mountford brought into collaboration with himself, with happy results, great exponents of the sister arts of painting and sculpture, but he has carried out in the interior of the New Sessions House an architectural scheme of colour decoration in marble which is one of the most striking achievements of our time.

It has been suggested by some critics that the ground-floor hall is not well-lighted, but even on a dull November day, late in the afternoon, the light appeared to us ample for the purposes of the hall and its adjacent corridors, that of approaches merely to the various parts of the building. This result is obtained by the use of light-coloured marbles, Vedrasse and Hopton Wood, in alternate bands for the wall lining. For columns on this floor Tinos marble with caps and bases of bird's-eye, Verd Antique and Cipollino are used. Bird's-eye is also employed for architraves and door heads. In the refreshment-room, Breche Sanguine, Vedrasse and Corallo are the marbles employed. In the principal

great hall on the first floor, which is amply lighted, a darker scheme of colour is adopted. Here Cipollino is used for wall-linings, with monolith columns 16 feet 4 inches long and 2 feet 4½ inches diameter, also of Cipollino. Relief is obtained by panels of Pavonazza and contrast by a plinth of Verd Antique.

The *raison d'être* of the whole building is, of course, the provision of courts for the trial of criminal offences. Of these there are two smaller and two larger, placed symmetrically on the first floor and approached by the public concerned from the great central hall. In all the courts oak joinery prevails throughout, furniture, fittings and structural woodwork being all of beautifully executed workmanship, adorned with carving by Mr. Gilbert Geale.

All the adjuncts, waiting-rooms for witnesses, rooms for juries, judges, lawyers and officers are architectural studies of good design and excellent workmanship; even the tables and seats in the prisoners' cells are specially designed.

A notable installation of the "Plenum" system of ventilation has been carried out with the help of eight large fans, heating pipes, filters and a well-arranged provision of ducts and shafts.

As befits a modern building numerous lifts have been provided for the use of various sections of officials and public who may be engaged in the business to be transacted.

In short, the New Sessions House may be said in truth to be an epitome of the best modern work of architect, painter, sculptor, craftsman, contractor and engineer.

SOUTH AFRICAN WAR MEMORIAL LIBRARY, TRINITY COLLEGE, GLENALMOND.*

THE library which was formally opened by Lord Roberts, V.C., on October 20, has been erected to the memory of those eleven "Old Glenalmonds" who, among the 105 serving in the South African campaign (1899-1902), died in their country's service. Their names, recorded on the mural tablet previously unveiled in the school chapel by Lieut.-General Sir Ian Hamilton, K.C.B., D.S.O., are as follows:—W. H. Dick-Cuningham, Lieut.-Colonel commanding the 2nd battalion Gordon Highlanders, died January 7, 1900, of wounds received in action at Ladysmith on January 6; A. F. G. Foulerton, Major 1st Leinster Regiment, died January 3, 1901, at Vreda; C. W. P. Dalzell, Lieut. Royal Artillery, died December 7, 1900, at Pretoria; A. J. C. Murdoch, Lieut. Cameron Highlanders, killed in action at Nooitgedacht, December 13, 1900; A. B. Coddington, Lieut. Essex Regiment, killed in action at Driefontein, March 10, 1900; K. Z. P. Macaulay, Lieut. Loyal North Lancashire Regiment, died of wounds received in action at Middleburg, January 30, 1901; D. E. Guthrie, Lieut. Imperial Yeomanry, died at Mafeking on February 2, 1902; H. Motum, Second Lieut. Donegal Artillery Militia, died at Lindley, January 14, 1901; G. R. Peddie-Waddell, Trooper Imperial Yeomanry, died at Germiston, February 8, 1901; W. Frost, Trooper 2nd Canadian Mounted Rifles, died of wounds received in action at Diamond Hill, June 12, 1900; A. B. Moncur, Trooper Brabant's Horse, killed in action.

The work of clearing the ground was commenced in November 1904; a memorial-stone was laid by Sir Ian Hamilton in August 1905, and the work was completed in July 1906. The cost of the library, exclusive of the classrooms, has been 2,500*l*. The Council selected a splendid site on the south side of the great quadrangle, and helped to increase the height and dignity of the building by adding to the scheme two classrooms, which form the ground floor while the library occupies the whole of the upper floor. The building is placed midway between the school chapel and the warden's house, and provision is made for eventually connecting these buildings by means of a one-storey

* See Illustration.

* See Illustration.

cloister, according to the original design of the founder of the college.

The entrance hall, which forms part of the projected cloister, is paved with stone, and has five archways in its stone walls; an entrance archway under the oriel of the library, two for the cloister, one leading to the well-equipped classrooms, and another on the circular tower staircase, by which the library is approached.

The library proper is an apartment 60 feet long by 20 feet broad, with 18 feet between floor and wood ceiling. It is divided into three portions: the first, which is lighted by an oriel window giving upon the quadrangle, is allotted to the newspaper readers; the centre portion contains four "carels" (bays) for study, each equipped with a table and two benches; the southern portion contains the magazine tables and benches, and is lighted by three large south windows. The walls are covered with bookcases to the height of 7 feet, and six double bookcases, about 8 feet long, project into the central portion, forming the "carels" mentioned above. A carved wood screen carried from wall to wall above the bookcase line, forms a division between the newspaper-room and the other portions.

The greater number of the shelves are movable to allow the storage of books of various dimensions; glazed locked bookcases are provided for valuable books of reference. The shelves have capacity for 14,000 volumes.

The walls are built of local sandstone, and the roof is covered with Craiglea slates from the neighbouring quarry. Kauri pine is employed for the bookcases and other finishings, while oak is used for the tables, benches and reading-desks of the library, and pitch-pine for all the floors. The lighting is by electricity throughout, the heating by steam. The foul-air shafts are carried to the ridge, while plentiful inlets of fresh air are arranged round the walls. The glazing is executed in steel-cored leaded quarries. The building was designed by Mr. A. G. Heiton, architect, Perth.

SELBY ABBEY.

THE executive committee of the Selby Abbey Restoration Fund met on Saturday in the sacristy of the abbey under the presidency of Lord Wenlock.

The Bishop of Beverley, at the outset, moved that the committee confirm the appointment of Mr. J. Oldrid Scott as their architect, and this was unanimously agreed upon.

Mr. Scott, in replying, said it had always been a pride and delight to be connected with that beautiful abbey, and no effort should be wanting on his part to bring it back as far as possible to the beautiful condition in which it was before the disastrous fire.

The appointment of Mr. Searle as clerk of the works was confirmed, and the committee sanctioned the work of "shoring," which had already been carried out to the arches of the choir and other work at an expenditure of about 200*l*.

Mr. J. Oldrid Scott (the architect) addressing the meeting as to the work desired to be done, said that it seemed to him that one part of the work they ought to undertake as soon as possible was the covering in of the building from the weather. The old roof had absolutely gone; practically there was no timber left, so that the roofing would have to be new. This could, however, be tendered for by builders. He suggested that surveyors' quantities should be at once taken out for the roofing of the building. It was stated that the quantity of lead collected in the debris was worth about 600*l*.

It was decided to at once instruct the architect to prepare plans and specifications for the complete roofing of the church, for the external roofing of the choir and for the temporary roofing of the tower, and to obtain estimates from the builders whose names had been placed before the committee.

Mr. Scott reported that he, together with the clerk of the works and Mr. T. S. Ullathorne, of Selby, had been over to the Rev. Benjamin Hemsworth's quarry and had examined the stone there, which was admirable, and would answer the purpose as well any stone they could get. It was a very fine gift of Mr. Hemsworth's, and he hoped the committee would decide to accept it. Lord Wenlock moved

that they accept the stone, and give thanks to the Rev. Benjamin Hemsworth for his very generous gift. The motion was passed.

The Chairman announced that 10,000*l*. was the amount of work which the committee had sanctioned so far.

It was decided that application be made by the chairman and secretary in the name of the committee for a faculty to rebuild and restore the fabric and its furnishings as they existed before the fire.

The repairs to the columns and arches of the choir and the Lathom chapel were entrusted to Mr. T. S. Ullathorne, of Selby, who had assisted in the restoration of the church on a previous occasion.

THE EDINBURGH MUNICIPAL COLLEGE OF ART.

SOME supplementary particulars have appeared in the *Scotsman* of the scheme now under consideration for the establishment of the Edinburgh College of the Fine Arts and School of Decorative Arts and Crafts. In addition to the main points which we mentioned briefly last week, the report suggests that, in conjunction with the four completely appointed sections of painting, sculpture, architecture and decoration, there should be, as "common necessities," a cast gallery, a museum, library and lecture theatre, *plein air* glass studios for the study of animals and outdoor effects generally, and various other accommodations such as are now considered desirable in modern schools of art. Although the scheme does not reproduce any existing institution, it follows rather the best continental schools than those at home in standard of requirements, and is the outcome of a study of establishments at various centres, such as Paris, Berlin and Brussels. The scheme is largely based on a programme and sketch plans submitted by Mr. Macgillivray, R.S.A., a member of committee. The block plan shows approximately a parallelogram which in its long axis lies oriented about east and west, following closely the northern boundary of the site. The length over all is about 420 feet, the average width about 140 feet. The form it is suggested the buildings should take is, roughly, that of a hollow square, divided at the middle by the entrance hall, museum and cast gallery, centred north and south. This results in the formation of two courts, one on the east side of the central block measuring 140 feet in length by 70 feet in width, and one on the west side 130 feet long by 50 feet in width.

As far as circumstances and the exigencies of construction allow it has been thought desirable to localise the various sections of the arts in fairly defined and suitable quarters of the building. Thus the space and studios allocated for the art of painting occupy the whole of the north-east quarter of the plan, and have the advantage of an almost true north light. Similarly, the space and studios for sculpture take up the north-west quarter of the plan, and receive a light which, on summer afternoons, would be almost too westerly for the painting section. Architecture and decorative painting occupy the south-east quarter of the plan—the whole of the upper floor at this part being apporportioned to architecture and the ground floor to decorative painting and elementary design. Public offices, general accommodation for the administration and staff, &c., occupy the two floors of the south-west quarter. By this scheme the lecture theatre will be most conveniently placed at the east end of the block, near the sections requiring to use it most frequently. Over the sculpture studios are shown a series of seven small studios for post-graduate students and a space for a photography class. The library is placed at the centre over the entrance hall. The plan also shows two common rooms for students, one for each of the sexes. They are placed one on each side of the central block near the entrance. In each of the courts there is a glass pavilion. That in the east court is for painters to practise group painting with open-air effects. The one in the west is for the study of animals by sculptors and painters. A conservatory for plants is attached to the decorative section on the outside of the south-west quarter, facing the sun. By way of explaining the amount of space required, it is said that with a view to the greatest efficiency it is of high importance that the studios, rooms, &c., for each department of the institution should be specially designed and equipped for its special work, so that those desirous of acquiring knowledge in more than one department may be afforded every facility. On the plans submitted, taking the studios and classrooms by

themselves, and leaving out such general matters as museum, lecture theatre, library, glasshouses, corridors, staircases and offices, the plans provide superficial area of classrooms equal to 30,000 superficial feet. Taking as an allowance per student, say, 40 feet, there would in this space be accommodation for 750 students; and this at three relays per day would represent 2,250 students. The estimate of the number of students who would probably attend the school is 2,006, made up as follows:—From the Royal Institution, 456; from the Heriot-Watt College, 450; teacher-students, 1,000—total, 1,906; allow for probable increase, say 100—2,006.

The Lord Provost's committee of Edinburgh Town Council have had under consideration the report of the art school committee, recommending that the whole of the Cattle Market should be set apart for the purposes of the school, the estimated cost of which is put at 50,000*l*. The committee recommend general approval of the report, and the town clerk was instructed to apply for a share of the accumulated funds of the Board of Manufactures. It was also agreed to appoint a deputation to wait upon the Secretary for Scotland, and place before him the claims of the city for a satisfactory grant from the fund in the hands of the Scottish Education Department.

An agreement has been entered into among the different parties. Assuming the total expenditure to be 70,000*l*, the Education Department of Scotland will contribute 30,000*l*. and the Scottish Office 10,000*l*. The Town Council's share is fixed, therefore, at 30,000*l*, of which half is represented by the value of the cattle market site, leaving 15,000*l*. to be raised out of the rates or by voluntary effort. The important point is that it is a *pro rata* arrangement, each undertaking hanging upon the other, and if the Town Council fail to provide the stipulated portion, the Government contributions will be diminished accordingly. The surplus from the Board of Manufactures will be drawn upon for the 10,000*l*. to be given by the Secretary for Scotland.

ROYAL SCOTTISH ACADEMY.

At the annual meeting of the Royal Scottish Academy held on November 14 the office-bearers were elected and the Council declared for the ensuing year as follows:—Council—Sir James Guthrie, president; Messrs. E. A. Walton, W. Birnie Rhind, John Kinross, C. Martin Hardie, W. Grant Stevenson and Hippolyte J. Blanc; George Hay, secretary; John Hutchison, treasurer; W. Birnie Rhind, C. Martin Hardie, auditors; W. D. McKay, librarian; E. A. Walton, W. Birnie Rhind, curators of library; J. Campbell Noble, E. A. Walton, W. Grant Stevenson, Robert Burns, visitors of the life school.

The report of the Council is as follows:—

1. The eightieth exhibition was opened on Saturday, January 27, and was closed on Saturday, June 9. It comprised 346 paintings in oil and water-colour, 41 works in sculpture, 68 in architectural drawings, models and photographs of architectural works executed by exhibitors, etchings and enamels. The Council have pleasure in reporting that the increased interest taken recently by the public in the exhibition has been maintained.

2. The banquet took place in the galleries on the eve of the public opening of the exhibition, when the President and Council had the honour of receiving a large and distinguished company.

3. At the statutory general assembly of the Academy, held March 21, R. M. G. Coventry, painter; Percy Portsmouth, sculptor; and James Miller, architect, were elected to the rank of Associate.

4. The librarian and curators of the library report as follows:—As in the two past years, the library was open for a very limited period—six evenings in all—from Monday, November 13, till Monday, December 18, 1905. It is to be regretted that the attendance was less satisfactory than in the immediately preceding years, and especially that the students of the Academy's life class were less numerous represented amongst the visitors. The books, drawings, prints, &c., are generally in good order and catalogued up to date.

The following addition has been made to the Academy's collection of works of art during the past year:—"The Portfolio," substituted for the portrait lodged in 1905, by E. A. Walton, R.S.A. (diploma work).

5. Report of the Visitors to the Life School of the Royal Scottish Academy:—The session of 1905-6 commenced on November 13, 1905, and finished on June 29, 1906. There were 125 meetings of the class, viz. sixty-one evening and sixty-four morning meetings; and the aggregate attendance

amounted to 1,235. The visitors have pleasure in reporting on the satisfactory condition of the life school, in the number of students on the roll, the average attendance and the standard achieved in drawing and colour. The Carnegie Travelling Scholarship is giving an additional stimulus to earnest work, while the President's monthly prize is having a beneficial effect in composition. The Council, after reviewing the works done by the students during the past year, have great pleasure in confirming the opinion of the visitors in their report regarding the earnestness and ability manifested by the students, as shown in their studies when arranged in the galleries. After a careful examination of the studies the Council awarded the prizes as follows:—The Carnegie Scholarship, Peter Munnoch; the Chalmers Bursary, David Alison; the Chalmers-Jervise prize for best drawing from the life, Peter Munnoch; MacLaine Watters Medal, William A. Cuthbertson; the Keith prize for the best work by a student in this year's exhibition, David Alison. The Stuart prize for composition and design was not awarded this year. William A. Cuthbertson, Alex. Bryson Gillespie, Hugh Monro and David Wright are commended for drawing, and Matthew H. W. Whittet is commended for painting.

6. The Council have pleasure in reporting that, by the courtesy of the National Art Collection Fund committee, the *Rokeby Venus*, by Velasquez, was for a short period shown in the galleries of the Academy, and attracted great interest and attention.

7. The Council have also pleasure in reporting that the collection of works of art by the late George Frederick Watts, R.A., O.M., referred to in the report for 1905, was highly appreciated by all art-lovers and others who visited the collection.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.

At a meeting of the Birmingham Architectural Association, under the presidency of Mr. A. L. Ball, a paper was read by Mr. Halsey Ricardo on the "Use of Enamelled Ware in Street Architecture." He said that the architect's use of enamelled tiles might be classed for convenience sake into three divisions, according to the purposes for which he used them—either on hygienic grounds, for the purpose of saving or reflecting light, or for decoration. The three divisions blended and shaded off into each other, and sometimes all three objects were obtained simultaneously in one scheme of tilework. He explained in detail the manufacturing of tiles, and said the question of using them externally was made very difficult by the doubtful behaviour of the tiles themselves. It was a common sight to mark great patches on walls where tiles had been and had dropped off, or to find them cracked and discoloured. The underground railway was painfully rich in examples of their failure, and he noted that the linings in the twopenny tube were beginning to discolour. Wet followed by frost, with an imperfect key for fastening at the back of the tile, accounted for the downfall in most cases, while the impure atmosphere of London endeavoured to discolour everything it could not corrode. He referred to what had been done in the past in regard to tilework for the outer covering of buildings in Mesopotamia, in Persia, in Africa and in Spain. They were used as a protective covering, and also for decorative purposes for the exterior of buildings. Many beautiful effects had been produced by their employment. They had been used also for interior decoration. The example might be followed with advantage and profit in our large cities. For half the year our cities were the colour of a dirty cobweb, and the only refreshment the eye got was in the glimpses of the sky overhead, the shop windows and the hoardings. Those latter marked the hunger for colour significantly. They wanted colour in our streets, and he asked why they should not plate their own buildings with tiles. He did not suggest that a man should veneer his vertical section of a street side that served him as his house, and let his neighbour on either side follow or not his novel start, because colour to be effective must be in broad masses. He should like to see whole streets treated in permanent colour. As a beginning in so bold an experiment the scheme might be tried on a detached building standing free, and with some trees about it, to a public building of such a frontage as should be sufficient or display a large mass of plain wall surface. The effect of broad masses of colour would be admirable, and a glazed surface would be advantageous from a health point of view, and would also be very durable. It was easily cleaned and was impervious to the elements.

NOTES AND COMMENTS.

WE have more than once referred to the differences between Mr. KELLETT, a contractor, and the Corporation of Stockport. The matter arose out of the partial construction of a reservoir. The contract was likely to amount to 400,000*l.*, although work only to the value of 75,000*l.* had been executed. The amount paid was 68,154*l.*, a reserve being retained according to the conditions of the contract. In the progress of the works it was discovered that the site was unsatisfactory. This fact was pointed out by the contractor, but was received with scepticism. Mr. KELLETT was informed that he had undertaken to make a dam that was watertight and stable, and to that he would be held. His reply was that what he had undertaken was defined by the drawings. After some time the Corporation decided to put an end to the contract, and Mr. KELLETT brought an action which was to be tried at the Manchester Assizes this week. The Corporation had, in fact, decided to try a different site, and the contractor, it was stated, was kept employed on experimental excavations which would bring him no profit. On the second day Mr. ISAACS, K.C., one of the counsel for plaintiff, said it had been agreed to submit the whole case to the official referee. Mr. PICKFORD, as counsel for the Corporation, said there was no intention of acting unfairly, and that if Mr. KELLETT suffered injury he could recover compensation. Mr. Justice A. T. LAWRENCE expressed his satisfaction, for a technical case of such a magnitude involves all connected with it in a severe strain. The real point at issue is whether the contractor agreed to carry out works which were defined on the plans, or whether he accepted all contingencies in the belief that his ability was sufficient to get him out of every difficulty. The engineer was the late Mr. MANSERGH, and in a letter to the resident engineer he wrote:—"Clause 97 (of the contract) is quite clear; it throws the sole responsibility for the perfect stability and watertightness of the dam on the contractor, and you must say nothing to him which will lead him to suppose that his liability is limited in any way." From Mr. MANSERGH's experience there is reason to suppose that he was not likely to be indefinite about the responsibilities of the contractor.

THE position of civil engineering and the main cause of its popularity was suggested by Mr. DONALD A. MATHESON, engineer-in-chief of the Caledonian Railway, at a meeting of students in Glasgow. Civil engineering was, in his opinion, the art of making a sovereign earn the most interest, and the commercial element was everywhere present in all civil engineering work. The young civil engineer should therefore be taught early, preferably in the school of practical experience, to recognise the absolute necessity of securing durable work and of ensuring economy, not only in the first cost of construction, but also in point of upkeep. The economics of maintenance must be marked on his memory. The civil engineer who had not had practical experience in maintenance was not well qualified to design or to direct the design and construction of works. Sufficiency in strength of civil engineering works was really true economy. But one of the enemies to economy was the difficulty created by water. Nothing was more true than the saying attributed to a well-known Scottish railway contractor of the past—"Ye canna cheat watter." In all civil engineering work judicious first cost and the exercise of skill in properly dealing with water ultimately saved much money in maintenance, and, strange as it might sound, good drainage might be said to be synonymous with good dividend. A penny properly saved in maintenance was a penny rightly gained for dividend. It was not incompatible wit the high professional ideal to say that the making of dividend was one of the chief ends of the civil engineer. Dividends could be made, or at least increased, by sound economy in expenditure in maintenance, and expenditure in maintenance in its turn could

to a large extent be governed by skill in design, judgment in the selection of materials and thoroughness in construction. It could have been pointed out that the great difficulty in dealing with water arose from its unexpected appearance. It may seem easy when there is an irruption caused by the tapping of a spring to say that the danger could have been anticipated by a careful study of geological maps and sections. But not even the geologists have a sufficiently detailed knowledge of subterranean arrangements to impart certainty to their prophecies.

On Wednesday Lord BALFOUR OF BURLEIGH unveiled a memorial of JOHN KNOX, the Reformer, which has been set up in St. Giles's Cathedral, Edinburgh. The sculptor is Mr. PITTENDREIGH MACGILLIVRAY, R.S.A. The features of the Reformer are of such a definite and stern character, it might be supposed that representation of them was not a difficult task. But when the advice of THOMAS CARLYLE was sought about the selection of a portrait for the Portrait Gallery in Edinburgh, he had to be very guarded in his reply, and some of the old portraits were criticised with characteristic scorn. BEZA's woodcut is described as the representation of a gentleman content to take things as they came, if only he was allowed to digest his victuals and sleep in a whole skin. A similar portrait by GOULART, of Geneva, is said to be only a vague hypothesis. The portrait given by VERHEIDEN, a Dutch theologian, which evidently was used by Sir DAVID WILKIE for his *Knox preaching before Queen Mary*, was to CARLYLE the most intolerable figure that exists of KNOX. The Torphigen portrait is held to be the work of a hopelessly incompetent painter, while the portrait in Glasgow University shows an altogether weak and foolish head. The portrait in Holyrood House is now recognised as one of an official architect. One in Hamilton Palace presents not the portrait of the prophet of the Reformation, but of the professional Merry Andrew of the family. Indeed, after reading CARLYLE's letters one can doubt whether it is wise to attempt to represent JOHN KNOX on such uncertain evidence. The sculptor in the new memorial follows the lines of Professor HUME BROWN's portrait, and at least presents a very vigorous divine. St. Giles's Cathedral now contains several interesting memorials of the political and theological battle in which Scotsmen participated.

By an inexplicable oversight it was stated last week in the note on the new War Office that Sir HENRY TANNER has co-operated with Mr. CLYDE YOUNG. The official information was before the writer, and it stated what was generally known among architects, that Mr. CLYDE YOUNG had the advantage of the experience of Sir JOHN TAYLOR, K.C.B. We regret the error and trust it will cause no annoyance.

ILLUSTRATIONS.

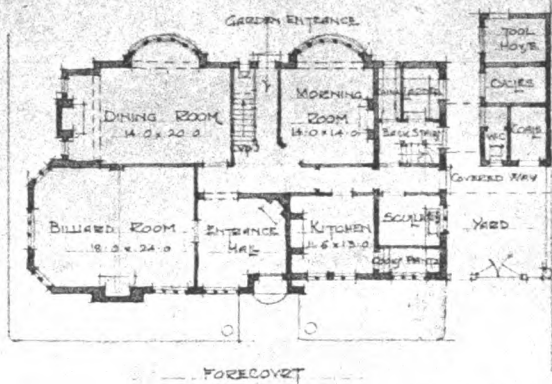
NEW SESSIONS HOUSE, OLD BAILEY, E.C.: DOORWAY.

SOUTH AFRICAN WAR MEMORIAL LIBRARY, TRINITY COLLEGE, GLENALMOND.

CATHEDRAL SERIES.—MANCHESTER: THE SOUTH PORCH AND TOWER.

HOUSE, WAKEGREEN ROAD, MOSELEY.

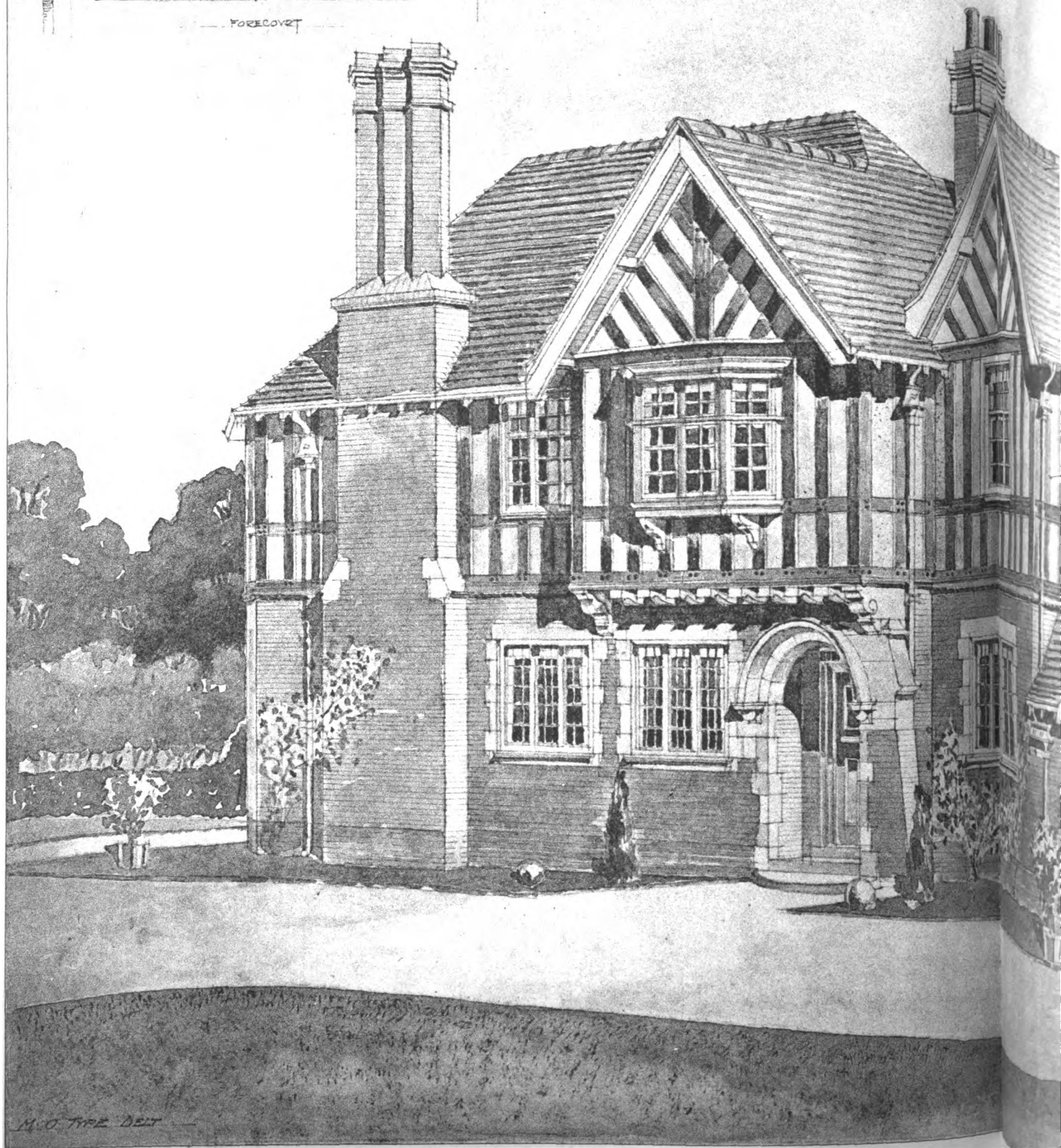
THIS residence now being completed is situate in Wakegreen Road, Moseley, Birmingham. The site is most picturesque, overlooking a well-timbered valley, the autumn tints of same being at the present time most pleasing. The architect is Mr. J. BREWIN HOLMES, Exchange Buildings, Birmingham; the contractor, Mr. E. CROWDER, of Birmingham. The total cost of buildings, fencing, laying-out grounds, &c., is 2,000*l.* The interior oak panelling of the hall and dining-room is the work of Messrs. WARD & CROFT, Barwick Street, Birmingham.



HOUSE WAKEFIELD

FOR CLAUDE N. J. 1906

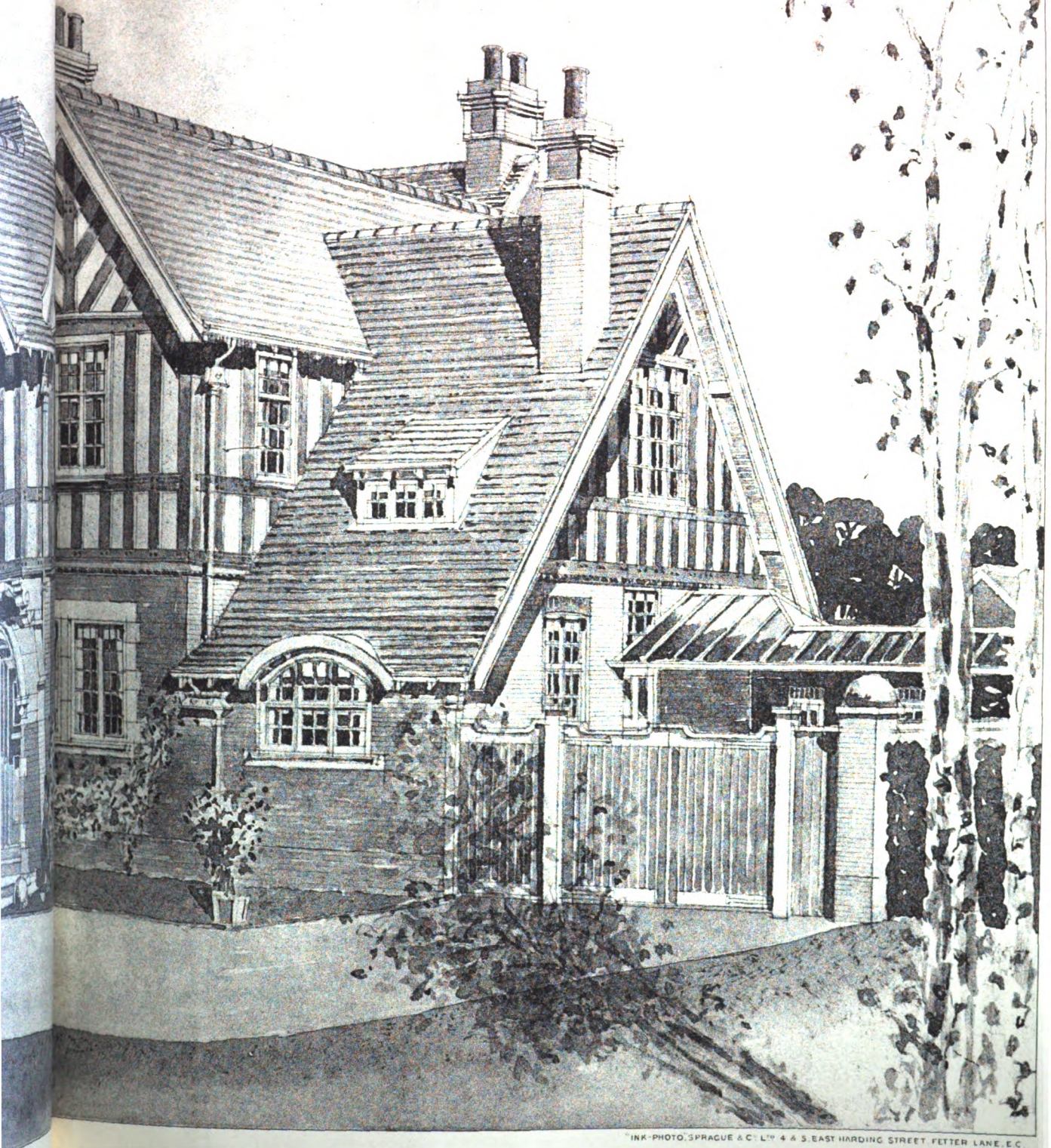
J. BREWIN & HOLMES
ARCHITECTS
BIRMINGHAM



Nov. 23rd 1906.

E. WILKIN RD MOSELEY

XX CHIPPERS ESQ

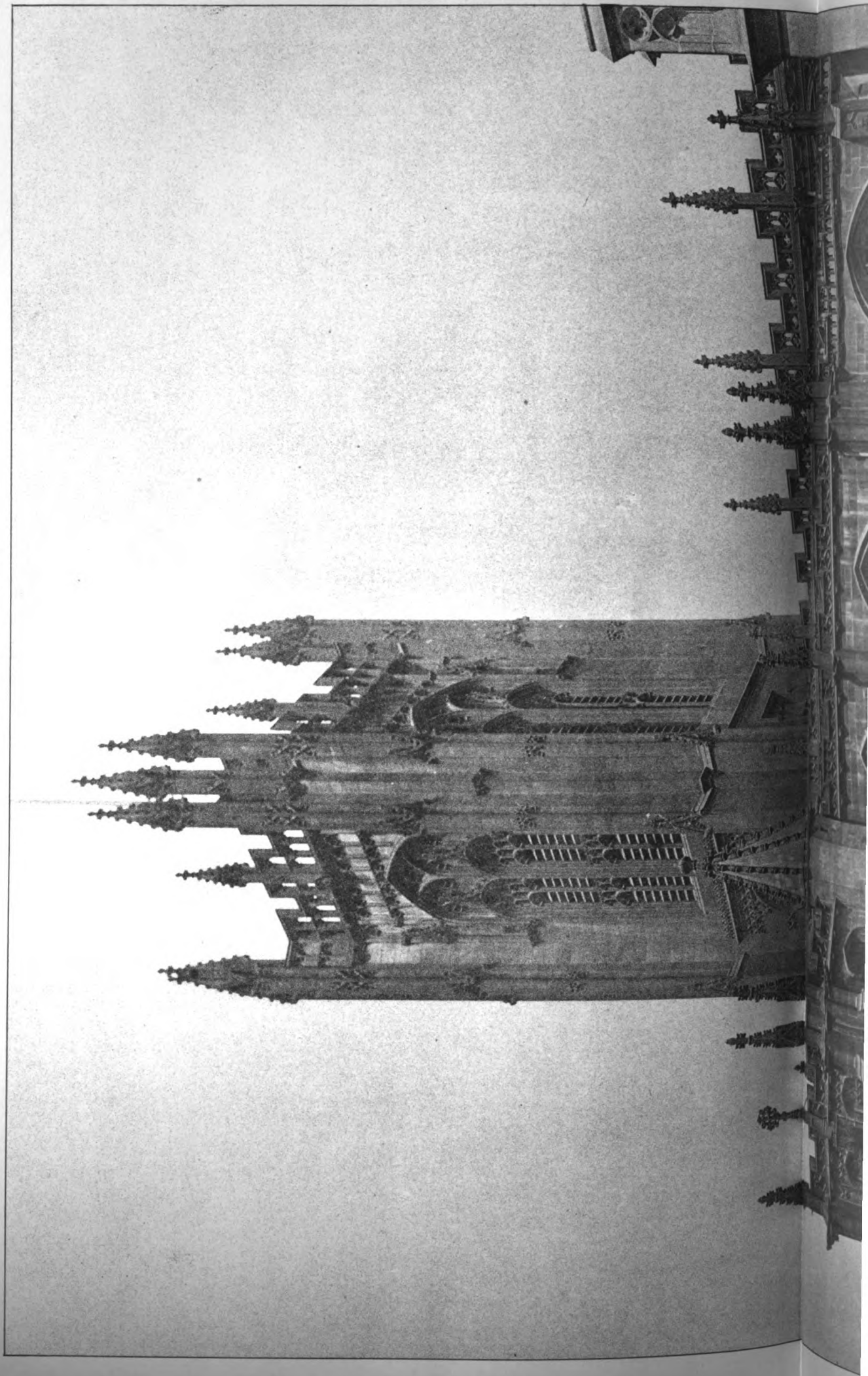


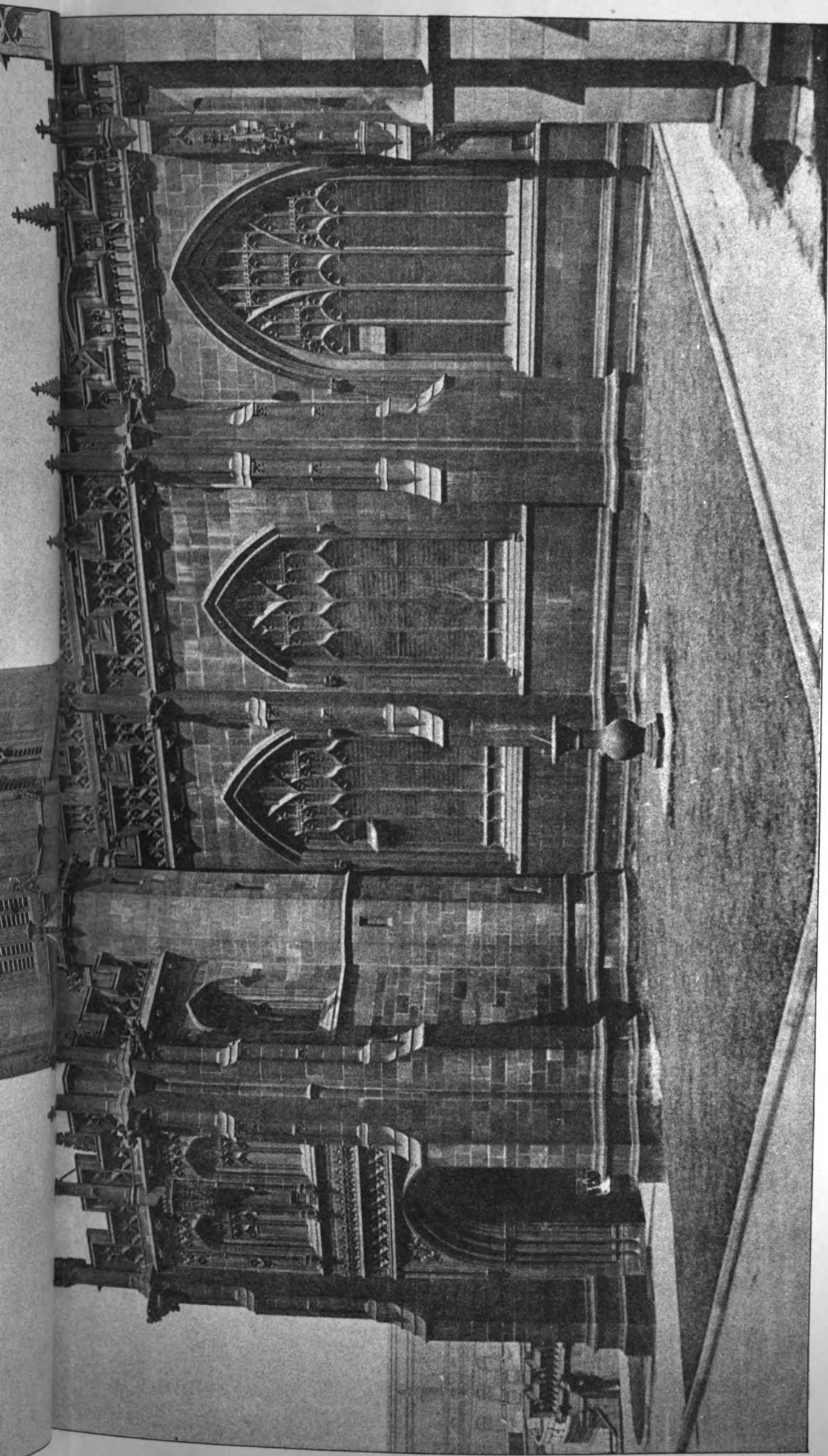
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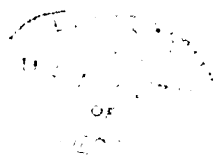
Die Architect, Nov. 23rd 1906.



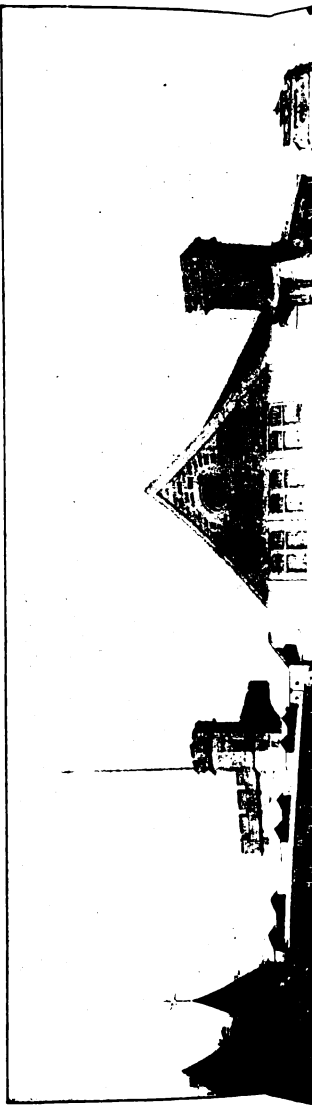
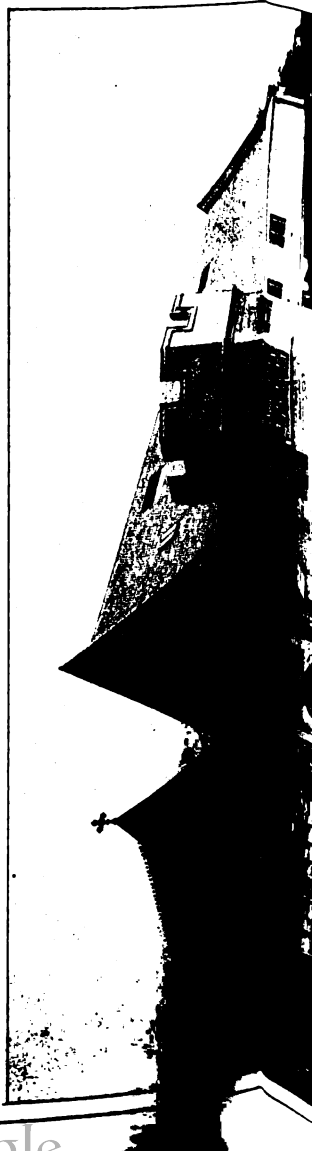
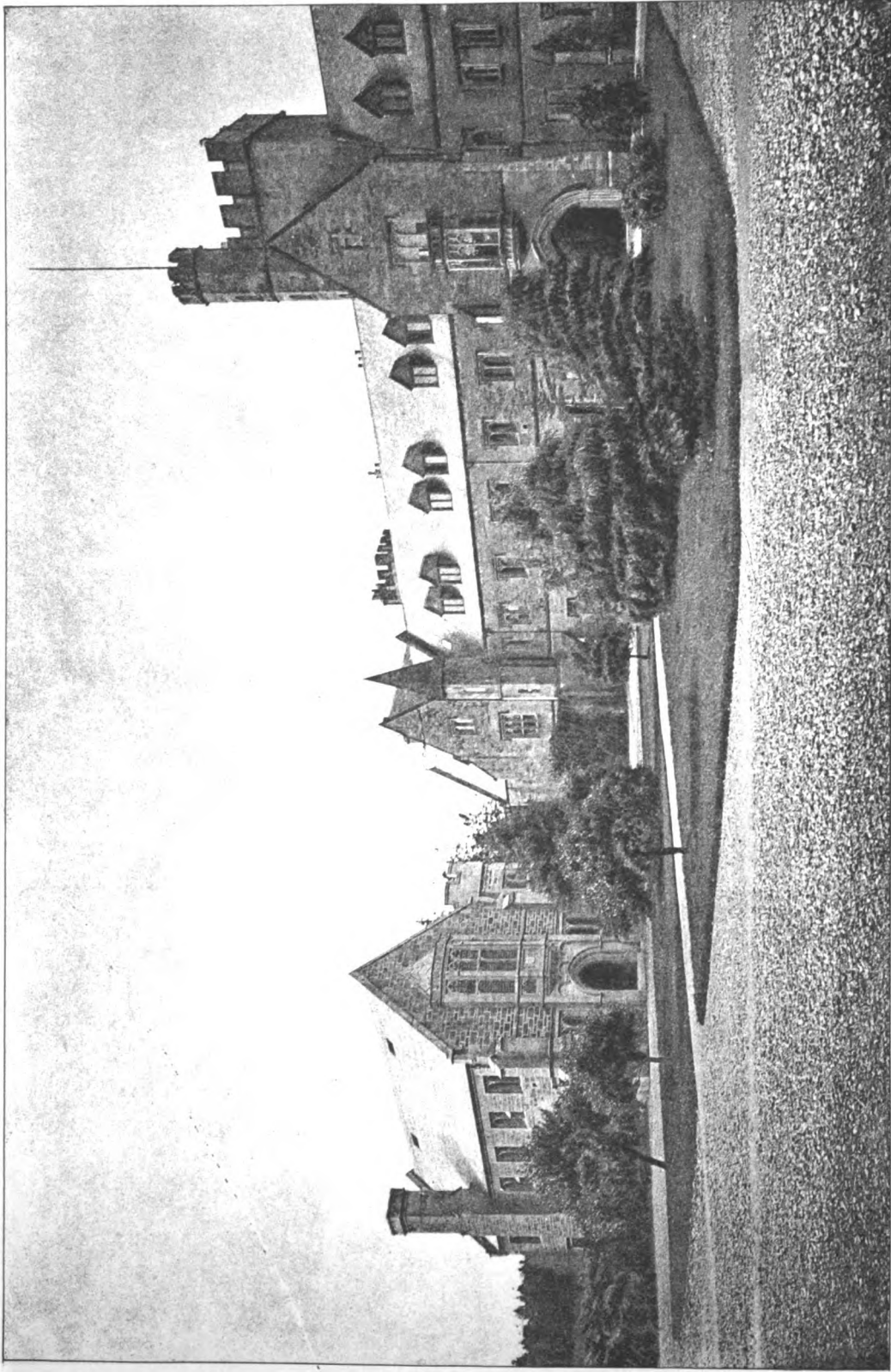


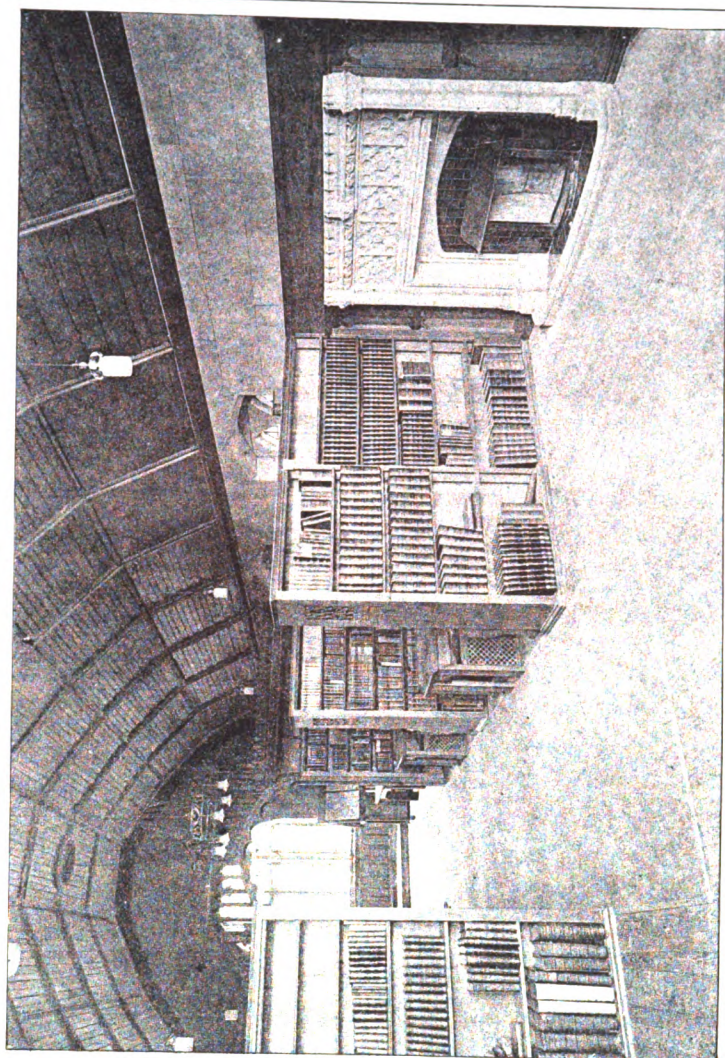
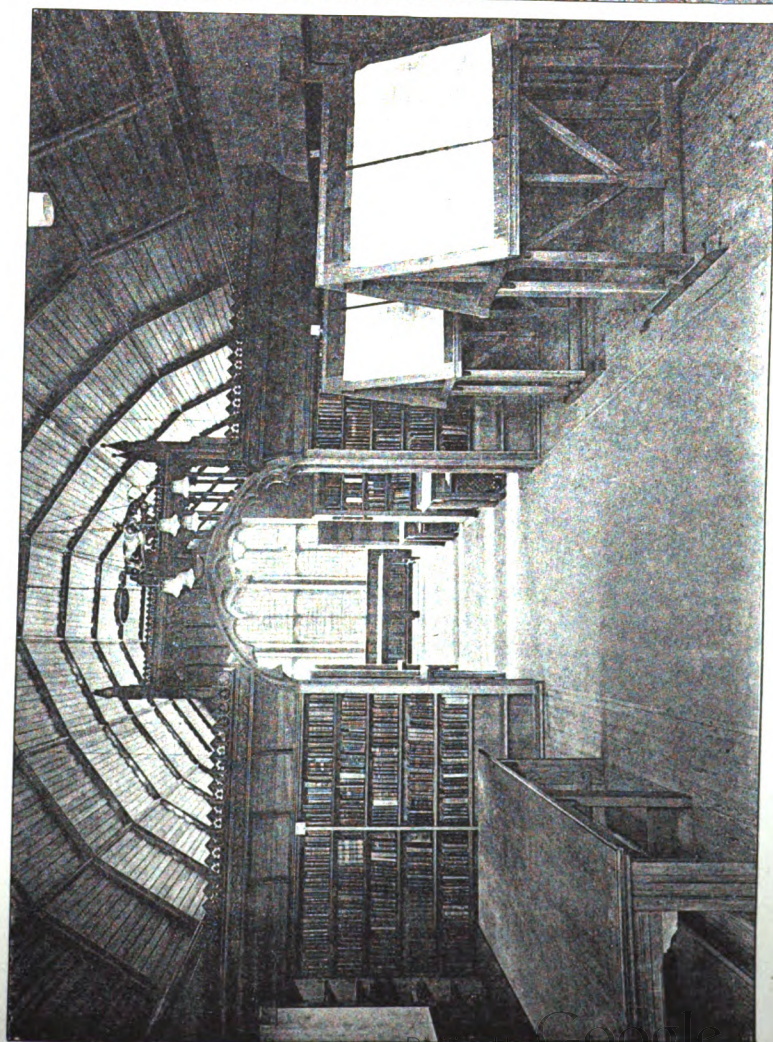
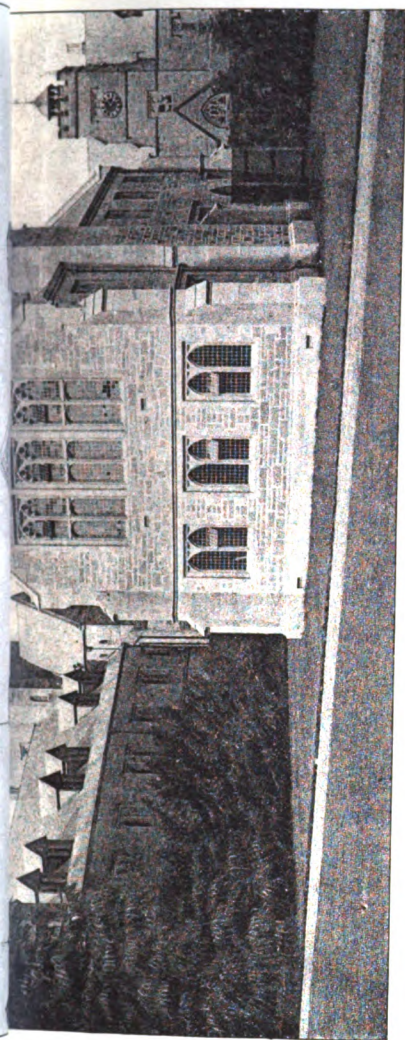
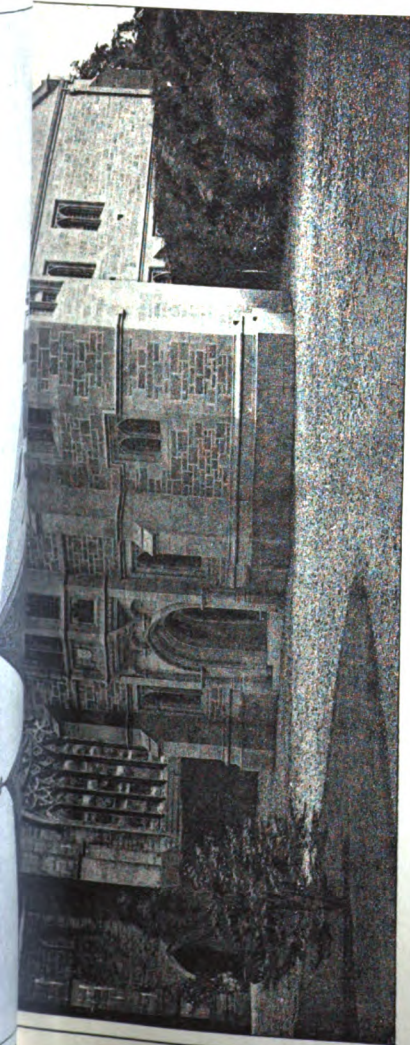
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CATHEDRAL SERIES, No. 585.—MANCHESTER: THE SOUTH PORCH AND TOWER.





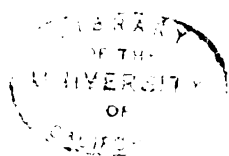




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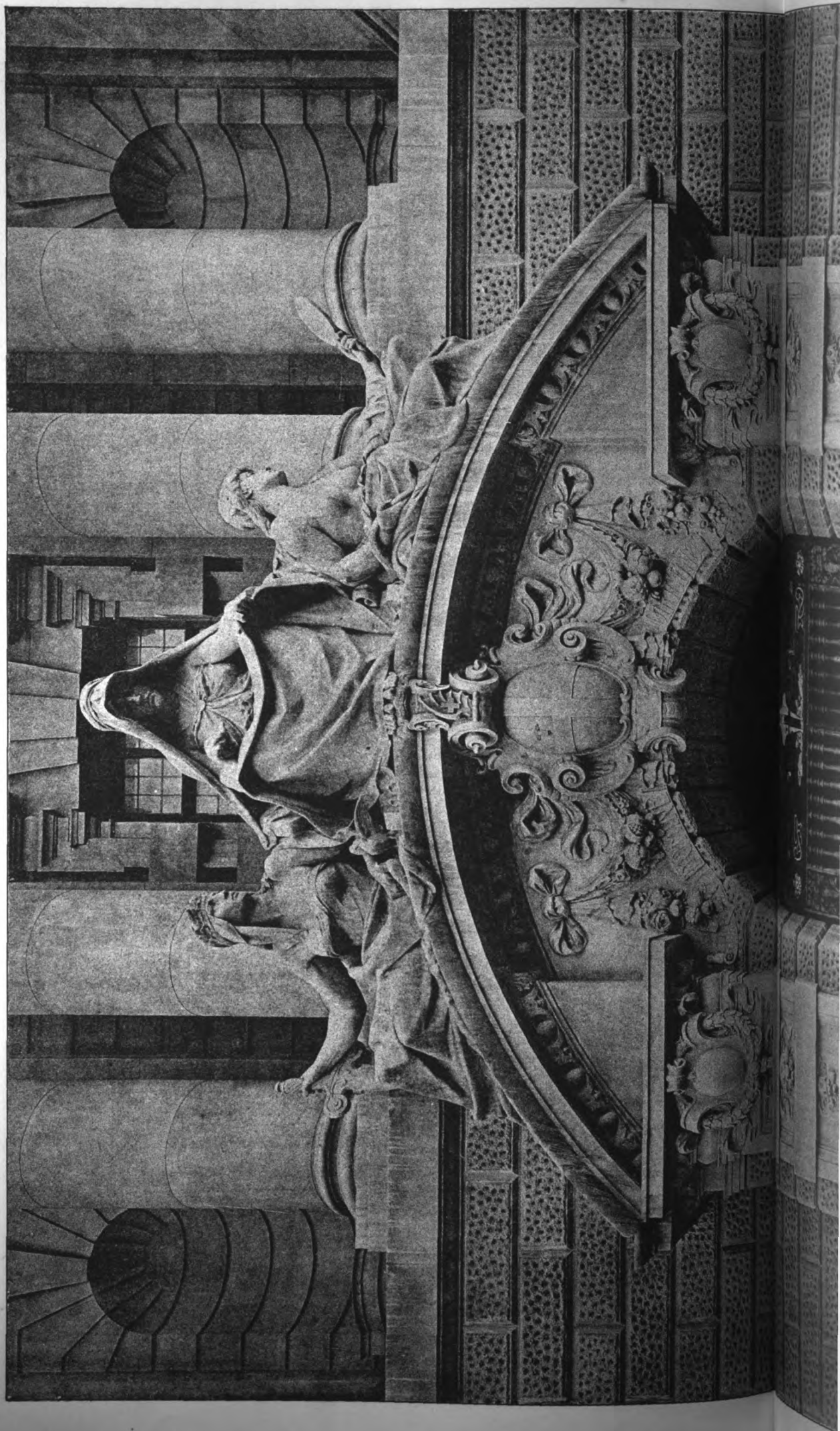
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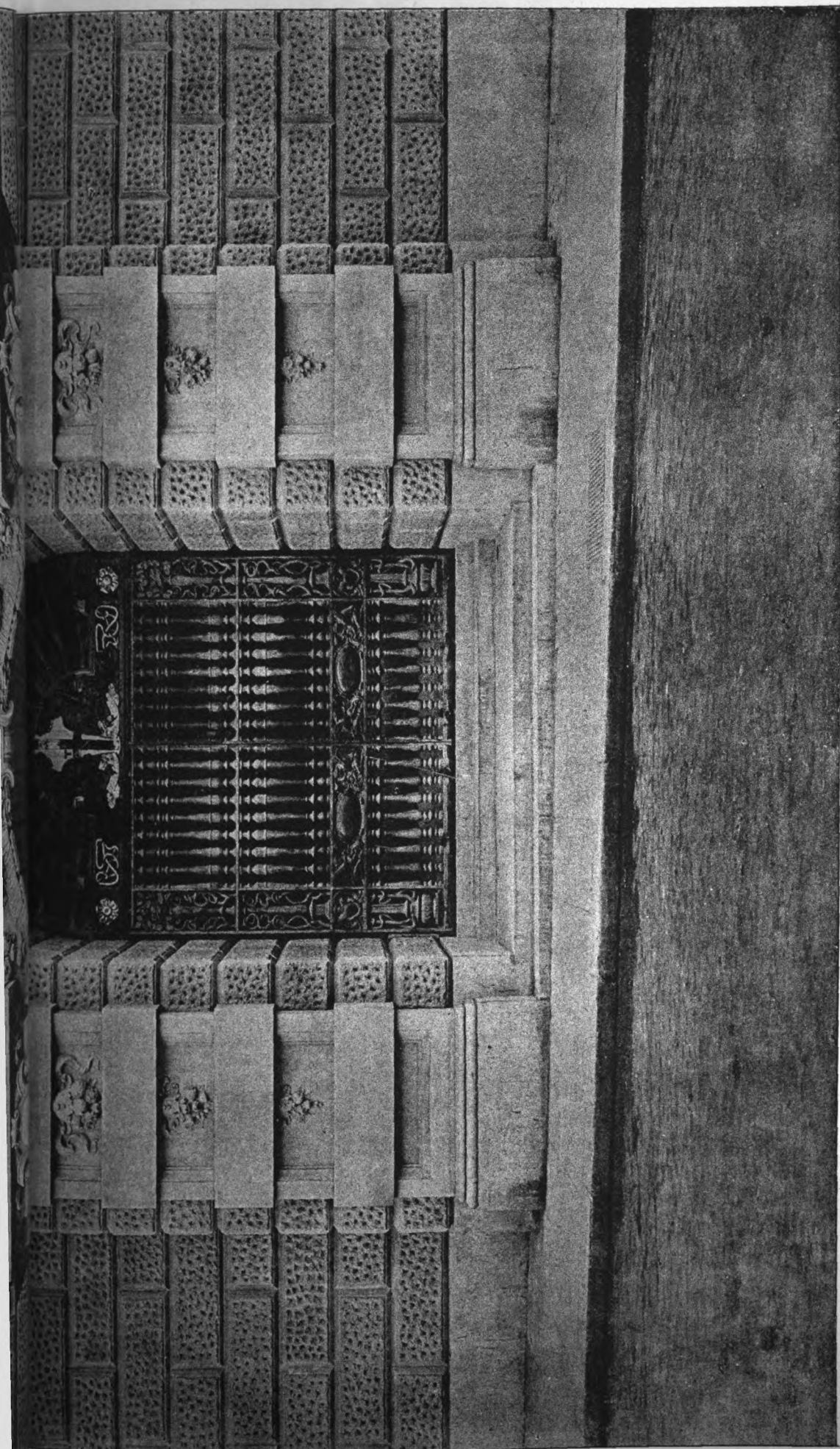
SOUTH AFRICAN WAR MEMORIAL LIBRARY, TRINITY COLLEGE, GLENALMOND.
A. G. HEITON., Architect.





De Architect, Nov. 23rd 1906.





PHOTOGRAPHED BY S. B. BOLAS & CO. 69, OXFORD STREET, W.

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NEW SESSIONS HOUSE, OLD BAILEY, E.C.: DOORWAY.

E. W. MOUNTFORD, F.R.I.B.A., Architect.

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ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Institute of Architects was held on Monday evening last at Conduit Street, W., Mr. H. T. Hare, vice-president, in the chair.

Mr. A. E. HENDERSON read a paper on :—

The Cræsus (Sixth Century B.C.) Temple of Artemis at Ephesus.

The purpose of the lecturer was to describe the actual remains found and the fragments which remained of the Cræsus (sixth century B.C.) Temple of Artemis at Ephesus, uncovered and surveyed during the British excavations directed by Mr. D. G. Hogarth in the autumn of 1904 and the spring of 1905, also to place before the Institute his suggested restorations. He began by stating that the Cræsus Temple was the fourth structure on the site, and that there were remains of yet another (a fifth) called "the Hellenistic Temple," over and beyond it, besides large concrete masses which were late Roman or early Byzantine, sinking low down into the foundations and rising to about two metres above the Cræsus pavement. He showed a large plan and sections of the earlier temples, but did not explain them, except to say that they increased in size as one superseded the other. Yet the Cræsus cella walls easily enclose the last of the three. The general plan shown gave all the remains which were uncovered, which practically amounted to all that was left of the Cræsus and Hellenistic temples. Before commencing his survey the lecturer was instructed by the late Dr. Murray to measure accurately every portion of Cræsus pavement, and this he believes he has faithfully fulfilled. He showed how the Hellenistic foundations extended beyond the earlier temple, and showed the position of a brick drain beyond the outermost step, which had been covered by the marble paving of the court, also where the step itself survived and the large pier foundations to support the podium steps. He further showed photographs of the temple as excavated, and described the difficulties with water, which were successfully overcome. The Cræsus Temple was then taken in detail. The central basis of the three earlier structures (from and near which the treasure was extracted, now on view, on the presentation of a visiting-card, in the Coin Department of the British Museum) was raised and reused as the centre. The lecturer pointed out that the foundations were practically double the length to the width, that the walls had separate foundations, but not the columns, and he showed a conduit which passed beneath the west doorway. Foundations to the steps to the Perron, or western platform, were shown both in section and by a photograph. The paving was then described, how it was laid to no pattern, but how beautifully accurate all the joints were made. The remains of the walling to the cella were then described, how markings were found indicating the position of the north wall, and the impression of the east wall in a mass of concrete, and how by the portions remaining the south wall could be traced from the east cross wall to the south-west anta. This walling was shown to vary somewhat to the walling left of the west wall, which shows the position of the north reveal of the great west portal. Other portions of the superstructure were a plinth and lower base surrounded by Hellenistic foundations lying to the north-east. A plinth—greatly mutilated—to a column directly south of the south-west anta, and half a plinth lying directly to the south-west of this; and, lastly, a large mass of Hellenistic foundations, which was not explored, but it showed that settlements had occurred to the Cræsus Temple before these foundations were laid. He then went on to describe the fragments of architecture which came to light. He began by stating that the outer rank of columns to the peristyle had larger plinths than the inner rank, and that all had a circular lower base about two metres in diameter, formed of three orders of double astragals separated by two filleted scotias. Many varieties of upper or torus bases were found; these he illustrated; the most usual type was parabolic in section, with horizontal flutings separated by V-grooves. Another variety was specially pointed out; the upper outline was divided up horizontally by quirked beads. The space between these in the upper half had flutings, but the lower half had reedings, the upper part being concave and the lower convex, which, as shown in the photograph, looked extremely substantial. No complete drums of columns were uncovered, but twenty various fragments were examined and measured; it was found that fourteen of these gave forty-four, three gave forty, and three gave forty-eight flutings to the circumference. He placed the forty-four in the outer rank, the

forty in the inner, and the forty-eight he did not place, as they were of an entirely new type; the flutings were alternately wide and narrow, one torus base was found to be of similar design. Enough portions of capitals were found for the lecturer to combine these to make an entirely new drawing. He also stated that the batter outwards of the volutes was for the optical purpose of counteracting the excessive foreshortening as seen from the ground, and he mentioned that in Hellenistic times the spiral was contracted horizontally and lengthened perpendicularly for the same optical purpose. The spiral to the Cræsus Temple was found to be a simple unwinding curve which can be easily set out. A suggested restoration of a rosette capital was shown, which proved to be somewhat different from the one erected in the British Museum, a leaf and dart echinus took the place of the usual egg and dart, and pointed leaves instead of elliptical were given to the rosette, besides other minor alterations. Nothing which looked like an architrave could be found, but the bed-mould and corona were both important additions, besides several fragments of the large sculptured cymatium gutter.

The lecturer then dealt with his restored plan; he showed the data from which he planned the columns placed round the peristyle and in the pronaos; he then described his restoration within the cella enclosure, how he placed the columns along the facing found in the foundation, and he placed one column (the 127th) in the centre behind the basis, thus making the naos twice the width of its aisles. He suggested that the thirty-six sculptured columns could be accounted for by placing them in the front rank of the ends, and one at each end of the flanks, the remainder lining the central walks of the pronaos and porticum. He found that the whole length of the temple platform was 109 metres 20 centimetres, and the width 55 metres 10 centimetres. He found that measuring from the central axis to the north and south faces of the columns in front of the antæ was the same distance practically (about 12 metres 30 centimetres) as from these faces to the north and south faces of the outermost columns, thus dividing the façades into four equal divisions. He then showed an elevation with the height from the pavement to the underside of the architrave of this same dimension, viz. one-fourth the length of the façade. This height makes the order work out at about 8 diameters. He made the entablature a quarter of this, the pediment rose another three-eighths, and with the surmounting acroteria made the proportion of superstructure to the colonnades come to as 3 is to 4. He suggested that the roof was of tiling and timber, which would then account for the total destruction of this temple by the arson of Herostratus.

Mr. D. G. HOGARTH, who proposed a vote of thanks to the author of the paper, said he was himself truly grateful to Mr. Henderson for the assistance rendered during the work of excavation by his knowledge of technical details. The speaker in his supplementary remarks to the paper paid a tribute to the memory of the late Mr. J. T. Wood, because of the energy, persistence and acumen the deceased had shown in discovering the temple. No one, he said, could speak too highly of Mr. Wood, and all the world had reason to be grateful to him for the recovery of those remains which had been hidden for centuries under 18 feet of earth. Those who visited the place after Mr. Wood had profited enormously by what was done by him. The speaker said in the recent excavations they found the work of clearance undertaken by Mr. Wood had been excellently done in spite of many difficulties, and he had also laid bare the pavement of the temple described in the paper. They finally found Mr. Wood had most creditably searched the earth which had been removed from the remains. Considering the age in which the work had been undertaken, Mr. Hogarth thought the excavations by Wood could not have been better. The importance of the discoveries was not then realised, and Mr. Wood failed to do himself justice in his book on the Temple of Ephesus, and for some reason he never published drawings or plans; indeed, the speaker thought it was almost true to say that he ignored the archaic temple which he had discovered. Wood believed he had discovered one temple, whereas beneath the stratum were the remains of three earlier ones. The speaker said one reason why Wood probably would never have discovered them was that he ascertained his records by pitting, and from personal experience, notably at Knossos, the speaker had found that procedure to be fallacious.

Mr. CECIL SMITH seconded the vote of thanks, and said it was always a reproach that the work of excavating on the site of the temple had not continued after Mr. Wood's death.

The Austrians made application, but the right to investigate was refused them. The excavations described by Mr. Henderson would be the last undertaken. The local officials had compelled them to fill in the foundations, and the site was soon covered with water and debris.

The CHAIRMAN joined in the vote of thanks, and the meeting terminated.

EDINBURGH ARCHITECTURAL ASSOCIATION.

THE opening meeting of the Edinburgh Architectural Association was held on the 14th inst. Mr. Hippolyte J. Blanc, R.S.A., the president of the Association for the third time, delivered the inaugural address.

Mr. Blanc at the outset recalled the fact that their Association was founded about fifty years ago, and that, with the exception of the London Architectural Association, it was believed to be the oldest Architectural Association in the British Isles. As a body of architects its highest aims should be loyalty to the profession it represented and its members, and sound guardianship of the valuable architectural traditions of the city. Though to one moving with the growth of the city the changes in fifty years might not be very noticeable, yet the increase and expansion of the city and its industries were very apparent. Princes Street, the North Bridge, Lothian Road and Shandwick Place had had their frontages as in 1858 almost entirely changed, either by new faces super-applied on the old or by entirely new creations in substitution of the old. Of the original tenements in Princes Street, for instance, very few remained, nearly all having been supplanted by the palatial commercial edifices that revealed the increasing wealth of the citizen owners, through whom the valued rental of the city had been in fifty years increased at least fourfold. In that period nearly 150 public buildings had been added to the city, one-half being churches. In all this advance architecture had not declined, and in the rapid march of sanitary science the profession had proved its fitness to handle the details expertly. Whatever might be the future development of the city, it should be a matter of first importance that the main routes should be direct and wide enough for the increasing numbers of modern speedy conveyances. Pavements in these routes also were required to be much wider, to avoid the unseemly jostling experienced every day in the chief thoroughfares. Tree planting in streets, in the links and in the squares, should not require more than mention. A building could be made to look acceptable, though plain, if its forms were in harmonious proportions; so also could a building be designed richly, if the decoration be judiciously applied upon a well-proportioned body. Before the steady march of commerce sentiment must give way, but to infuse a fair proportion of sentimental treatment in commercial work was not incompatible with the requirements of commerce, and whoever, therefore, disregarded that sentiment was not acting wisely in the best interests of the city. Architects should therefore go with the spirit of the time, though in a thoughtful and scholarly manner, and not be led into some of the distorted expressions of modern eccentricities which, however pleasing as novelties, had a very ephemeral attraction.

The student of to-day had before him, in his daily walks in that city, opportunities of educating his tastes by making himself familiar with those specimens of masterful proportion and detail. Let them compare the thoughtfulness exhibited in Craig's and Ainslie's plans, prepared soon after the opening up of the northern fields of the city for feuing, when the Nor' Loch was spanned by the North Bridge, with the utter disregard of all amenity in the disposition of Morningside Road, Dalry Road and a few others. Why should the private interests of individual proprietors control the amenities (and often destroy them) of streets and roads, which ultimately fall upon the body of ratepayers to use and maintain? Why should not the magistrates have greater control in the genesis of such streets? When the problem of laying out the new town was under consideration, it was prudently determined to submit the whole scheme for the suggestions of architects. The result justified the resolution, and if Edinburgh had nothing else to show than the very successful and dignified Classical compositions in the squares and crescents of the new town, it had enough to justify its claim to be considered a truly Classical city. But of architectural character the later city extensions were mostly thoroughly devoid. The tenement residences had been in some main thoroughfares planted stretch after stretch painfully close, following the original irregular line of roadways, without

the slightest engineering. The resulting effect was anything but elevating to the resident or the passer-by. Why should streets be so closely aligned that opposite neighbours should be enabled to see through each others' windows, and at the same time make the narrow streets prematurely dark by the shadows of the high tenements placed on each side? If in Paris, under modern legislation, streets could be made from 150 to 200 feet wide, affording facilities for every sort of modern traffic and for broad pavements fringed with trees, was it necessary that the extensions of a city like Edinburgh should be laid out as a series of windy lanes? Edinburgh, on account of its hilly ground, demanded even wider avenues than did cities on level plains. Having regard to the irreparably poor appearance of the Morningside Road approach to the city, also of the Dalry and Gorgie Roads, it might be hoped the Corstorphine, Queensferry and Newington approaches might be kept broad, and guarded against the intrusion of anything affecting their present amenity, such as would result from the closing in of tenements. They might take suggestions from the specimens of the new town and a lesson from the experience of London and Paris, and especially the former, where enormous sums of money were being expended to bring back the amenity lost in a previous age of culpable, careless administration.

As in the case of all cities, suggestions of new schemes for improving the city's amenity were continually being made. Princes Street and the Calton Hill were perennial themes for busy minds ever on the outlook. It might be asked, however, with regard to the Calton Hill, could the picture as they now saw it be made more beautiful? Did not the openness of the screen formed by the unfinished national monument appear more pleasing to the eye than would be an enormously solid building apparently terminating the vista? One of the latest suggestions, that of forming a terrace or boulevard on the south side of West Princes Street, was now under consideration. Very wisely, a model had been constructed that the citizens might judge the effect of the suggestion to form a terrace or boulevard on the south side of West Princes Street. The proposal, however, had not taken—and, doubtless, wisely. There was more involved than could be judged from the model. In the West Gardens, the gentle fall from Princes Street Walk and the gradually ascending castle bank opposite, with the broad valley between, formed a unique picture, which could be appreciated only as a whole, not only by the leisurely, but by the ordinary passer-by. To cut off any of the picture, as seen from Princes Street, would destroy it, and the contraction of the valley, by the intrusion of the continuous stretch of terrace wall as seen from the lower walk, seemed very undesirable. A few feet in addition to the present Princes Street Walk, and a more dignified railing, would be an improvement, and at much less cost. Mr. Blanc also briefly touched upon the question of the Usher Hall, expressing his preference for a new building interrupting the present thoroughfare towards Haymarket.

The gift of Lord Leven and Melville for preserving and rendering serviceable and interesting the old chapel of Holyrood was one that was certain to appeal to the best sentiments of the citizens. But no sooner was the gift announced than a crop of suggestions and opinions were daily served up—some welcome, many not. Were not architects yet capable of dealing themselves with matters entrusted to them? Did the medical profession receive from the public budgets of anonymous correspondence when any member had a case to treat? He failed to see the difference. The risk of that premature discussion was that it would undoubtedly restrain the hands disposed to give, with the result that the city would be poorer by being deprived of the chances of increasing its real attractions. No declaration had yet been made by the architect, Mr. Thomas Ross, in whose hands the subject was placed, so therefore they had nothing before them. The gift, however, as a national one could not be overestimated. The history of the chapel was a sacred one. It seemed desirable, therefore, to do whatever was possible, with sacred handling, to save the building from its obvious fate. Total decay would, within a very limited period, certainly overtake the building if the inestimable opportunity was not now taken to arrest it. If it could be shown that wasting and disrepair could be rectified, and the building could be made serviceable by retaining all it possessed of original material, and by having the gaps filled in, there seemed no reason why that should not be done.

Architecture, he maintained, ought to be made a part of

a polite education, but if the public had no opportunity either at school or in after life of being properly directed in the most interesting and most useful study of architecture, how could an intelligent appreciation of an architect's labours be looked for? The remedy should be found in the infusion of a love for architecture at school. Instead of schools devoting so much time during autumn, winter and spring to the sport of football, could not that be varied by a few Saturdays being given up under special experts to an examination of some historic old building? By so sowing the seeds of elementary knowledge, one could look for a new generation qualified to think and act in sympathy with architectural progress. He earnestly hoped the foundation of the new art school, which now had attracted the attention it deserved, would not be long delayed, and that its teaching equipment would be such as would supply a full measure of the clamant needs of the architectural student.

On the motion of Mr. T. Ross, the president was accorded a hearty vote of thanks.

In reply, Mr. Blanc referred to the loss the Society had sustained in the death of Mr. Ballantyne, and it was resolved to send an expression of sympathy to the family.

The secretary, Mr. Colin B. Cownie, intimated that the Council of the Royal Institute of British Architects had arranged to hold their annual meetings in Edinburgh next summer.

AULD BRIG O' AYR.

THE following report by Messrs. Simpson & Wilson has been submitted to the executive committee for the preservation of the Auld Brig at Ayr:—

Acting on the instructions of the central committee, we have again made a careful examination of the whole bridge, and we are confirmed in the opinions expressed in our letter to the town clerk of Ayr, dated August 23, 1905. So far as we can judge, no movement has taken place in the bridge since our first inspection more than a year ago. From the bores which have been put down, it appears that the south abutment and all the piers are founded on boulder clay varying in thickness from 13 feet at pier No. 1 (the northmost pier) to 10 feet at pier No. 3. From what we have seen we have no doubt that the north abutment is founded on rock of some kind.

Boulder clay is a good foundation, and we are satisfied that the present condition of the bridge is not due to the sinking of the piers, but that the weakness is in the structure itself.

All the arches have gone out of shape more or less, the south arch unequally, having flattened on the north side and risen in the centre, while the other three arches have all sunk at the crown, and in so doing have drawn the spandril walls away from the piers.

The movement in the arches is, we consider, due to insufficient and improper haunching, and to the action of water, which has washed out a large proportion of the lime forming the original mortar.

The object of the committee being to strengthen the bridge, so as to preserve it in its present form without in any way interfering with its outward appearance, we now proceed to describe how this can be done. The mode we propose to adopt is as follows:—

1. Point or caulk any open joints in the arches, spandril walls and piers, the pointing being kept $\frac{1}{2}$ inch back from the face of the stones.

2. Excavate two trenches, 3 feet wide and 4 feet apart, at right angles to and between the spandril walls at the centre of each pier and down to the top of the haunching, and fill same with concrete.

3. Excavate trench, 3 feet wide, along centre of roadway, down to the arch and haunching, beginning at the cross walls above described, and working towards the centre of the arch from each side. Before filling this trench with concrete, apply grouting machine to each side along the bottom, so as thoroughly to fill the vacancies in the spandril walls and arch. Fill the trench with concrete up to the level to receive the roadway, and after the concrete is set remove the sand from between the spandril walls, and grout the portions of the arch and outer spandrils not already done.

4. Sink pits, 8 feet by 4 feet, in the centre of each pier, down to a depth of 8 feet below the timber cradle, grouting in all directions as the work proceeds. From the bottom of the pit drive mines, so as to underpin with brick and cement the whole area of the pier and cutwaters.

5. Cover the voids between the spandrils and concrete arches 9 inches thick, on top of which a layer of asphalt is to be laid, the roadway being finished with hornising as at present, making the roadway perfectly watertight.

We propose to begin with the south arch, and work northwards, following up the spandril walls and grouting as quickly as possible.

The parapet walls are much worn and off the plumb, and cannot be made to serve as fences without being rebuilt, although they are safe enough to stand in their present state if protected by unclimbable railings.

SIR ROBERT GEFFERY'S ALMSHOUSES, SHOREDITCH.

THE following memorial has been sent to the Charity Commissioners for England and Wales on behalf of the Society for the Protection of Ancient Buildings, the Metropolitan Gardens Association and the National Trust:—

We, representing societies interested in the preservation of places of historic and artistic interest and of open spaces, desire to address you with regard to the almshouses of the Worshipful Company of Ironmongers, situated in Kingsland Road, Shoreditch.

From advertisements which have appeared in the press and the notice in the garden adjoining the houses, as well as from the letter addressed by you to the secretary of the National Trust, under date October 1, 1906, it appears that the sale of the site and consequent demolition of the almshouses are contemplated.

These almshouses were erected in accordance with the terms of the will of Sir Robert Geffery in the early years of the eighteenth century, and they retain the architectural charm of buildings of that period. In front of the houses and facing the street there is a considerable garden containing fine trees. The houses have all the appearance of being well cared for; they have evidently been reroofed within the last quarter of a century. The chapel has been newly decorated and there does not appear to be any lack of means for keeping the establishment in good order and repair. All the living rooms of the inhabitants appear to look into the garden, and generally it may be supposed that the lot of the residents is not a disagreeable one. There does not seem, therefore, to be any adequate reason for the removal of the houses other than the prospective realisation of a considerable sum of money by the sale of the site.

The Commissioners, however, in announcing their decision in the case of the Trinity Almshouses, stated it to be their opinion that "an increase of income available for charitable purposes is not in itself a sufficient ground" for such changes.

We venture, therefore, to submit that this site is in its present condition of real value, for it provides a building of architectural beauty and historic interest in a district of mean buildings and unattractive warehouses, and a picturesque and well-matured garden which forms one of the very few open spaces in the district.

A part of the site too is occupied by a disused burial-ground, and could not be used for building without an infringement of the Disused Burial Grounds Acts.

The destruction of these almshouses would not only break a valuable link in the chain of history, it would remove from London a standing example of the charity and benevolence of her citizens.

Accordingly, we would very earnestly urge you to refuse your sanction to any scheme which involves the destruction of this garden and these almshouses, nor to sanction any other scheme without holding a public inquiry.

JEAN FRANÇOIS MILLET.

MUCH interest was excited in Scotland by the announcement in the papers of Friday last that "L'Angelus," the famous pastel by Millet, had become the property of a Glasgow collector. It was subsequently stated to have been purchased by Mr. John Reid, an engineering manufacturer, who had inherited a very valuable collection from his father. The following article on the artist appeared in the *Glasgow Herald* on Monday:—

In one of those felicitously phrased and illuminative essays which only the scholarly critics of France seem to have the gift of writing, M. Leonce Benedite, the director of the Luxembourg Gallery, claims that Jean François Millet

is the most extraordinary of all the great figures which have made the nineteenth century famous in the domain of art. However this may be, he undoubtedly stands alone, austere and grandiose, an isolated being, without analogy in the present, without precedent in the past. Before him none would seem to have looked out on this world of ours with eyes so mournfully clear-sighted and so gravely tender; and certainly none has expressed with an eloquence so simple and so pathetic those sentiments which were stirring human societies to their depths at the time that he lived and worked. Millet was, in truth, the man of his work. This work was not merely the expression of an intellectual concept, an artist's day-dream; it does not evoke an imaginary world, some vision of the land that never was; rather is it the outcome of his life itself. And this is the secret of his greatness. He was a son of the soil. As a lad he drove the plough, he tended the cattle; for him seed-time and harvest brought stern toil. Year in and year out he lived the grave and humble life of the peasant. And all the time his soul, aloof, introspective, meditative, brooded on the elemental facts of his surroundings, the aspects and the emotions of the daily existence of the tillers of the earth, so that, when the artistic impulse became too strong to be any longer resisted, it was with a keenly observant eye and a spirit attuned to lofty thoughts that he embarked on his life's career. Millet was, in truth, an accomplished and sincere artist who was also a great humanist. At first, without a doubt (his student days in Paris past), he attempted to produce work that would be fashionable, would please the thoughtless public; but after a few years of effort not to be himself he abandoned this endeavour, and, settling at Barbizon, commenced his real life's work, that unique series of pictures which has been well called "The Epic of the Peasant." Here amid poverty and (only too often) want the strong man persevered with his appointed task; daring at last to give his genius full play, he showed himself the great interpreter of "the cry of the earth," the painter, as he himself said, of "the fundamental side of men and things." Animated by the one dominant idea, in the end he achieved such masterpieces as "The Sower," "The Gleaners," "The Man with the Hoe," and (not least) "The Angelus." In these and in the many other works of like inspiration, grand yet sombre poems of the toilers in the fields, we see the real man, individual and unconventional, with a breadth of outlook and a depth of sympathy all too rare. His gospel was that the artist must feel deeply if he is to paint well, a man must be touched himself if he is to touch others, or else his work, however clever, will never have the breath of life, and he will be nothing better than sounding brass or a tinkling cymbal.

In all his pictures he fastens on one central and fundamental idea, and allows nothing to distract the mind from the principal subject, and he treats every theme with that large simplicity of style, that monumental dignity, which mark the work of the master mind. In these majestic achievements he visualises for all time types which sum up the story of whole generations of toilers—impressive figures which are part of the great and changeless order of existence, close linked by ties that none may break to the changes of the seasons and the beauty of the natural world. It is perhaps in "The Angelus," one of the most famous pictures in the world, that his qualities are displayed in the highest degree. No motive could be simpler than that of this small canvas—a peasant and his wife, who pause in their toil in the wide, open field at the sound of the Angelus bell, and who stand silhouetted against a tenderly luminous evening sky. As they hear the chime they bend their heads in a momentary silent prayer, and so simple and so sincere is the art of the painter that the whole picture seems to evoke the sound of bells heard at twilight—seems to be suffused by a profound pathos and a sense of devotion that envelops the two figures as completely as the atmosphere of evening that permeates the far-stretching landscape. It is a grave, impressive and stately art which can thus convey to the beholder the emotions of the painter, can thrill the heart and stir the soul to quick response.

This little work, now famous in two continents, was sold by Millet for only 1,000 francs, and the story of its growing appreciation and of its travels and vicissitudes subsequent to the time when the artist parted with it is as fascinating as a romance. Space will not permit a detailed account of these mutations of place and circumstance. Suffice it to say that M. Durand-Ruel in a few years time gave for it thirty times the sum that Millet received, and that during the Franco-Prussian war it was vainly offered in Britain for 1,000*l.*, though it shortly after became the property of a

Belgian collector, who paid 2,000*l.* for it. At his sale in 1881 it realised 6,400*l.*; still later the famous connoisseur, M. Secretan, gave 12,000*l.* for it; and when his pictures were dispersed, after a most dramatic struggle between the contestants who were anxious to secure it, it was bought for the French nation, amid a scene of the most intense excitement, for some 22,000*l.* But the Government of the day refused to ratify the action of its representative, with the result that "The Angelus" went to an American buyer and was consigned to the States, where, however, it stayed but a short time, being ultimately secured by M. Chauchard, at a cost of 32,000*l.*, for France. The enormous popularity of these august works of Millet's, alike among critics, public and collectors, is very interesting, affording as it does a typical instance of the triumph of idea over expression, of emotion and thought over manipulative skill, of subject over technique. Millet was a great artist; there is in all his work an austere simplicity of mass conjoined to a quiet harmony of colour, a certain rhythmic quality of design allied to a grave reticence of expression that are wholly admirable. But Fromentin was probably right when he insisted that this most distinguished of French painters was not a technician as we to-day understand technique. There is no doubt as to the enormous power of his work, but at the same time it cannot be denied that his oil-paintings are sometimes laboured in effect, that there is an absence of spontaneity in them, that a certain heaviness and woolliness of touch is evident, and that they lack, as paintings, the lightness and subtlety to be found in the work of many artists without a tithe of Millet's genius.

Indeed, if we want to see the master at his best as a technician, unsurpassed and unsurpassable, it is to his pastels and his black-chalk drawings that we must devote our attention. In such a work as the pastel of "The Angelus" (an exquisitely luminous drawing, suffused with the pearly light and still serenity of evening) are none of the blemishes inherent in the oil-pictures, which are the outcome of a more laborious method of artistic expression, and it is because they possess to the full this quality of freshness and spontaneity that Millet's drawings are often more completely representative of his genius than his paintings. In them the thoughts which filled the great peasant's sleeping and waking hours are expressed with a clearness and directness, an ease and charm which nothing can disturb. In them his noblest qualities are present. His wonderful power of draughtsmanship, his thorough mastery of form, his entirely sufficing gift of suggestion, his tender and profound feeling—each is to be found in his drawings and pastels. And all the passionate sympathy with suffering and toiling humanity, all the loving observation of earth and sky in their various aspects, all the power and pathos of his art are, as it were, distilled and concentrated into his work in this medium.

IVORY IN THE ARTS.—II.*

MY programme includes the consideration of the applications of ivory in the decorative arts, and it was my intention to carry you, if time permitted—by means of illustrations on the screen—through the progress of the art of ivory sculpture in most countries and in all ages, showing especially the beautiful work of the Middle Ages. But I must ask your indulgence for omitting the early periods of this subject, and for confining my remarks to the position of ivory sculpture in our own times. Before doing so, however, I will touch briefly upon one or two intermediate points of interest. I intended to have spoken of the gigantic statues of gold and ivory attributed to Phidias in the great days of Greek art. Of these we have only records and no remains whatever. But the question, if and how the ancients managed to procure large slabs of ivory (and we find also very large ones amongst the consular diptychs and in Mediæval works) is often raised, and some have thought they knew some method of softening ivory. The old alchemists, in fact, give some marvellous and fanciful recipes for so doing. As a matter of fact, so far as our knowledge goes, ivory may be softened and reduced to a glutinous mass, but it cannot be again restored to its original condition. Probably the chrys-elephantine statues were covered with slabs or thin plates of ivory which could be easily bent round to follow the contours. The effect close by would resemble a kind of mosaic, or the leading of the stained-glass windows, but at a great height

* From the Cantor lecture, by Alfred Maskell, F.S.A., published in the *Journal of the Society of Arts*.

such as these statues reached the joints would not be perceptible. It is interesting to recall, in connection with the raw material, the machine invented by M. Alessandri, shown at the Paris exhibition of 1855, by means of which veneers of ivory in sheets as large as 30 by 150 inches were produced.

In these days of collecting works of art, when the prices of first-rate specimens of the various branches has of late years become so high as to be prohibitory to all except the American millionaire, it is important that amateurs especially should be on their guard against the clever forgeries which abound. Ivories have not escaped. Some thirty years ago the authorities of the Museum at Brussels paid 800*l.* for a forged consular diptych—it would have been cheap to-day at ten times that sum, if genuine. The Louvre has suffered, and with the museums of Rouen and Lyons (some thirty years ago) bought three specimens of the very rare images of the Virgin, known as "*Vierges ouvrantes*." Quite recently the first-named has been withdrawn as a forgery. A genuine example—the "*Vierge de Bourbon*"—brought at Christie's, three years ago, the large sum of 3,800*l.*

In the spring of 1904 Mr. Craig-Brown, a well-known Scotch gentleman and collector of objects of art, being in Italy and passing through Bellagio, was much struck by what appeared to him to be a very fine ivory shield of large dimensions in the establishment of some dealers in the town. The shield, as you see it here, measured something over 3 feet in height with a corresponding breadth. The story told to Mr. Brown was that it was the property of the reigning Duke of Parma, presented to one of his ancestors by the royal family of England. You will observe the Tudor royal arms at the top. The price asked and given by Mr. Craig-Brown was 400*l.* Well, to make a long story short, the thing is a fraud, a quite modern forgery, and the Duke of Parma knew nothing at all about it. Mr. Craig-Brown brought an action in the Italian courts and eventually recovered his money. Meanwhile, at his request, I paid him a visit in London and saw the shield. In my judgment, as I told him, I believed the centre to be a modern copy with additions of a seventeenth-century Germany ivory plaque by Antonio Leoni in the museum at Munich, the border adapted from a well-known Renaissance steel shield in the Louvre. You will note here some differences which have been made. But mind you, at the same time, I think it is every bit as good as—whatever may have been his value as a sculptor—it would have been if a genuine work by Antonio Leoni. Passing through Brussels some months ago Mr. Craig-Brown was not a little startled to find an identical copy for which the same price 400*l.* was asked in the establishment of M. Nossent in the Rue de la Madeleine—he may as well have the benefit of the advertisement—and I heard only yesterday that you can get another one, same price, in Venice. Now all this is, I think, very instructive, and there is a further moral. Why do we not buy for the actual beauty of things, the beauty we ourselves may see in them? As I said just now, the seventeenth-century sculptor could not have turned out better work. And again, sometimes it is the biter who is bit, I think. You buy at a cottage in Clovelly, for instance, what you think a find, a genuine piece of Della Robbia ware, let us say, for a pound or two. It turns out to be a clever imitation. Are you justified in reproaching the wily cottager or his employer, or on the other hand, if really genuine, how much of the 1,000*l.* or so which you might realise would you think you were called upon to present to the ignorant original possessor?

In all works of art, so clever is the modern forger that the greatest experts are constantly deceived. If you are not an expert, and indeed if you are, always verify what may be called the *état civil*—the life history of the object offered to you.

Few people, so far as my experience goes, even amongst those who are generally interested in works of art, seem to be aware of the extent to which ivory sculpture is practised at the present day by distinguished artists. We know that it is used for such prosaic things as billiard balls, paper knives, cutlery handles and toilet objects, and other objects of utility which we are accustomed to see in shop windows. Visitors to Dieppe also know that it is still famous as a centre of ivory carving, that crucifixes and figures, fansticks and knick-knacks of all kinds which may be qualified as art of a certain kind abound there; that Chinese and Indian productions of a similar kind answer to the demand that is made for them, and that in recent years Japanese figures of a better type command compara-

tively high prices. But I am often asked whether any of our best modern sculptors work in ivory, and when we consider the beauty of the material, the esteem in which it is held by artists and their willingness to use it, the surprise to me is very great that so little is generally known concerning the practice of ivory sculpture, and the beautiful work which has been executed by our most distinguished artists. Now and again a figure or two may be observed at our Royal Academy, or perhaps a modest attempt at decorative work manages to insinuate itself at an exhibition of arts and crafts. But they are not the fashion; they attract some desultory attention, are acquired by a discerning collector, disappear and are forgotten by the public at large. We have no museum for the encouragement of modern art like the Luxembourg at Paris, there is no fashionable lead and the encouragement of ivory sculpture would appear not to be within the terms of the Chantrey bequest.

Then again, ignorance concerning art in ivory still requires to be dispelled amongst the authorities who rule and manage our international exhibitions. Otherwise, would it be possible to believe that at these—certainly up to that at Paris in 1900—ivory carving has been classed with leatherwork, brush-ware, basketwork and a number of other industries? The same juryman would be called upon to adjudicate on the decorative sewing of a boot, or the art value of a carved meerschaum pipe and the merit of a *chef d'œuvre* of ivory sculpture by a Frampton or a Damp. It is little wonder, then, that artists of distinction declined to exhibit under such conditions, and that the public should remain in ignorance. Yet after all nothing is more certain than that the most distinguished amongst our sculptors have been accustomed to work in ivory. And it is pleasant to see that in recent times attempts have been made to place the art of ivory sculpture in the position which it once held and which it is entitled to hold; that is to say, on an equal footing and in an equal place of honour with sculpture in marble or bronze or in any other material. A first exhibition was held in Brussels some twenty years ago, at which all the most distinguished amongst the Belgian sculptors and some fifty others exhibited, and the year before last a most successful exhibition was held in Paris. It is true that in order to justify the expectation of a revival of ivory sculptures more than this is required. But everything must have a beginning. A great deal depends on the trend of fashion, that is to say of patronage. It is useless to ignore this fact. Huge sums are given by the wealthy patrons of art for specimens of the antique, more or less genuine, the bulk of which goes into the pockets of the dealer. What is necessary is that their tastes or inclination should turn in the direction of the modern, of the living artist.

The profession of sculpture demands in many ways expense. From the point of view of the quality of the material, it costs as much to execute a bust or a statuette in ivory, a foot or so in height, as to produce a life-size statue in marble. The sculptor is only too willing to use ivory as a medium, but he cannot be expected to sacrifice his material interests and educate the public at his own expense. Those whose work in ivory I shall presently briefly bring under your notice are in the first place great sculptors in marble. They naturally in another direction have regard to public requirements. Ivory is a delightful material to work, delicate and graceful in results, grateful in every way to the artist. It is to monumental sculpture what the miniature is to painting—or rather it takes its place with bronzes and goldsmith's work. Any sculptor can work it. It requires no special knowledge or training. But from about the time of the Italian Renaissance it got into bad hands and became the product of the workshop rather than of the studio of the artist—there being all the time, however, in every age, sculptors of the highest distinction who kept alive its traditional position and redeemed its character. Still, generally speaking, as an art it fell, and suffered from its mechanical abasement. To the public nowadays carving in ivory suggests China or India or Dieppe, nothing more. People may pay for such things what they may be worth, but it is not at such a price that a sculptor of reputation can work. Then, again, the Church. When one thinks of the examples of ivory sculpture destined for the service of religion—the diptychs and triptychs, pastoral staves, statuettes and crucifixes of the thirteenth and fourteenth centuries—one marvels at the horrors which have taken their place since the patronage and influence of the Church on art no longer are of value. And again, if one remembers the large sums obtained for a Byzantine or Mediæval ivory casket, one cannot help thinking what a great artist could produce if he were offered

adequate inducement. What could be more appropriate for presentation caskets than a simple one in ivory deriving the principal value from the work of a great sculptor? What more worthless than the hideous productions of the silversmith's shop which our corporations present to foreign potentates and distinguished guests, or as prizes for distinction in the field or in sports?

Who, then, are the great sculptors to whom I have referred as being so little generally known? I wish, indeed, that there remained more time at my disposal, enabling me to do more than briefly refer to their work. The revival of ivory carving in quite recent times is due to Belgian sculptors. This is as it should be, for throughout the golden age of ivory sculpture in the thirteenth and fourteenth centuries Flemish artists were particularly distinguished; and again in the days when the art of the rococo ran riot, the Fiammingos, the Van Opstals and the Fay-d'Herbes were the masters when decadence reigned elsewhere. So it is at the present day; encouraged by the proprietor of the Congo to make fashionable a material which is one of the most valuable products of that possession, we have in ivory some *chefs d'œuvre* from the hands of such well-known sculptors as Julien Dillens, Meunier, Van der Stappen, Wolfers and Samuel, not to mention a considerable number of lesser lights. Here is the charming statuette "La Gloire" of the first-named and the "Fée au Paon" of Wolfers. Wolfers's work—he is also a goldsmith—is nearly always an admirable combination of ivory with gold, silver, enamels, precious stones and semi-precious marbles. In France I can only mention—for there is no time to do more—that such sculptors of the very first rank as Jean Damp and Theodore Rivière, amongst a host of others, give us yearly most charming work in ivory. This is his famous "Salammbô chez Mathô." The original is in the Luxembourg. Damp and others are famous also for busts and figures in ivory, or in ivory in combination with wood and other materials—portraits of celebrities and leaders of high life which ought to set a fashion and may become the rage. Then, again, ivory is largely used by such great artists as Lalique, and by Gardet and others for beautiful toilet articles, such as hair-pins and combs, mirrors, fans and the like. And so to come to England, and if it cannot be said that we can produce an extended list of workers, on the other hand it will be admitted that they number amongst them our greatest names. This is Frampton's beautiful "Lamia," exhibited at the Academy in 1900, and now in the collection of Mr. Willy Vivian. It is the "Lamia" of Keats—in ivory and bronze, at the moment of the transformation. The face, with its studied serenity—cryptic, snake-like—is carved in life-size from a very fine block of beautifully-grained ivory, which was supplied to the sculptor by the very long-established firm of ivory dealers, Messrs. Myers & Son, of Tower Hill. Mr. Frampton tells me that for some things he prefers the soft variety of ivory, for others the hard, and that he always uses live in preference to dead ivory. For large work a large grain is effective, for smaller, certainly less grain and closer texture. The block used for this bust weighed some 14 lbs. Whether ivory in sculpture should be polished or matted till it is almost like white marble, as some sculptors make it, and how far it should be used alone or in combination with other materials, are questions to which I can do no more than allude. Other admirable English sculpture in ivory in various private collections—our public ones possess not a single example—includes the work of such names as Alfred Gilbert, the late Harry Bates and Reynolds-Stephens, and at Lloyd's Registry you will see it beautifully used in the frieze by that clever young sculptor, Lynn Jenkins.

The subject of my lectures is so important and covers such a large extent of ground that, as you will have observed, I have on each evening been compelled to skip and abbreviate, and offer you scarcely more than indications for your consideration. As a matter of fact, it would not be difficult, I think, to make at least ten divisions, each one of which would afford more than sufficient material for an evening's lecture. But I shall be satisfied if the points I have indicated may have been sufficiently interesting to induce some of my audience to inquire further—there is ample and beautiful material in our great museums—and, at any rate, I am sure it will be admitted that ivory and its applications have played a more important part in the history of civilisation than at first sight might appear evident, that the material itself and its working is full of interest, that its usefulness enters largely into our daily life, and that in the history of art it has a place which is on

a level, at least, with any other of the sculptural arts, not excluding, indeed, even the graphic arts.

BEAUTIFYING LIVERPOOL.

A MEETING was held at Liverpool Law Society's Rooms, Cook Street, which had been convened by a sub-committee of the Liverpool Architectural Society with the object of forming a society having for its object the beautifying of the city. According to the *Liverpool Courier*, Mr. Henry Hartley presided and Mr. T. T. Rees acted as hon. secretary.

The Chairman said that the Society did not wish to tread on the rights of citizens, but already the Corporation had great powers under the Building Acts regulating the width of streets, air-space in backyards, &c. Why not extend those powers so as to deal with the artistic side of the question? A committee of taste should deal with the elevation of public and private buildings to see that they were not constructed on advertising lines, but in accordance with good taste and the character of the surroundings. Overcrowding in building districts should be stopped and buildings restricted to a certain number per acre.

Mr. Willink pointed out the difficulties supplied in existing legislation affecting public matters and the rights of private citizens. The Corporation could, however, purchase large estates on the outskirts and lay them out with a proper amount of space, and sell the plots of land, thus bringing back the purchase money and expenses.

Mr. Rensberg expressed his entire sympathy with the movement.

Professor Riley thought their chief object should be to educate public opinion. Models of buildings and proposed improvements should be constructed and exhibited.

The Chairman intimated that letters in support of the movement had been received from many societies, including the Liverpool Kyrle Society, the Liver Sketching Club, the Ruskin Society, the Historic Society of Lancashire and Cheshire, the Housing Association, and the Garden City Association.

The following were appointed as the executive committee:—Mr. F. J. Leslie, Dr. Caton, Mr. Hall Neale, Mr. Kirby (president of the Architectural Society), Professor Riley, Mr. J. G. Dawbarn, Mr. Willink, Mr. Wardle (president of the Ruskin Society), Mr. John Edwards (chairman of the Housing Association), Mr. George Rose, the Rev. T. W. M. Lund, Mr. J. Cameron (chairman of the Law Society). Power was given to add three to the number.

ROMAN REMAINS IN SCOTLAND.

THE autumn meeting of the Classical Association of Scotland was held in Edinburgh University buildings on Saturday.

Dr. George Macdonald, assistant secretary Scottish Education Department, gave a lecture on "Roman Remains in Scotland, with Special Reference to Some Recent Discoveries." His main object was, he said, to convey to his audience some general idea of the progress which had been made in the last twelve or fifteen years towards arriving at a more complete knowledge of the history of Scotland in Roman times. The sister Association in England had, through its Manchester branch, shown an active interest in the corresponding period of English history by conducting a series of explorations at Melandra Castle in Derbyshire, and had published a handsome volume embodying the results. Was it too much to hope that, if not the Classical Association of Scotland as a whole, at all events those members of it residing in districts where traces of the Roman occupation were to be found, would in similar fashion lend their aid in what they could hardly fail to find a fruitful line of research? The older writers upon the subject had been guided towards their conclusions by a comparison between the scattered notices left by historians of Rome and such isolated traces of fortifications and the like as survived above the surface. Twelve or fifteen years ago, however, the Glasgow Archæological Society called in the help of the spade in an examination of the structure of the Antonine vallum. A year or two later the Society of Antiquaries in Scotland explored in scientific fashion the Roman fort at Birrens. Since then the latter body had continued their investigations on various sites, and were at the present moment actually engaged on what promised to be the most important of their whole series of operations—the excavations at Newstead, near Melrose. The lecturer pointed out that it was from Germany and France

that we had learned the methods of proper excavation, and also that the problems of research were to some extent simplified by the acquaintance which, thanks above all to the genius of Mommsen, we now had with the organisation and arrangement of the Roman provinces and of the Roman army. Scotland was included within the system of organised frontier defence. It was traversed by military roads and dotted over with small forts, the most notable line of which was that which lay along the wall of turf that stretched from Forth to Clyde. By means of a series of limelight views explanations were given regarding the aspect and plan of these forts, the nature of the objects usually associated with them and the general character of the life that they reflected. Particular interest attached to the plan of the fort built by Agricola on the Barr Hill, Dumbartonshire, to the astonishing varieties of miscellaneous articles recovered from the Antonine Fort on the same site by Mr. Whitelaw, of Gartshore, and to the remarkable examples of Roman helmets secured in the spring of the present year at Newstead, in the course of excavations now being conducted there under the charge of Mr. James Curle, of Priorwood.

At the close the usual votes of thanks were awarded.

THE BLACK ROOD OF SCOTLAND.

A MEETING of the Scottish Ecclesiological Society was held in the Architectural Association's rooms, Edinburgh, on Saturday. Mr. George Watson, Jedburgh, read a paper on "The Black Rood of Scotland," in which he stated that from the earlier accounts of it they learned that it was a piece of the true Cross, nearly 3 feet in length, upon which was fixed a figure of Our Saviour. It was brought here by Queen Margaret about 1067, and when she was dying in Edinburgh Castle in 1093 she requested it to be given her, and when presented she kissed it. Before he died at Carlisle in 1153 David I. made a similar request. Mr. Watson argued that there was no connection whatever between the Black Rood of Scotland and the origin of Holyrood, Edinburgh. The first writer who mentioned that was Hector Boece, but the charter of Holyrood expressly stated that the abbey was founded in honour of Holy Rood. The Black Rood was afterwards found by the officials of Edward I. in Edinburgh Castle in 1292, and it was probably sent to Berwick in that year, when it was taken possession of by him. Five years later he caused many Scottish magnates, both territorial and ecclesiastic, to swear fealty to him on the Black Rood. By the treaty of Northampton in 1328, the Rood was returned to the Scottish nation, along with the Ragman's Roll, which was burned by the Scots when it came into their possession. David II. took the Rood in his ill-fated expedition which ended in the battle of Durham in 1346, and the English, finding it among the spoils, made an offering of it to St. Cuthbert in Durham Cathedral. Bellenden, writing in 1533, said it was there at that time and was held in great veneration, but it was never afterwards heard of, and the probability was that it was taken possession of by the emissaries of Henry VIII. when the Durham monastery was dissolved in 1539.

TESSERÆ.

Giotto's Country.

IT is at least undoubted truth that Giotto was born and passed the years of childhood at Vespignano, about fourteen miles north of Florence, on the road to Bologna. Few travellers can forget the peculiar landscape of that district of the Apennine. As they ascend the hill which rises from Florence to the lowest break in the ridge of Fiesole, they pass continually beneath the walls of villas bright in perfect luxury and beside cypress hedges, enclosing fair terraced gardens, where the masses of oleander and magnolia, motionless as leaves in a picture, inlay alternately upon the blue sky their branching lightness of pale rose-colour and deep green breadth of shade, studded with balls of budding silver and showing at intervals through their framework of rich leaf and rubied flower the far-away bends of the Arno beneath its slopes of olive, and the purple peaks of the Carrara mountains tossing themselves against the western distance, where the streaks of motionless clouds burn above the Pisan sea. The traveller passes the Fiesolan ridge and all is changed. The country is on a sudden lonely. Here and there, indeed, are seen

the scattered houses of a farm grouped gracefully upon the hillsides, here and there a fragment of tower upon a distant rock; but neither gardens, nor flowers, nor glittering palace walls, only a grey expanse of mountain ground tufted irregularly with ilex and olive—a scene not sublime, for its forms are subdued and low—not desolate, for its valleys are full of sown fields and tended pastures—not rich nor lovely, but sunburnt and sorrowful, becoming wilder every instant as the road winds into its recesses, ascending still until the higher woods, now partly oak and partly pine, drooping back from the central crest of the Apennine, leave a pastoral wilderness of scathed rock and arid grass withered away here by frost and there by strange lambent tongues of earth-fed fire. Giotto passed the first ten years of his life, a shepherd-boy, among these hills; was found by Cimabue near his native village drawing one of his sheep upon a smooth stone; was yielded up by his father, "a simple person, a labourer of the earth," to the guardianship of the painter, who, by his own work, had already made the streets of Florence ring with joy; attended him to Florence and became his disciple. We may fancy the glance of the boy when he and Cimabue stood side by side on the ridge of Fiesole and for the first time he saw the flowering thickets of the Val d'Arno, and deep beneath the innumerable towers of the City of the Lily, the depths of his own heart yet hiding the fairest of them all. Another ten years passed over him and he was chosen from among the painters of Italy to decorate the Vatican.

The Walls at Richborough, Kent.

At Richborough the foundations were thus arranged:—First two rows of boulder stones lie on the natural soil, which is a solid pitted sand, then a thin stratum of chalk nodules, next a single row of boulders, and over them another thin layer of small chalk, all these being without cement; then boulders again, mixed with mortar. And so the masonry proceeds internally, with a confused mixture of large boulders, ochre stones, sandstone and blocks of chalk, the whole cemented with a mortar formed of lime, grit, large and small pebbles, sea shells and fragments of baked bricks. The outside of the great north-east wall is very beautiful to the eye, as well as magnificent. It is composed, as far as now remains, in general of seven great and fair distinct rows of stone, each of them very nearly 4 feet thick, and each of them consisting in general of seven courses of separate stones. The measure of the great combined courses sometimes varies a little, some being 4 feet 3 inches, whilst others are only 3 feet 3 inches in breadth, or rather in depth, which may therefore perhaps indicate an intention of forming them about 4 Roman feet in breadth or depth upon an average. These great courses of stone are separated from each other by six smaller courses of bricks, composed each merely of a double row of bricks that are about $1\frac{1}{2}$ inch or $1\frac{1}{4}$ inch in thickness, but are of very different breadths, from 8 inches to 1 foot; and of very different lengths, some being 14 inches, some 16 inches long and some $17\frac{1}{2}$ inches, a variation of dimensions to be met with in some other Roman structures. For in the old wall of Verulam was a brick, now worked up in the wall of the abbey at St. Albans, which is very nearly 2 feet in length, and there is one at Dover near 3 feet in length. The composition of these bricks is also as various as their dimensions. Some of them are entirely red throughout their whole substance (like our modern bricks), only of a deeper colour; some are red on the outsides, but of a deep blue within, the internal substance being formed of a different earth from the outside (perhaps for the sake of sparing the better and scarcer material). And here, again, we find a great similarity to other Roman works, for in the walls of Chesterford, Verulam and Silchester are exactly the same varied appearances. Some of the bricks also, here at Richborough, are of a yellow colour, having plainly been composed only of mud and clay taken from the neighbouring shore. And some of these latter might possibly have been merely dried by the sun, but how the red ones should become of that colour without the aid of fire, or how any (except the yellow ones) should have been dried in the sun, as has been hastily conjectured by some antiquaries, is incomprehensible. Let them have been formed how they will, the whole produces still a very beautiful effect to the eye. The structure is everywhere uniformly of this sort of style, except in some very few parts, where reparations have plainly been made in Saxon times, and with squared stones of a much smaller size and with herring-bone work.

Correspondence

Church of San Clemente, Rome.

SIR,—An influential committee of all denominations of clergymen and of archaeologists, under the presidency of the British Ambassador, has been formed in Rome to raise funds for the preservation of this ancient basilica, which dates from the first century of the Christian era. For more than thirty years the third or lowest church has been inaccessible owing to the collection of water, and an estimate has now been framed to drain it. The work is estimated to cost about 1,500*l.*, and over 100*l.* has already been raised locally. May I make an appeal through your influential columns to all lovers of ancient monuments, Christian and Pagan, without distinction of creed or nation, to help us to raise this sum? The Western Branch of the Bank of England at Burlington Gardens has kindly consented to receive subscriptions, which should be paid to the "San Clemente Preservation Fund." Subscriptions may also be sent to me direct, or to the British Consul at Rome.

—I am, &c.,

J. T. CROTTY, O.P.,

Rector of San Clemente.

GENERAL.

Her Majesty the Empress of Germany has graciously accorded her high protectorship to the work of the fourteenth International Congress for Hygiene and Demography, which will take place in Berlin from September 23 to 29 of next year.

The Roads and Bridges Committee of the Wilts County Council recommend the appointment of Mr. Alfred Dryland, county surveyor of Herefordshire, for the post of county surveyor of Wts, vacated by the death of Mr. C. S. Adye. There were 11 applications.

The Dunfermline Abbey Church, which was recently renovated and decorated at a large expenditure, has now had the electric light installed.

Dr. Arthur Schuster, professor of physics at Manchester University, has sent a letter to the Manchester education committee in which he says:—"I desire to offer, through you, to the Faculty of Technology one scholarship per year during the next three years, and shall be glad to place 50*l.* each year at the disposal of your committee for that purpose. I should like to say I am induced to make the above offer by the excellent performances of your students during the degree examinations last June. I should confine the scholarships to the subjects of chemistry, engineering and electrical engineering."

Flatford Bridge, on the Stour, which was introduced by John Constable into several of his pictures, and is now in danger of falling into the river, is to be restored on its original lines. A fund will be raised for the preservation of the wooden bridge.

Mr. Hugh Stannus will read a paper on "The Korinthic Capital" at the Royal Society of British Artists on December 4, before the Society of Designers.

Mr. James Dredge, of 103 Bedford Court Mansions, Bedford Avenue, London, W., for thirty-five years joint editor of *Engineering*, Commissioner-General for Great Britain at the Brussels Exhibition in 1879, and author of several engineering works, has left property to the value of 78,366*l.*

The Municipality of Barcelona propose to hold a fifth international art exhibition in that city from April 23 to July 15, 1907, which may again be opened in September and October. The exhibition will comprise the fine arts and art crafts generally. The time for receiving exhibits will extend from March 15 to 30.

The Worcester County Council have adopted a scheme for the decoration of the windows in the large hall of the Shirehall with heraldic designs and coats of arms of sheriffs of the county. The arms of chairmen of quarter sessions and also of the County Council will be inserted in separate windows. It was estimated that the cost to the county of the provision of the border, &c., will be 250*l.*

The University Court of St. Andrews have accepted an offer by Mr. John Ritchie, M.A., LL.B., Perth, to deliver short courses of lectures on the history of architecture in 1907-8 and 1908-9.

At the Last Meeting of the St. Asaph (Denbigh) District Council an application was received from Mr. Williams, highway surveyor for the Abergele district, for an increase of salary. The surveyor receives 72*l.* 10*s.* a year, out of which he has to provide a horse and trap. Estimating the cost of that at 30*l.* a year, it leaves a sum that worked out at 16*s.* 3*d.* a week. An increase of 12*l.* 10*s.* a year was agreed upon. The case was mentioned of another surveyor who received 22*l.* less than Mr. Williams, and he had to keep a horse and trap.

The Manchester City Art Gallery Committee will hold, in the Art Gallery in Mosley Street, during the months of December and January, an exhibition of Holman Hunt's collected works. The owners of most of Holman Hunt's works that were on view recently in the Leicester Galleries have promised them for this exhibition, and a few which were not exhibited in London have been secured for Manchester. It is proposed to open the exhibition about December 5.

The Committee of the Incorporated Church Building Society have passed a resolution expressing deep regret at the death of Mr. John Thomas Micklethwaite, F.S.A., for sixteen years a member of the committee of honorary consulting architects and latterly its President. They desire to record their sense of the great loss they and the Church at large have sustained by his death, and to bear testimony to the very careful and thorough way in which he rendered most valuable service to the Society.

The Trustees of the Macdonald Trust in connection with the Aberdeen Art Gallery have purchased the following pictures from the exhibition now on view in the gallery, to be added to the permanent collection:—"Volendam," a Dutch scene, by Mr. A. Gibson, Glasgow; "Poplars in the Thames Valley," by Mr. Alfred Parsons, A.R.A.; "Rain-storm on Dartmoor," by Mr. David Farquharson, A.R.S.A.; and "Aberlady," by Mr. J. Campbell Mitchell, A.R.S.A.

A Committee has been formed to erect a memorial to the late Rev. Sir Borradaile Savory, who for nineteen years worked for the restoration of the church of St. Bartholomew the Great and for its schools. The late rector was always averse to mural tablets being placed on the ancient walls of the building, considering that memorials should consist of something to beautify the church. In order to carry the idea into effect the committee have decided to protect the sanctuary of the church by a low screen, in part of which will be incorporated the personal memorial in bronze, and, if funds are sufficient, to substitute for the present temporary altar-rails two short rail-panels in bronze. Sir Aston Webb's plans have been adopted. In order to test the effect of the proposal, a model is to be constructed in one of the bays of the apse, and the committee will be invited to inspect the same.

The City Guardians have decided, with regard to the erection of a workhouse and infirmary at Homerton, "That, in view of the opinion expressed by the architect to the Local Government Board, they be empowered to negotiate with the architect, Mr. A. E. Pridmore, for his employment by them to prepare the final scheme and plans upon which tenders can be invited and the work carried out subject to the approval of the Guardians and the Local Government Board."

Mr. Banister Fletcher will deliver a lecture on Monday next at the University of London, South Kensington, in connection with the Extension Guild. The subject will be the Parthenon.

The Maidstone Urban District Council will consider shortly the following resolution:—"That the alteration to the Old Palace Gate House be postponed for the present, and that Sir Martin Conway, of Allington Castle, be asked if he will kindly view the building and give his opinion as to the best way to deal with it, and also to suggest an architect who has had considerable experience in restoring old buildings."

Stirling Castle has been transferred from the military authorities to His Majesty's Board of Works, and a local firm of contractors have been employed to repoint the whole of the old Parliament House.

The Commission appointed by the Turin municipality to study the construction of new railways likely to benefit the trade of Piedmont has proposed the adoption of a scheme put forward in 1882 for piercing Mont Blanc in order to allow the new line to be constructed from Aosta to Chamonix. If this project is realised, the latter town will be brought within 115 miles of Turin.

The Architect.

THE WEEK.

It is remarkable that a clause in a private Act of Parliament should override a public Act which was passed sixty years afterwards and is in operation every day. That anomaly was exhibited in a decision given in favour of the Millwall Dock Company for expenses in connection with a dangerous structure. In 1864 the Dock Company obtained an Act which enacted among other things that "the provisions of any Metropolitan Building Act from time to time in force do not extend or apply to any building of the company." There has been some contention whether the buildings belonging to a dock company which are exempted from the Building Act are other than those used for the purposes of the company. On October 24 last year a fire broke out in a building in Millwall Dock. Mr. CLARKSON, the district surveyor, directed that part of the building should be taken down, another part shored up. The Dock Company obeyed, but they declined to pay the fees, amounting to 1*l.* 2*s.* 6*d.* The magistrate, after consideration, held that the word "do" corresponded with "shall," and related not only to the Act existing in 1864, but to subsequent Building Acts. But Mr. DICKINSON thought the subject was important. He said he would be very pleased to state a case. The Legislature must be assumed to have a knowledge of the company's Act, and by avoiding all suggestion of amendment it was evidently their intention to allow the private Act of 1864 to retain its original authority.

A MODIFICATION has been introduced in one of the regulations respecting the new county hall. In July last it was decided that there was to be a preliminary stage open to architects of any nationality. From the designs sent in not less than ten nor more than fifteen were to be selected in private by assessors. The authors of the selected designs and eight selected architects were to take part in the second competition. It has been represented to the establishment committee that if the eight selected architects sent in their designs as the architects of any nationality it would be difficult for them to do justice to the designs unless they neglected the other calls upon their time. It has accordingly been arranged "that the outlines of the competition for designs for the new county hall do provide that the eight selected architects invited by the Council to send in designs in the final stage of the competition be not required to lodge their designs with the Council until the date fixed for the delivery of the designs in the final stage of the competition." Eight architects are therefore certain of taking part in the final competition, but, beyond this gain, it does not appear they will have more advantages than the ten or fifteen architects selected in the open competition.

In the article we published on the 26th ult. giving an account of the origin of the Collegiate Church at Manchester, which is now the cathedral, we said that THOMAS DE LA WARR in 1422 was able to obtain a license from the king to found a collegiate church. It was usual in such cases to have authority also from the Pope, and it had long been believed by investigators of the subject that there must have been some special reasons for the absence of the Papal document. The latest volume of Papal letters, published under the direction of the Master of the Rolls, contains a brief dated April 26, 1426, which supplies the void. Manchester then formed part of the diocese of Lichfield, and Pope MARTIN V. gives authority for the erection of the church into a collegiate church, the establishment of a college to consist of the master, eight chaplains and other ministers; then they shall have the power of framing ordinances and statutes and to pay certain con-

tributions to the diocese of Lichfield. All correspond with the rules accepted by THOMAS DE LA WARR, but the document fills a void which was the more remarkable on account of the importance of Manchester as well as of the founder of the church.

It was discovered some time ago that the fireproof ceilings at the Bexley asylum deflected so seriously as to become dangerous. Repairs have cost over 2,400*l.* The ceilings were carried out by sub-contractors, who declared as far back as 1902 that there was absolutely no reason to apprehend danger, and in 1905 it was stated there existed no warrantable cause for alarm. There can no longer be any question that the fireproof ceilings are failures. The asylums committee of the London County Council would, of course, wish that the whole expense in reparations should be refunded by the sub-contractors. By the contract deed they made themselves responsible for all defects within five years of the completion of the work. The deflections appeared subsequently to that period. The committee are therefore compelled to say:—"We have carefully considered the whole circumstances, with the view of seeing whether it would be possible to take any steps in the matter, and we have taken the opinion of eminent counsel as to whether responsibility for the faulty construction could be brought home to any person or persons. It appears, however, from his advice, that there are difficulties in the way of our doing this, and we have reluctantly come to the conclusion that we can take no further action in the matter."

SCOTSMEN are too prudent to allow the continuance of a dispute with a Government department concerning projects in which money is to be expended. We have referred recently to various plans for preserving the amenity of Stirling, which, with its castle, forms one of the most picturesque parts of Scotland, and is, moreover, a survival of Mediæval history of unusual interest. But the ground was valuable for building sites, and arrangements were entered into to dispose of part of it as sites for villas. The Stirling Town Council naturally looked forward to the introduction of additional ratepayers, and there was a possibility that amenity would be sacrificed to finance. A defence association was formed and they were able to count upon the support of Sir HENRY CAMPBELL-BANNERMAN, who is member for Stirling. It has been arranged that the Crown lands are not to be parted with, and the fine prospect which every visitor to Stirling can enjoy will not be impeded. The whole negotiations have been carried out in an amicable spirit, and should be imitated by other towns when they have dealings with official departments.

His countrymen believe in the architectural skill of ROBERT ADAM, and many grandiose country houses are the result. When the first Earl of FIFE resolved to erect an ambitious mansion which would be in keeping with his new dignity, ADAM obtained the commission. The work was commenced about 1740; yet, although the large sum of 70,000*l.* was expended, the building to this day is incomplete. His noble client had also the national failing for litigation. ADAM was successful in the law courts. However, it is not always advantageous to gain a victory over a client, and the earl revenged himself on the designer by an affected indifference to the great lonely mansion. Bishop Pocock described it as all of hewn freestone, brought by sea a great part in boxes. It consisted of four floors, with six rooms on a floor and towers at the angles. Although several alterations have taken place in the interior, Duff House still contains some imposing apartments. The people have acted very differently from those in Staffordshire when they were offered Trentham Hall by the Duke of SUTHERLAND. In the north, Duff House has been accepted with enthusiasm, and there is little doubt it will be used to the public advantage.

ST. PAUL'S CATHEDRAL.

THE name of the venerable Dean GREGORY has been so long connected with the cathedral of London, everyone must regret the charge he makes against the London County Council of seeking by subterfuges to precipitate the construction of the sewer by which the cathedral would be endangered. All the world knows the real and imaginary shortcomings of that body, but we doubt if its most bitter opponent among laymen would have made such a charge. People of all creeds unite in their admiration of St. Paul's as an example of architecture which upholds the national pride, for it will allow of a comparison with any other building in Europe. Unhappily clergymen who have attained high rank or influence, whatever may be the Church to which they belong, appear to think, as if by instinct, that they are possessed of infallibility—even in matters of business of which they can have merely theoretical knowledge. The cathedral architect believes, according to Dean GREGORY, that imminent danger would arise through the construction of the sewer, and the Dean endorses the views of his official. Now it should be remembered that last year Mr. SOMERS CLARKE, who then held the office of architect, informed the County Council that, relying on the advice of their engineers, Messrs. BARRY, LESLIE & Co., the Dean and Chapter did not regard with apprehension the proposed low-level sewer passing under the south side of St. Paul's Churchyard. During the last eighteen months there has been no change in the circumstances. No deviations have been put forth of a more dangerous kind than were originally contemplated. Not one yard of sewer has been laid. And indeed it is believed that the ground near the cathedral will not be affected for another year. Yet the venerable Dean, who is one of the Fathers of the English Church, does not hesitate to declare that precipitate action is being taken, in order, we suppose, to have the work completed before the public are aware of its commencement.

Everyone will admit that, with so great responsibility devolving on them, the officials cannot be too jealous about the safety of St. Paul's, for the conditions of the site, as well as the circumstances under which the building was erected, are of a kind which allow of the existence of doubt even after an endurance of over two centuries. The site was fixed from having been connected with a temple or church for centuries, and from being the highest part of the City. Clever as was WREN, he was not a geologist, and he did not realise what varieties of ground existed within the limited area on which he was to build. He thought he was laying great bases for eternity on material which it would have been wiser to have excavated and carted away. If the whole of the ground in the neighbourhood could be left untouched, then it is possible that the site might have remained as safe as it was originally. It was not the best of its kind, but with proper watchfulness the building might have continued as a stable compound of different materials.

London, from its character, cannot have unused subterranean places. Works which WREN could never have anticipated had to be carried out at all cost. Drain-pipes, water-pipes, gas-pipes, railways and much else were the inevitable consequences of a city which was modifying its conditions to suit modern life. But the authority to deal with the ground in the neighbourhood of St. Paul's was not conferred in secret. Each scheme had to obtain its own private Act, which was only granted after a very close examination, inspired by the opposition of rivals. The Dean and Chapter, we suppose, from the beginning made themselves heard before Parliamentary committees. But if they had neglected to do so, there is so strong a desire on the part of members to keep the humblest church uninjured that no measure would be allowed to pass in which there was the remotest danger to the cathedral. It may then be taken for granted that if something has

happened which was not foreseen, it would be very difficult to fix the responsibility for it.

If there was uneasiness about the future the Dean and Chapter have had ample time to take remedial measures by which the stability of the cathedral would be guaranteed. By means of steel and concrete, platforms can be created under the most difficult circumstances which can carry enormous weights. The operation would be expensive. But London is sufficiently wealthy to meet the outlay necessary for the preservation of its cathedral. People, however, imagine that when works of the kind have to be carried out the cost can be made by means of diplomacy to fall on various companies, and that those who receive the benefit will obtain it gratuitously. With such a history as St. Paul's it will be difficult to make out a claim which any Parliamentary committee or law court would ratify.

The important question at the present time is to decide what should be done. Under ordinary circumstances the theory that cathedrals belong to the deans and chapters is recognised and respected. But there are emergencies in which the country should assert itself and claim them as essentially national property. With one cathedral architect saying "There is no danger to be apprehended," and another announcing that "Danger is imminent," it would be ridiculous to wait until some catastrophe decides which view is correct. Nor is it a time when architects can go on claiming to be omniscient in all varieties of works, whether above or below the earth's surface. The question to be decided is whether there is likely to arise a sufficient shrinking of the material forming the ground as to cause a sensible settlement of a part of the building and what measures should be adopted to anticipate such an event. That is essentially a case for determination by engineers who have had experience with works more or less similar in character. What should be done therefore is to issue a Royal Commission to a certain number of members of the Institution of Civil Engineers, appointing them to investigate the subject and to report upon any remedial measures advisable. There would be no necessity for them to enter on an archaeological-historical investigation, or to point out what should have been done in preceding years. Taking things as they are, it would be quite enough for the Commission to discover whether there were impending risks, and how far all danger could be set aside. The Dean and Chapter might believe it was vandalism to attempt works except at a long distance outside the environment of the cathedral. That kind of privilege has, however, vanished with much else favourable to the existence of public buildings.

At first, as we have said, it is unnecessary to go beyond the simple question whether, if water has to be abstracted from the supporting material, and shrinking follows, what remedies can be recommended. The County Council engineers believe that the means proposed for the construction of the sewer will not result in the withdrawal of water, and that the material will remain in its present state. The engineers employed by the authorities agree in that opinion. But the Dean and Chapter seem to be rather apprehensive on the subject. It is essentially an engineering problem, respecting which information can only be obtained by those who have had to direct underground works on a large scale. We must own we are surprised that the clergy should allow their fears to be made known. It is never difficult to create a scare in the highly emotional minds of worshippers in a church, and the consequences in so large a building as St. Paul's could not be estimated. It is only a comparatively few experts who are capable of dealing with the subject, and until they have investigated it as a mere question of weight and supporting power it would be wiser to refrain from anything which will aid remotely in a panic. It may be supposed that the discussion over newspaper statements,

which represent nothing more than the speculations of amateurs, is a sign of the great interest taken in the security of St. Paul's. But it would not be difficult to find that with most people the subject is looked at merely as a somewhat piquant opportunity for chattering over matters which to the majority are mysteries.

AN ACADEMY RECORD.*

IN the interval between the publication of his sixth and seventh volumes Mr. ALGERNON GRAVES has had to meet with unmerited trouble. By an excess of generosity which was almost Quixotic he undertook responsibilities in connection with the historic house in Pall Mall which prudence would have avoided, and of which no court of equity would compel the enforcement. We hope the appreciation of his straightforwardness and self-sacrifice will be shown by encouragement to him as an author. It must be said that the new volume shows no sign of the anxiety amidst which it must have been completed.

For architects the contents of the seventh volume should have peculiar interest. Several of the great names associated with the art in England appear in the pages. The contributions of Sir JOHN SOANE fill ten columns. He was a man who believed that when any circumstance can be profitable, it should not be lightly abandoned. He recognised the use of the Academy. He began in 1772, when he was an assistant in HENRY HOLLAND's office, with "The front of a nobleman's town house." And there were few years in which he was not represented up to 1836, when he sent a design for the improvement of Westminster Hall, the Houses of Parliament and the Law Courts. He also contributed "A portfolio design for a British Senate House, from the original drawings made in Rome, 1779. This design was composed without regard to expense or limit as to space, in the gay morning of youthful fancy, amid all the wild imagination of an enthusiastic mind, animated by the contemplation of the majestic ruins of the sublime works of Imperial Rome." Few people would give credit to Sir JOHN for wildness of any kind, but, blind and solitary in his house in Lincoln's Inn Fields, his youthful effort must have seemed to be the creation of a different being. He won the silver medal of the Academy in 1772 and the gold medal in 1776, but neither design was exhibited. As travelling student he remained abroad until 1780. When he returned he exhibited the following in 1781:—"Design for a Dog House," "Elevation of a Mausoleum," "Design for a Mausoleum," "Plan of a Mausoleum," "Plan and Elevation of a Hunting Casine." For a time the drawings appear as if they were merely efforts to attract commissions, but in 1785-6-7 there was evidence of genuine work. SOANE was appointed architect and surveyor of the Bank of England in 1788, and in 1792 a view of the vestibule began the important series of drawings of that building which were exhibited from time to time until 1824. He was elected A.R.A. in 1795; he was also clerk of works to St. James's Palace, Chelsea Hospital, the Houses of Parliament, architect to the Woods and Forests, Dulwich College and much else. If multiplicity of offices could make a man happy, SOANE was to be envied. He not only prepared designs for triumphal bridges, but he was able to carry out several—such as one at Tynningham. For an ambitious man there could hardly be a more favourable time. The Houses of Parliament—and especially the House of Lords—could not be considered as adapted to the needs of a legislative palace, and as early as 1796 he prepared a design to render the House of Lords more commodious. Between 1800 and 1807 he made one or more drawings of a new House of Lords.

He possessed an order from the committee, and he took care to keep the subject before the public. The desire to have some part done prior to the fire was shown by C. H. TATHAM's proposal to convert INIGO JONES's Banqueting Hall into an Upper House. After the Continental war came to an end SOANE's ambition was excited by designing in 1817 "A national monument forming one side of a quadrangle, the other sides intended for sites of a Royal Palace, the two Houses of Parliament and Courts of Judicature." Parliament was not likely to approve of becoming a subsidiary element in any architectural design. SOANE was not, however, to be defeated, for after various designs for public memorials, in 1826 he contributed the following to the Academy, which is worth reprinting inasmuch as the same part of the Metropolis is now in course of alteration:—

Plans, elevations, &c., for completing the south side of Downing Place, and connecting the same with the new Council Office, the Board of Trade and the Treasury by a triumphal arch. This arch, decorated with statues of His Majesty, the Duke of York and the Duke of Wellington, the battle of Waterloo in basso-relievo, and other appropriate sculpture, is intended to perpetuate the military glory and invincible valour of Great Britain. The arch at the end of Downing Place, decorated with statues of his late Majesty, Lord Howard of Effingham and Lord Nelson, with the defeat of the Spanish Armada and the battle of Trafalgar represented in basso-relievo, is intended to record the glorious and ever memorable achievements of the British Navy. Downing Place—thus enlarged and enriched with national monuments commemorative of the splendid successes of the British arms by sea and land, and containing likewise some of the principal public offices and the official residences of several of the great officers of State—would form a suitable approach to the House of Lords from the new palace in St. James's Park whenever His Majesty should be graciously pleased to open the session of Parliament in his Royal person, and the procession would be no longer compelled, as at present, to pass under the low arches and gloomy vaultings of the Horse Guards. *Mihi turpe relinqui est.*

In the same year SOANE exhibited a national entrance into London which was intended to combine the classical simplicity of Grecian architecture, the magnificence of Roman and the fanciful intricacy and playful effects of Gothic. In 1828 he gave a view of a court in a proposed royal palace which was inspired by VIGNOLA's palace at Caprarola. It was to be erected in Hyde Park, with a series of magnificent hotels extending to Knightsbridge, Bayswater, &c. SOANE was disappointed when at last it was resolved to make alterations and additions at Buckingham Palace serve for the colossal scheme which had taken possession of him.

A great many people suppose that the SMIRKE family monopolised official architecture during centuries. The Academy catalogues show that although Sir ROBERT SMIRKE was treasurer for thirty years, during the whole of that period he did not once exhibit. That was setting a bad example to other architects, for if the Academy is to be recognised as a national institution certain duties are imposed on the members. He was sceptical about the benefit to be derived from having a drawing hung in an out of the way corner where few could see it, for architecture was worse treated than sculpture. Indeed the Academy record of Sir ROBERT is very curious. In 1801 he exhibited an *Infant Bacchus*; afterwards followed a scene from the "Merchant of Venice," a restoration of the temple on the Sunium Promontory, the Acropolis of Athens, and the Temple of Jupiter at Agrigentum. But of actual work, the theatres, clubhouses, colleges, public buildings, there was no sign. SYDNEY SMIRKE commenced exhibiting in 1820. He did not contribute afterwards for twenty years, and his last work was in 1869, viz. "The intended Design for the future adaptation of Burlington House to the purposes of the Royal Academy, as approved by Her Majesty."

SCOTT and MOFFATT had two drawings of the Orphan

* The Royal Academy of Arts: a Complete Dictionary of Contributors and their Work from its Foundation in 1769 to 1904. By Algernon Graves, F.S.A. Vol. VII.: Sacco to Tofano. (London: G. Bell & Sons.)

Asylum at Wanstead in 1842. However, GEORGE GILBERT SCOTT did not appear until 1847, when he entered in triumph with his "Church of St. Nicholas, Hamburg." He was then in his thirty-sixth year. In 1848 he had a view of the cathedral of St. John, Newfoundland; in 1850 the restoration of Chapter-house, Westminster, and in 1855 there was another victory with the Hôtel de Ville at Hamburg. In that year SCOTT was elected an Associate, and two years later an Academician. SCOTT was fortunate in being able to keep to secure ground, and not to tentative efforts. But the Hall of Science for Prince Consort's Memorial and the German Parliament House never became realities.

GEORGE EDMUND STREET began to exhibit in 1848 with a Cornish church. In 1857 he was able to show his design for a cathedral at Lille and a memorial church at Constantinople. He was so facile a draughtsman it might easily be supposed that he would take the fullest advantage of his position in the Academy to show examples of his drawings. But as a rule he rarely sent more than four, and in some years no work of his was to be seen on the walls.

The reputation of JAMES SAVAGE depends mainly on St. Luke's, Chelsea; yet he erected several other churches in London which were among the best types of Gothic as practised in the first half of the nineteenth century. The chapel at Burleigh Street, which was lately removed, was the last work he exhibited in the Academy in 1832. He designed two bridges over the Liffey in Dublin, and also contributed designs for a triumphal bridge and a Temple of Victory. SAVAGE was a type of the careful, hard-working architect, as skilled in construction as in design, and his Chelsea Church should establish his name.

It is not to be expected that we could do justice within our limits to 800 columns, and, indeed, we have been unable to say a word about the paintings and the statues. The book is a record of which the value is sure to increase as time goes on. The best of us cannot retain the names of all the paintings and drawings which we have seen in the Academy. But it is surprising with what power old scenes can be conjured up on going over the entries. This is one of the advantages of the book. The arrangement by which separate volumes can be purchased if desired enables a record to be obtained, which the members of a family must prize, at only an inconsiderable outlay.

ST. PAUL'S CATHEDRAL.

THE following statement respecting the possibilities of danger from sewer construction has been prepared by the engineer to the London County Council at the request of Mr. Evan Spicer:—

Northern Low Level Sewer, No. 2. St. Paul's Cathedral.
November 23, 1906.

In the year 1904, when investigating the question of the route of this sewer through the City, I found that almost the only possible course it could take would be past St. Paul's Cathedral on the south side. Having regard to the importance of the building, I considered it necessary to consult Mr. Somers Clarke, the architect to the Dean and Chapter, and after several verbal discussions on the subject, I arranged at his request to have three trial borings 8 inches in diameter made in the vicinity of the cathedral for the purpose of ascertaining the nature of the strata. The sites for the borings were fixed by Mr. Clarke himself, and on September 30, 1904, a letter was sent to him covering a tracing on which the results obtained from the borings were indicated, together with the position of the sewer in relation to the foundations of the cathedral. It was pointed out to him that the sewer would be about 16 feet 6 inches below the top of the clay in which it would be embedded. On October 1, 1904, Mr. Somers Clarke wrote asking a series of questions as to the nature of the works and the methods of construction, and particularly inquiring whether the Council would consent to submit the proposals

to an independent engineer acting for the cathedral authorities, and also if the works could be inspected during execution. On the same date Mr. Clarke acknowledged receipt of tracing before referred to showing the result of the borings, and promised to lay the same before the Chapter on October 6.

On October 3, 1904, I replied to the inquiries of Mr. Clarke, and stated very fully the nature of the works and the precautions to be taken to avoid any possible damage to the cathedral, and agreed on behalf of the Council to the suggested reference to an independent engineer, and to the inspection of the works during construction by any engineer appointed by the Dean and Chapter.

On November 17, 1904, I reported this matter to the main drainage committee, and they agreed to pay the expenses, not exceeding 50*l.*, incurred by the Dean and Chapter in consulting an independent engineer, and I so informed Mr. Somers Clarke.

On April 29, 1905, I wrote to Messrs. Lee, Bolton & Lee, Mr. Lee being the chapter clerk, and in their reply, dated May 2, 1905, they stated that Mr. Somers Clarke had full authority to settle this matter on behalf of the Dean and Chapter. I at once wrote Mr. Clarke, and on May 15, 1905, received a letter from him in which he said he was authorised to state that, "advised by their engineers, Messrs. Barry, Leslie & Co., the Chapter of St. Paul's does not regard with apprehension the proposed low-level sewer passing under the south side of St. Paul's Churchyard." He also went on to ask that the suggestions made by their engineers, Messrs. Barry, Leslie & Co., should be adopted, &c.

To all the proposals made by Mr. Clarke I assented, and on May 18, 1905, he wrote forwarding a copy of Messrs. Barry & Leslie's report, dated October 19, 1904.

The suggestions made by Messrs. Barry & Leslie, all of which are embodied in my specification, are chiefly as follows:—

No void to be left between the outer skin of the sewer and the London clay displaced to make room for it.

Between Creed Lane and Distaff Lane the highest part of the sewer to be not less than 16 feet below the top of the London clay, and cement grout to be injected round the outside of tube under pressure. The "shield" process to be adopted and the work carried out under air pressure if required; the excavation in front of the cast-iron rings not to exceed the minimum amount necessary to insert each cast-iron ring in place.

Messrs. Barry & Leslie further approved the proposal that the cast-iron rings should be 1½-inch thick, and they express the opinion that, with concrete and brickwork inside the tube and cement grouting outside, no corrosion need be anticipated.

I may state that the sewer is 7 feet 6 inches internal diameter and 9 feet 4 inches external diameter, and is 50 feet below the roadway.

So far as the facts are known from information derived from plans lent by Mr. Somers Clarke, it would appear that the foundations of the cathedral rest on a layer of loamy soil or potter's earth which, in its turn, rests on the gravel which overlies the London clay. This gravel contains (according to the borings made in 1904) only from 3 feet to 5 feet of water, which is upheld by the clay, but does not penetrate into it. The sewer being 16 feet below the clay, it will not drain the water out of the gravel, as it will be made entirely in tunnel, compressed air will be used during construction, and there will be no shaft or opening of any kind from the surface between Ludgate Circus and Queen Street at its junction with Cannon Street. The proposed sewer at its nearest point is from 35 feet to 40 feet in a horizontal line away from the cathedral. Between the underside of the foundations of the cathedral (according to the best available information) and the top of the sewer a distance of about 40 feet vertically will intervene.

There is not the slightest likelihood that any water will drain on to the back of the cast-iron tube forming the sewer.

There is already a 4-feet 6-inch by 2-feet 8-inch local sewer in St. Paul's Churchyard between the proposed sewer and the cathedral. This local sewer is in the gravel which overlies the clay, and is from 20 feet to 25 feet below the surface of the roadway, and is below the level of the foundations of the cathedral.

Since May 1905 I have had no communication, official or otherwise, with the cathedral authorities, either as regards the construction of the sewer or any subsidence of any part of the cathedral. I may also say that I saw Mr. Somers

Clarke several times during last September, and he made no mention to me of any settlement at the cathedral.

In conclusion, I have to state that the sewer has not yet been commenced at any point within two miles of the cathedral, and no shafts have been sunk.

I attach hereto copies of the principal letters which have passed between me and the cathedral authorities.

MAURICE FITZMAURICE.

THE LATE WILLIAM MACKISON.

INTIMATION of the death of Mr. William Mackison, C.E., F.R.I.B.A., until recently city engineer of Dundee, which was made on Saturday, came as a surprise and shock, says the *Dundee Advertiser*, to the community at large. Except among his more intimate friends it was not known that he was ill, and even by them a fatal termination was hardly expected. It appears that for a fortnight Mr. Mackison had suffered from a slight indisposition, and it was not until a few days ago that complications arose which, assuming a dangerous form, ended in death shortly after three o'clock on Saturday morning. Deceased had been residing at Kirkton House, his residence at Auchterhouse, and there he passed away in the presence of his family.

A native of Stirling, where he was born in 1833, Mr. Mackison first made the acquaintance of Dundee in 1844 by entering the high school of the city in order to complete his education. He was a diligent and clever pupil, and took a good position in all his classes. Six years afterwards, in 1850, having in view the law as a profession, he was given a situation in the office of Messrs. C. Kerr & Co., solicitors, but after a short time, on a favourable opening presenting itself, he transferred his services to his native town, and took employment with his uncle, the late Mr. Francis Mackison, C.E., architect and surveyor. He definitely decided to adopt the profession of architect. In Stirling his career was very successful. He was fortunate in obtaining a wide experience in all branches of architectural and surveying work, and many of the most handsome villas and buildings, not only in the town itself, but in the surrounding district, were erected to his designs. The important offices of master of works, burgh surveyor and town architect in Stirling were held by Mr. Mackison, and during his tenure of them he was also entrusted with the supervision of the excavations at Cambuskenneth Abbey and the restoration of the fine old tower of that historic pile. As a recognition of the excellent manner in which he carried out this commission he was elected a Fellow of the Scottish Society of Antiquaries, and the same year was chosen a Fellow of the Royal Institute of British Architects—he and the late well-known and celebrated architect, Mr. David Bryce, Edinburgh, being at that time the only men enjoying that distinction. In other walks of life Mr. Mackison was a prominent figure.

It was in May 1868 that Mr. Mackison came to Dundee as burgh surveyor, in succession to the late Mr. Fulke. These were the days of small things. The surveyor's office was in the Police Chambers. Then there were only one assistant, one apprentice draughtsman and one apprentice clerk on the office staff; one inspector of works and two outside foremen over the squad of workmen employed by the Corporation. Needless to say, both the work and the staff of the department have greatly increased since that remote period. And the changes that have come over the city have been still more marked. Extensive drainage, paving and flagging operations have been carried out, streets have been widened and otherwise improved, and many important building schemes have brightened and beautified the town. One of the first tasks set Mr. Mackison was the laying out of the grounds around the Albert Institute; then followed the formation of Balgay Hill and cemetery (in which he was assisted by Messrs. Scott and M'Kelvie, town architect and superintendent of parks respectively); and after that came the preparation of the plans and sections of the Police and Improvement Act of 1871. This 1871 Act involved a large amount of additional labour on Mr. Mackison and his assistants, not only immediate but prospective, he having under it to examine and report upon the plans for all new buildings within the city and superintend their execution. The public baths, public cattle market and abattoirs, the police stations and extensions thereof, the smallpox and epidemic hospitals and King's Cross hospital, the extension and reconstruction of the cleansing department buildings, the new skating-ponds and the fish market were designed and carried out under his directions.

He also prepared the Parliamentary plans for the street tramways and the Esplanade and river reclamation works; also the Parliamentary plans for the boundary extension, &c. The extension works by the unemployed were performed from time to time under his oversight.

For a time Mr. Mackison also acted as water manager. During the water famine he brought the water of the Fithie into the Crombie Reservoir, carried out considerable extension of town piping, and effected many improvements at Monikie. In due course the water department was considered of sufficient importance to warrant the appointment of an engineer specially to attend to its manifold responsibilities, and Mr. Mackison was thus freed to devote all his attention to the duties coming under the cognisance of the present-day works committee.

But apart from professional cares, and notwithstanding the call which these made upon his time, Mr. Mackison proved a helpful citizen in other spheres. All religious and philanthropic causes found in him a constant and earnest supporter. He was a member of the Sanitary Association of Scotland, holding for two years the position of President, and was one of the first to support the formation of the Dundee Institute of Architecture, Science and Art, of which he became first Vice-President and afterwards President.

Into the causes which led to his severance from the service of the municipality it is not necessary to enter. That is a matter of recent history well within the recollection of the community; and still less is it required to do more than mention the action for 15,000*l.* raised at his instance, and still pending in the Court of Session, against the Town Council as compensation for work performed by him and claimed to have been outwith the scope of his office. Deceased was a man of sterling probity and character, of gentle manner and genial disposition, generally esteemed, and much liked by his subordinates in the public service. Mr. Mackison, who was seventy-three years of age, is survived by a family of two sons and one daughter.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

AT the annual social gathering of the Leeds and Yorkshire Architectural Society, held at the Queen's Hotel, Leeds, a musical entertainment followed the address of the president (Mr. H. S. Chorley, of Leeds). It also fell to Mr. Chorley's lot to distribute prizes awarded to students of the Society during the past twelve months. Mr. W. P. Rylatt won prizes (1) for a measured drawing of Methley Church, (2) for sketching and (3) for construction. To Mr. Carnelly were awarded a special prize for designs; while Mr. W. Whitehead won the second prize for designs, the essay prize and the Halden prize.

Mr. H. S. Chorley, in his presidential address, touched upon the Selby Abbey fire, expressing gratification at the prospect of the fine old building being restored to its original beauty. He hoped that Mr. Oldrid Scott, who had the work of restoration in hand, would be able not only to rebuild the burned-out portions, but also to carry out the other works contemplated in connection with the tower and south transept. The fire, proceeded the President, had demonstrated the danger of timber roofs, and raised the question whether it was possible to put fireproof vaulted roofs in Gothic churches. The stability of such places as the Pantheon and the Basilica of Constantine at Rome was due to the fact that their roofs were made of imperishable materials which could not be destroyed by fire or ruined by man's neglect.

Another question worthy of discussion was the proper preservation of our ancient monuments. Mr. Chorley mentioned in this connection that almost everywhere on the Continent the initiative had been taken by the State, while in this country the work had been carried out largely by private enterprise. Continental Governments had established State commissions to look after their national treasures. In England it must be said, of course, that so far as the work of actual restoration was concerned, the care of old buildings compared favourably with the work done elsewhere. In Europe many buildings had not been restored so much as rebuilt, and the State in its desire to preserve had ruined many fine monuments. The same complaint had been made occasionally in regard to this country, but generally speaking Mr. Chorley believed that restoration of buildings had been carried out with greater love and care than was shown on the Conti-

ment. But in other matters connected with the preservation of ancient monuments this country lagged behind. It was necessary, proceeded the speaker, that there should be a system of surveying and cataloguing to obtain a complete knowledge of all the architectural treasures the country possessed. Full insurance against fire should be insisted upon in every case, and an inspector of ancient monuments should be appointed. Mr. Chorley, with an eye to beauty, also added that advertisement hoardings in close proximity to these architectural gems should be prohibited. It was indeed evident, he concluded, that there was a real necessity for Government action in many directions.

The President also referred to the garden city movement, and urged architects to interest themselves in the housing question and take their proper place in any reforming movement, so as not to allow the matter to drift into the hands of the builder alone. Mr. Chorley said there was a growing necessity for the registration of architects, and in regard to the work of the Society he hoped next year to revive the sketching club, which had been a useful section of their organisation in the past.

Mr. Chorley was thanked for his address, on the motion of Mr. Sydney Kitson, seconded by Mr. Butler Wilson and supported by Mr. F. E. P. Edwards.

EDINBURGH MUNICIPAL COLLEGE OF ARTS.

THE sketch plan of the new art school has been approved by the Edinburgh Town Council. The block plan shows the central building with entrance hall, museum and cast gallery and buildings on the right and left, each with a hollow square in the centre. The frontage length over all of the building will, says the *Scotsman*, be about 420 feet and the average width about 140 feet. The entrance block has a frontage of about 60 feet and is situated to the west of the present entrance to the cattle market from Lauriston Place. Beyond it is a museum 55 feet by 40 feet, and behind that again on the north is a cast gallery for sculpture and architecture, which is 80 feet in length by 55 feet in width. The various sections of the arts have been allotted different parts of the buildings—painting on the north-east, architecture and the decorative arts on the south-east, sculpture on the north-west, and generally public offices and rooms for the administrative staff on the south-west quarter. On the museum corridor on the right is a students' room for ladies, and on the corridor on the left a corresponding room for gentlemen students. On the northern boundary to the east are rooms for drawing from the cast, painting from still life and flowers, marine paintings and landscape and etching studios. These are entered from the same corridor, which is about 120 feet in length. The eastmost room in the entrance floor is the lecture theatre, roughly speaking, 40 feet square, with cloak-room adjoining; while in the southern side of the east block are rooms for the preparation of colours, house painting, decoration, elementary drawing and design. The decoration apartment is nearly 50 feet in length by 40 feet in width, and has thrown out from it on its south side a conservatory for the rearing of plants and flowers. The building on the west of the main block has on the north side sculptors' classroom, life classroom, antique classroom and a room for decoration and ornament, the size of these rooms being about 40 feet by 30 feet. On the west end are workshops and an atelier devoted to casting, pointing and carving marble, stone and wood; and on the south front are rooms for elementary modelling, anatomy and a public office, the last mentioned entering directly off the main vestibule. In each of the central courts is a glass pavilion, 30 feet in length by 40 feet in breadth.

On the upper floor the library, 40 feet by 26 feet, is placed above the entrance hall. Behind it and above the museum is a hall, 54 feet by 40 feet, for the study of advanced architecture, while further on is a second cast gallery, 83 feet by 50 feet. The six classrooms on the north-east line of the building are devoted to painting from the nude and the draped model and to composition, while the upper rooms on the south side are set apart for architectural studies, the largest of these, for advanced decoration, being 50 feet in length by 35 feet in breadth. The upper rooms on the north-west side of that block have a range of seven studios, 20 feet by 19 feet, for advanced students of sculpture, the westmost corner room being for photography. On the south side of this block are rooms for the director, Council, secretary, a professors' common room and a large

room for students' proofs and school property. The caretaker's house is at the north-west corner of Lady Lawson's Wynd.

The scheme is that of Mr. Macgillivray, R.S.A., and the plans were prepared in the Public Office of Works.

NATIONAL MONUMENT, EDINBURGH.

A PAMPHLET, accompanied by a set of drawings by Mr. Henry F. Kerr, A.R.I.B.A., illustrative of the proposed completion of the National Monument for the Scottish National Gallery, has been issued.

Fortunately the questions, which involve the interests of science and art in Scotland and the credit of the country, are still open, and the Government may be relied on to deal with them according to the wishes of the Scottish people.

This would leave the venerable Royal Society of Edinburgh in the occupation of the Royal Institution, where, as Lord Kelvin said, the Society for the last sixty-two years of its life and work has enjoyed a lodging in the very best site in Edinburgh, thoroughly convenient in respect of all modern requirements.

It would leave the Royal Scottish Academy and other artistic societies both galleries at the south end of the Mound, affording ample space for all their requirements.

In connection with these buildings the Government would be put to no extra expense, and would be the better able to subsidise the institutions by which they will continue to be occupied.

The only questions remaining are those of the site and the funds for the National Gallery. Perhaps the finest site in the country was chosen by our ancestors last century for the National Monument. They selected as its model the Parthenon at Athens, which in its own class is undoubtedly the most beautiful building in the world. The building could be completed with an entrance hall and corridor, so as to afford more space for works of art and more room for expansion than the present National Gallery and the one adjoining it, while for those unable or unwilling to use the present access in carriage or on foot, a luxurious and easy elevator 300 yards from the Wellington Statue would set them down at its door.

The funds necessary, which to some timid Scottish people seem beyond reach, are equally accessible. Notice has been given by Mr. Norman Lamont, M.P., of an amendment on the National Galleries (Scotland) Bill, authorising the new Board to apply the accumulations held by the Board of Manufactures "towards the completion of the National Monument on the Calton Hill to serve as the National Gallery for Scotland." If carried, 28,000*l.* would become at once available for proceeding with the building and its access, and as the Royal Institution was built from purely Scottish money and is now valued at 200,000*l.*, it would not be too much to expect from the Exchequer a grant of that amount. Arrangements are being made for collecting whatever sum may be required to supplement the Government grant. Is it too much to expect contributions to that amount from all English-speaking people for completing what the venerable Dr. MacGregor truly writes "would be the finest thing in the British Empire"?

According to the town clerk, the completion of the National Monument on Calton Hill and the provision of a suitable building for the National Gallery of Scotland in Edinburgh, both of which are dealt with in the pamphlet, are of interest to the people of Scotland. The Corporation of Edinburgh, to whom the Calton Hill belongs, have expressed their readiness to give a site on the hill for the National Gallery if the Government resolve upon placing it there. Mr. Mitchell deals with the subject of the funds which would be required and the sources from which contributions might be expected. The Town Council, while not committing themselves to approval of Mr. Mitchell's views, invite attention to the questions discussed in the pamphlet.

In his pamphlet Mr. Mitchell submits the following suggestions:—

1. That the Bill be amended by reserving to the Board of Manufactures, established shortly after the Union, not only the "equivalent" annuity of 2,000*l.* thereby secured by the Scottish people, but the amount saved by the Board from that annuity. The present amount of the Board's capital is 36,481*l.*, invested in heritable bonds and Government securities, as stated in Paragraph 45 of the report by Mr. Akers-Douglas's committee. The Board should be

further authorised to apply these funds and any Government grants, donations and legacies which it may receive for the purpose in the completion of the National Monument on the model of the Parthenon, to serve as the Scottish National Gallery. By thus earmarking these funds, which belong to Scotland, an end will be put to the system under which Scotland has suffered so much in the past, and the institutions for the promotion of science and art in Scotland will fall to be duly supported by the British Exchequer in the same way as similar institutions in London and Dublin.

2. That the Bill be further amended by vesting the public buildings in question and collections of pictures, sculpture and antiquities contained in them in the Corporation of Edinburgh, the capital of Scotland, with power to manage the same by a committee of science and art, consisting of members of the Corporation and such representatives of science and art in Scotland as may be co-opted by the Corporation for the purpose.

At Mr. Mitchell's request, Mr. Henry F. Kerr, A.R.I.B.A., has prepared a set of drawings of the proposed reconstruction, which accompany the pamphlet. It is explained by Mr. Mitchell that—

(a) The interior is divided into a ground floor and a great hall above it. Setting apart the necessary space for the staircase at the east end and two lifts at the west end, there remains a rectangular area 120 by 64 feet, which is divided into six rooms communicating with each other and each measuring about 40 by 30 feet. The height of these rooms is 18 feet, and they are lit from the north and south sides, each room having three windows on one side. The sills of the windows being about 7 feet above floor level, the light will enter from above and the space below the windows may be available for statuary if not for pictures.

Including only the dividing walls, the lineal hanging space for pictures on the lower floor will be about	522
(b) The great hall, measuring 120 by 64 feet, will be lit from the roof by windows of thick glass occupying most of the spaces between the principals of the roof. The height of the hall is 27 feet at the sides and 35 feet in the middle. All the four walls will be available for pictures, and the lineal hanging space in the great hall will be about	341
(c) Additional space for the display of special pictures will be afforded by tripod stands, seven of which would afford further lineal hanging space to the extent of about	70
(d) The entrance hall and corridor to the south-east of the main building, lit from the roof, will afford further lineal hanging space of about	400
Total	1,333
The whole lineal hanging space within the galleries at the south end of the Mound is.	1,178

The proposed new National Gallery will thus have 155 feet more of lineal hanging space for pictures. The station of the electric railway beside the steps in Waterloo Place is only 300 yards from the Wellington Statue. Access to the National Gallery and the Hill will be obtained by a single line of railway worked by under-contact electric-power, which will terminate beside the entrance hall of the Gallery, passing through the trees and above the rock at a gradient of 1 in 8 for a distance of about 250 yards. In order not to interrupt the roadway below the Nelson Monument the line will be tunnelled to the south-east of that monument for about 56 yards. The present access to the Hill will not be interfered with in any way.

ANCIENT IRELAND.

A LECTURE was delivered at Manchester University on early Celtic Christianity by Professor Kuno Meyer. He traced the beginnings of Christianity in Ireland, and gave a glimpse into the Pagan civilisation which existed at the time of the first Christian missionaries. He deplored the reckless and wanton destruction of Irish antiquities and manuscripts which is still going on. Ancient oratories, churches and inscribed stones are being pulled down when the materials are needed to repair a neighbouring cabin, and the so-called restorations of the Irish Board of Works threaten these ancient monuments from another side.

Instead of excavations conducted on scientific lines, we were lately told of the proprietor of Tara Hill digging at random on that ancient site to try to discover traces of the lost tribes. The deplorable state of education in Ireland was responsible for such vandalism, and for the general apathy and ignorance of the Irish with regard to their own history and old literature. It was to be hoped that the Gaelic League, which was doing so much to revive interest in the language and literature of Ireland, would improve matters.

The whole of Ireland is covered with thousands of early Christian monuments, the earliest dating from the fourth, probably the third, century, and the shelves of libraries are full of thousands of unexplored Irish manuscripts—an almost neglected field of research. Ireland, in the golden age of its civilisation, was so strong and rich that it could afford to give of its wealth to other countries; the Continent was studded with Irish monasteries and schools, and Irishmen were the companions and advisers of kings. Going back to the first century of our era, Professor Kuno Meyer described the then ruling inhabitants, the Gaels, and said that they probably came to Ireland direct from the Continent, most probably from Gaul. The then trade routes went straight from the Continent to Ireland. Of the people who were living in Ireland before the arrival of the Gaels we knew nothing. He touched on some aspects of ancient Irish life and civilisation. Ireland in early times was split up into innumerable independent clans, and the idea of a central executive Government was unknown.

Much interesting evidence was drawn from the old epics, which were in prose with lyrical interludes, and which revealed a civilisation in which intellectual and artistic pursuits ranked high and where the ideas of chivalry were honoured, and from the lives of the early saints. The conscious falsifications which entered into these lives weakened their value as evidence, but they nevertheless threw valuable light on the times. The Pagan Irish worshipped idols and propitiated them by human sacrifices, particularly of children, and they worshipped the sun and trees and wells.

Professor Kuno Meyer thinks that there must in those old days have been considerable intercourse between Ireland and Britain. There were slave-hunting raids of the Picts or Irish on Britain, and a certain amount of commerce existed. From the second century there was constant intercourse between the two sister isles, and this was one of the channels through which Roman Christianity and civilisation reached Ireland. He combated the theory that Ireland was entirely Pagan before the arrival of St. Patrick in 432, and said that during the whole of the fourth century there was an organised Christian Church. Half a century after St. Patrick's death the Irish Church was at the height of its power and influence.

SOCIETY OF ARTS.

IN concluding his address at the opening of the session last week Sir Stewart Colvin Bayley, chairman of Council, said:—I have hinted in dealing with the future of the Indian section that we are somewhat cramped for space. For the past two years the Council were not without hopes that the Society might have received a great extension by becoming amalgamated with the London Institution, and that a new Society might have been established to carry on the work of these ancient institutions with renewed vigour. As you are aware, the efforts made in this direction have come to nothing. But the Council are now endeavouring to ascertain whether additional accommodation cannot be provided for the Society on the site it has so long occupied, by the acquisition of adjacent premises. Whether this can be successfully accomplished, and on terms which the Society can afford, is a question which is now engaging their very careful attention, and should their endeavours be successful, I have no doubt that the Indian section no less than the Society at large will be greatly benefited.

The Local Government Board recently rejected Acton's scheme for a new town hall and public offices at a total cost of 100,000*l.*, on the ground that it was unnecessarily elaborate and extravagant. An amended scheme was laid before the District Council last week to cost 36,000*l.*, this providing for municipal buildings only. Working drawings, prepared by Mr. W. G. Hunt, architect, were adopted, and specifications were ordered to be prepared.

NOTES AND COMMENTS.

AN experience on a comparatively small scale relating to reservoirs is now being afforded to the Metropolitan Water Board. A reservoir used to be a type of quietude; it is so well sheltered that scarcely a ripple agitates the surface of the water. And yet every official who has been connected with their construction or upkeep is aware that without any notice the mass of water can destroy both lives and property. Their history is marked both in England and other countries by terrible havoc and loss of human life. The case which the Metropolitan Water Board is now called on to deal with is the reservoir being constructed at Honor Oak. In the neighbourhood there is light yellow clay with some of those insets of sandy beds which it is difficult to explain, but which often are a source of danger. Great care is being taken in the preparation of the bed of the reservoir. But there are already indications that the clay and sand is liable to disturbance, and in such cases the work which is constructed above the beds is likely to follow suit. It is proposed to expend about 5,500*l.* to put an obstacle to the shifting and to strengthen the wall with counterforts. But the Board will be fortunate if they secure safety at so moderate an outlay. The difficulty in all such cases is that there are no counteracting pressures such as would arise from a second reservoir outside the first. The work will involve great anxiety. Messrs. MOWLEM & SONS, who have been entrusted with the operations, are also to construct another reservoir at a cost of about 140,000*l.*

IT was never anticipated when the world's great buildings were erected that they might have to encounter a fearful enemy in the form of an explosive. Another peculiarity of the danger is that, being unrestrained, buildings which would be spared in the ordinary course of war would not be exempted. The resources of civilisation, which is the phrase applied to explosives by advocates of the war against public buildings, are enemies with which it is difficult to contend. At St. Peter's, Rome, on the 18th inst. at midday, a tin can, like those containing conserves, was discovered between the altar known as Della Navicella and CANOVA's tomb of CLEMENT XIII., beneath a marble scaffolding which had been employed for repairs to the roof. The great basilica is guarded by a band of workmen known as the San Pietrini. They reside in quarters on the platform near the cupolas. Some of them are always on the watch during the night as well as day, and they declare they did not see anyone placing the destructive. It is remarkable that the large nails found in the case correspond with those used in the scaffolding. Evidently the contents were recently packed, for among the debris were fragments of journals two days old. The attempt was made by some unskilful hand, for otherwise it could not have been expected that under the favourable conditions so little damage would have occurred. What advantage would arise to the proletariat by the destruction of such a building is not to be understood. If it were proposed to convert the basilica to secular use the scheme might find supporters. But the destruction of a building like St. Peter's could not be remedied, for although another might be erected it would certainly be of a much cheaper class.

THE report on the work of the Department of Technology of the City and Guilds of London Institute contains about 250 pages of questions which were set in the latest examinations. They denote that there has been no playing with the seventy-four subjects. Special exercises were arranged for candidates proposing to become teachers of technological subjects. This year examinations were held at 444 centres, and out of the 20,610 papers, 11,665 passes were allowed. The examiners are not always flattering in their remarks on the results. For instance, it is unsatisfactory to read

"quite half the hand-sketches of the chisels were worthless" in the report on woodwork, and the illustrative sketches are also described as wretchedly drawn. One reason for the defects may be the kind of teaching adopted all over the country in the schools controlled by the County Councils. There are not a sufficient number of masters, and it is generally understood that the supervision is not exacting. The principal aim of all concerned is to have a large number of figures in their returns, and for statistical and fiscal purposes it does not matter whether the students profit by the instruction. The tests of the City and Guilds of London Institute should engage the attention both of the Government and the County Councils.

IN France the desire to praise men after their death is so general, it seems the more strange that *RAOUL ROCHELLE* should require no less than fifty-two years to elapse before he was eulogised at the Académie des Inscriptions et Belles-Lettres. He was the permanent secretary of the Académie des Beaux-Arts, and was also associated as member with many of the foreign academies. Although at the time of his death he was recognised as one of the foremost authorities in France on the paintings of antiquity, by some marvellous neglect he was deprived of the obituary notice which it was the duty of the member succeeding to his chair to deliver. He was, moreover, a type of the highest class of French professors. When twenty-three he taught history in the college of Louis le Grand in Paris. This was followed by his election to the chair of history at the Sorbonne. He published a history of the Greek colonies when he was twenty-five. Then from 1819 until the Revolution he held the appointment of superintendent of antiquities in the Bibliothèque Nationale in addition to a professorship of archæology. His works on the paintings of Pompeii and other memorials were in their time much admired. Nor has his reputation suffered by the investigations of the last fifty years. Yet if it were not for the thoughtfulness of *M. GEORGES PERROT*, it is possible that *RAOUL ROCHELLE* would have been unique in not being the subject of one of those memoirs which are the modern equivalent to the ancient funeral orations.

THE old-fashioned county histories always attract high prices. But for the information of ordinary readers the "Popular County Histories," published by Mr. *ELLIOT STOCK* at 3*s.* 6*d.* a county, are likely to serve as well as the more expensive volumes. Why they are not better known is one of the mysteries of publishing which only those connected with the business can explain. The latest addition is the "History of Oxfordshire," by Mr. *J. MEADE FALKNER*. That county has been connected in a marvellous way with the history of England and, we might add, of civilisation. The panorama which the author unfolds is remarkable, especially when we recollect the size of the county. Much of the effect is owing to the importance attached to the University, which from its foundation has been one of the motive forces of the kingdom. Architecture is also respected, for it must be remembered that *WILLIAM OF WYKEHAM* was a University don, and that *CHRISTOPHER WREN* was in the sixteenth century one of its miracles. Indeed, there is not a single page which is undeserving of study, and the short time spent in reading the book will be well rewarded.

ILLUSTRATIONS.

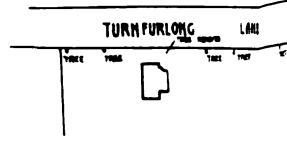
CATHEDRAL SERIES.—MANCHESTER: OLD CHAPTER-HOUSE DOOR IN SOUTH CHOIR AISLE.

HATTON COTTAGE, CHISLEHURST: SITTING HALL, LOOKING TOWARDS DINING-ROOM—LOOKING TOWARDS STAIRCASE—VIEW FROM ROAD.

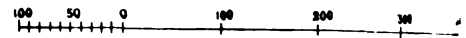
COTTAGE AT WALTON GRANGE FARM, ATLESBURY.

COTTAGE AT WALTON GRANGE FARM, AYLESFORD

FOR THE RIGHT HON. LORD ROTHSCHILD.

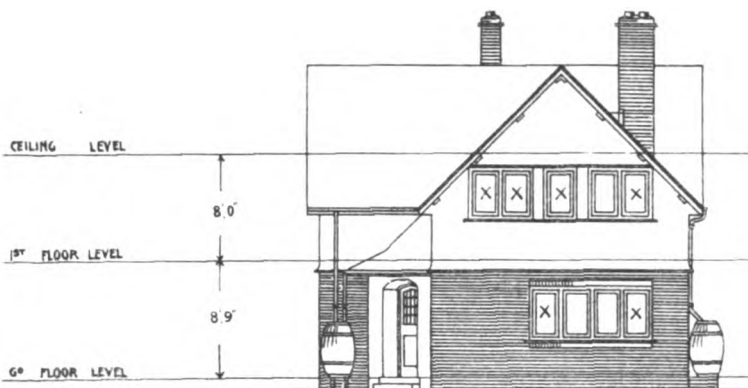


SCALE OF FEET



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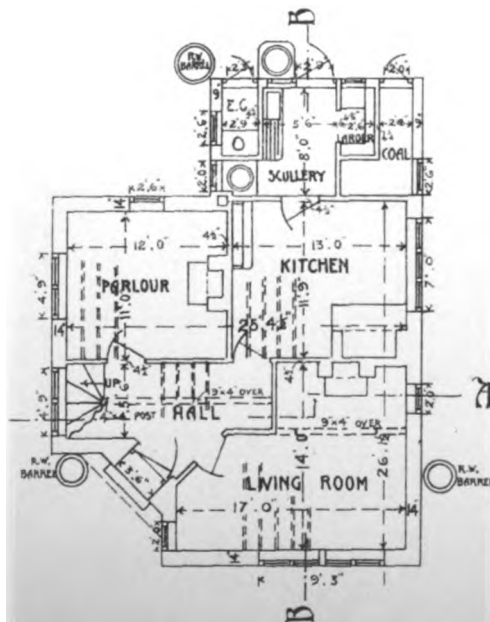
WINDOWS MARKED X TO OPEN



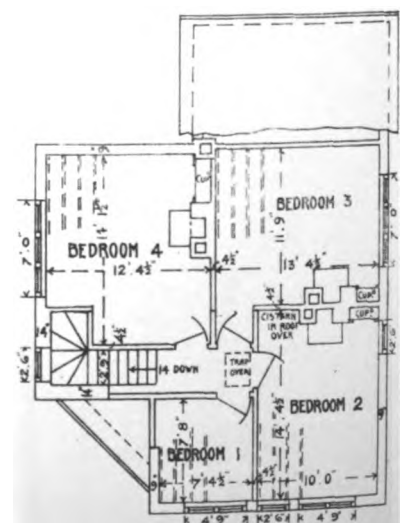
SOUTH WEST ELEVATION



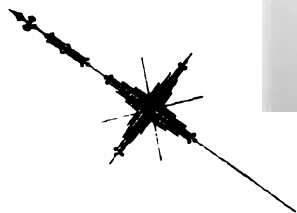
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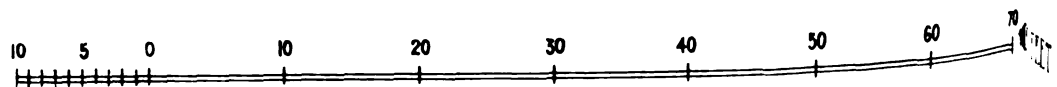
GROUND PLAN



1ST FLOOR PLAN

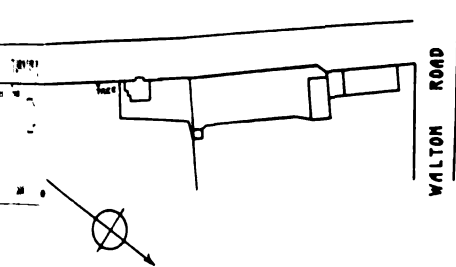


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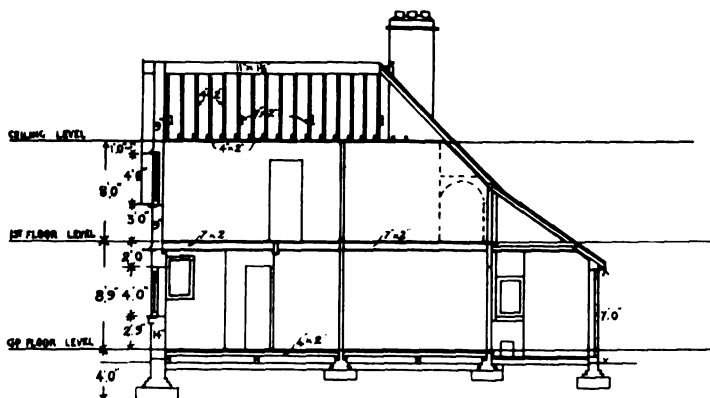


Jan. 30th 1906

SBURY



BLOCK PLAN



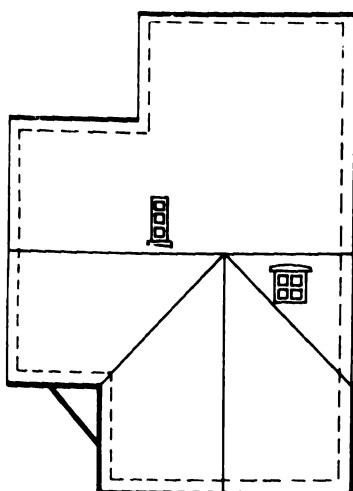
SECTION B.B.



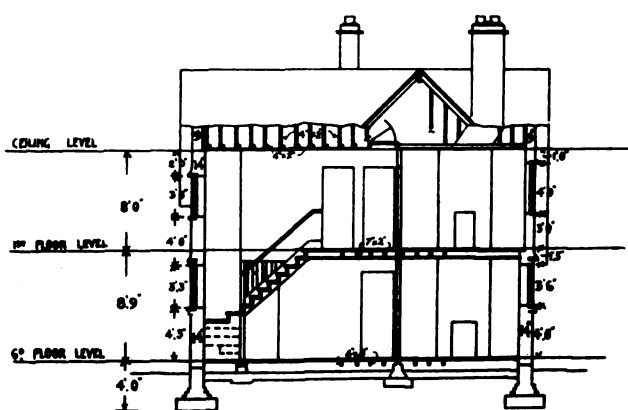
NORTH EAST ELEVATION



SOUTH EAST ELEVATION



ROOF PLAN

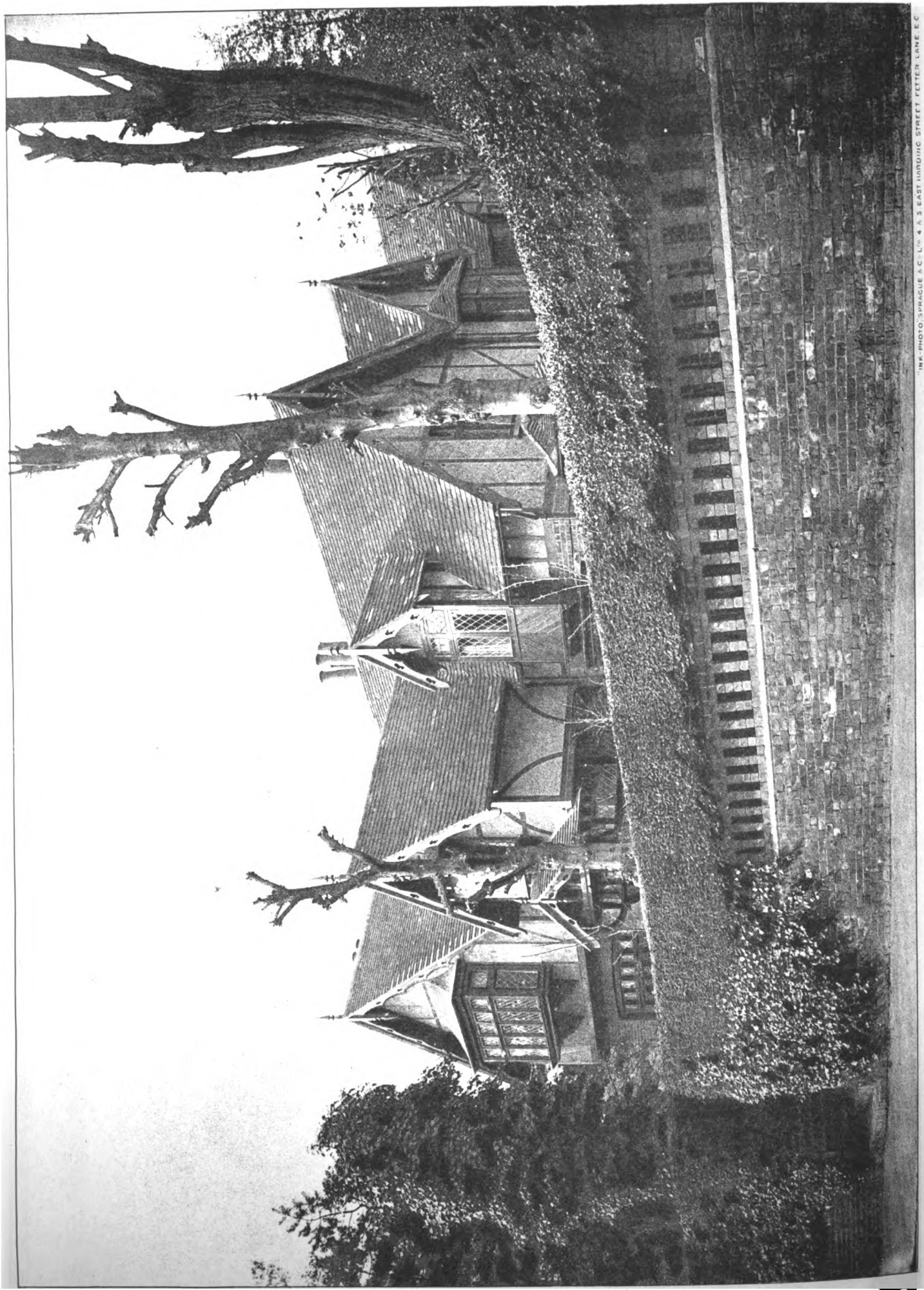


SECTION A.A.

FEET

W ERNEST HAZELL, A.R.I.B.A.
ARCHITECT





HATTON COTTAGE, CHISLEHURST: VIEW FROM ROAD.
A. H. RYAN-TENISON, F.R.I.B.A., Architect.

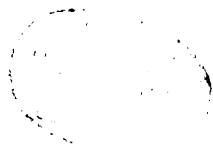
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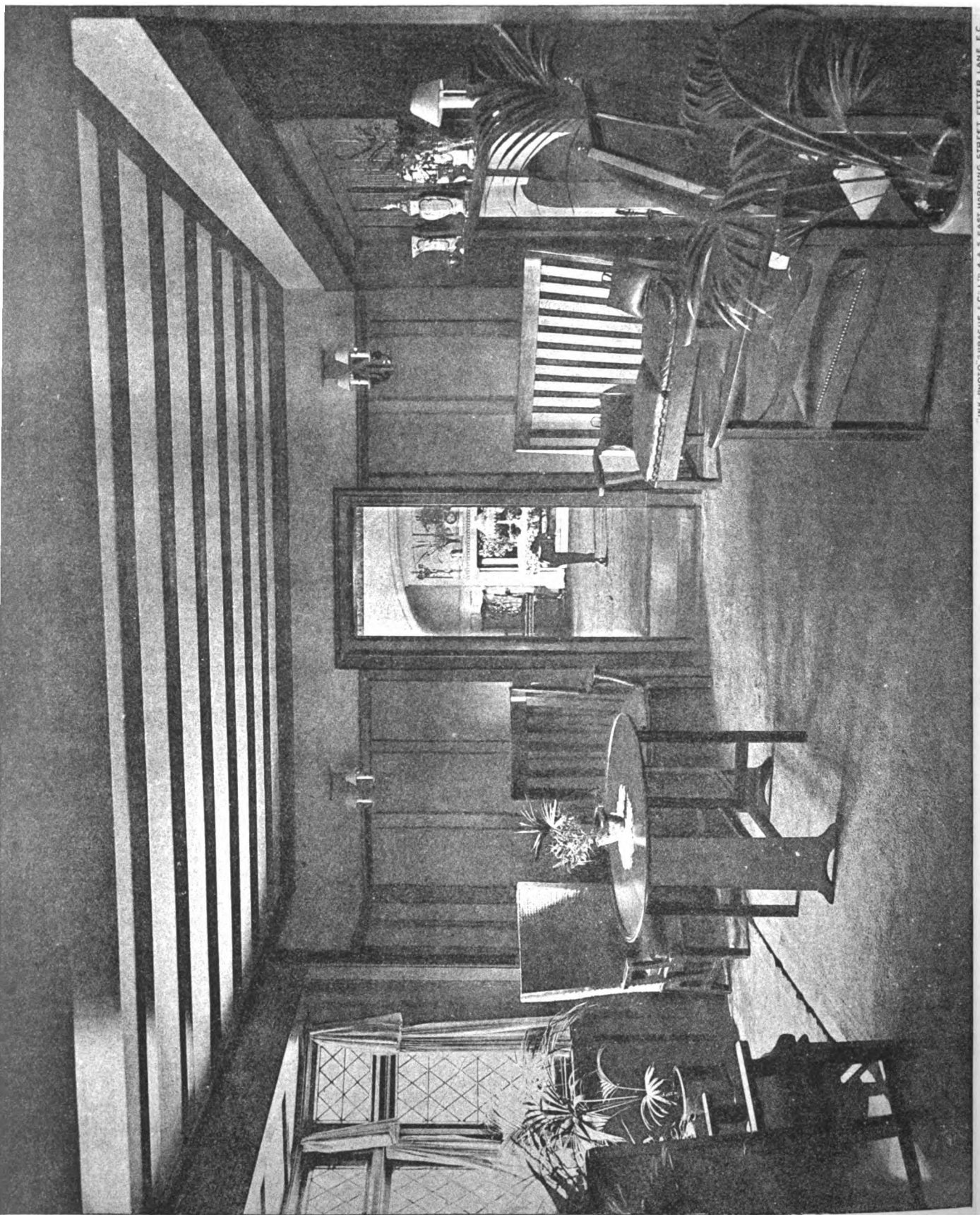


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COTTAGE AT WALTON GRANGE FARM, AYLESBURY.

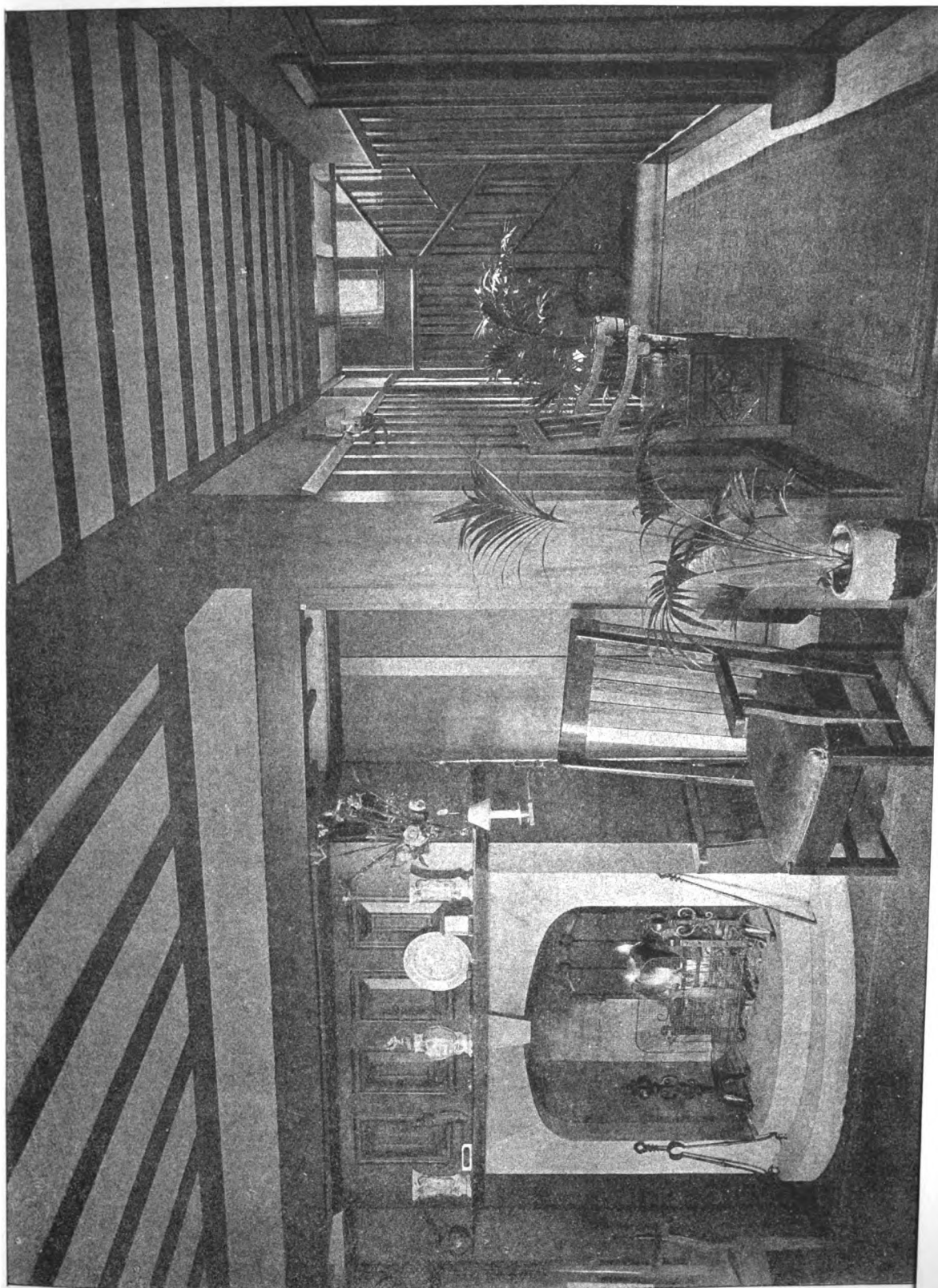
W. ERNEST HAZELL, A.R.I.B.A., Architect.





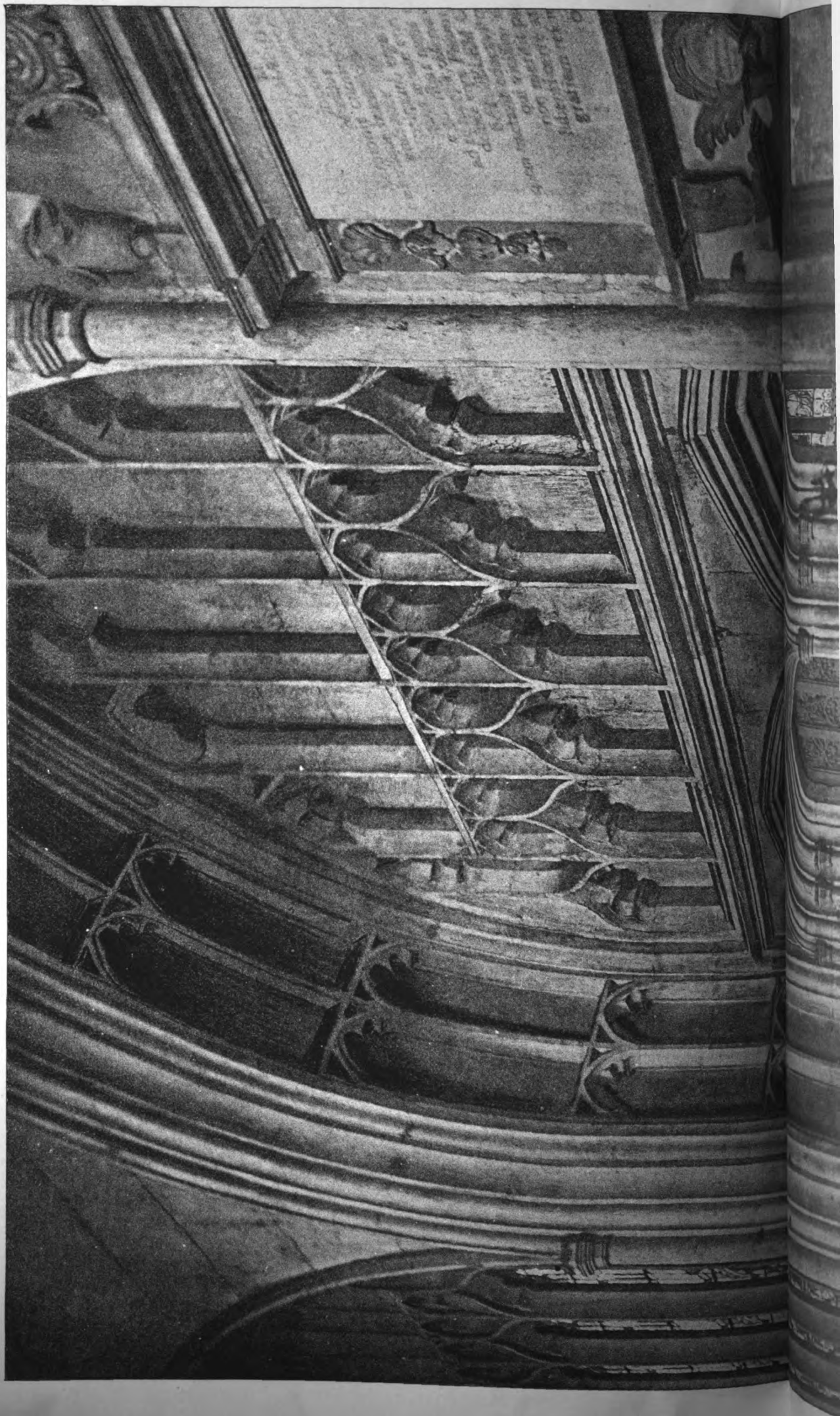
INK PHOTOGRAPH BY C. L. & S. EAST HARDING STREET, PETER LANE, E.C.

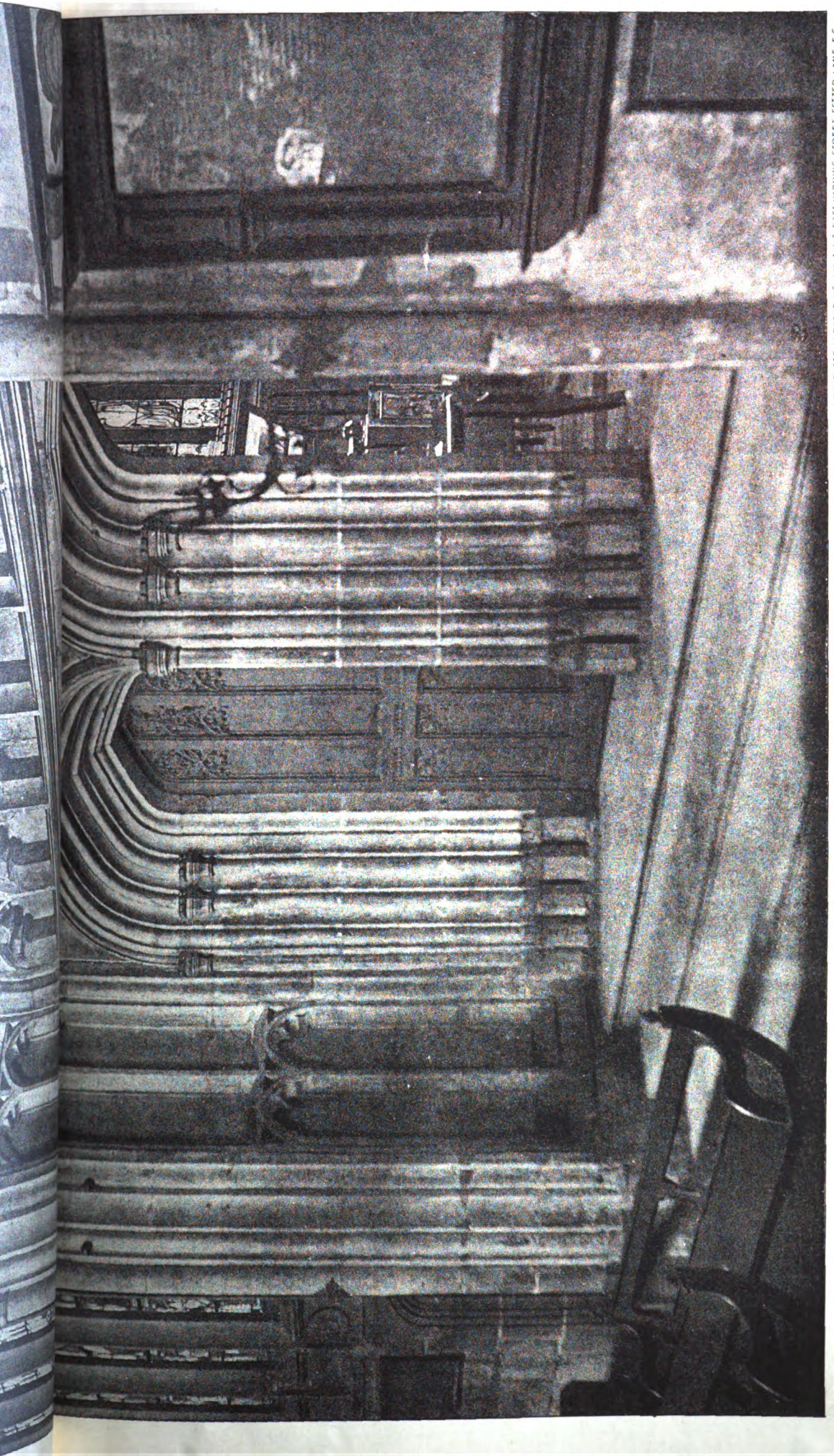
HATTON COTTAGE, CHISLEHURST: SITTING HALL, LOOKING TOWARDS DINING ROOM.
A. H. RYAN-TENISON, F.R.I.B.A., Architect.



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1917

The Architect. Nov. 30th 1906.





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CATHEDRAL SERIES, No. 586.—MANCHESTER: OLD CHAPTER HOUSE DOOR IN SOUTH CHOIR AISLE

HERALDRY IN RELATION TO THE APPLIED ARTS.*

THE imaginary animals that occur with such conspicuous effect in heraldic design would well repay the expenditure of more time than we can devote to them now. I must, however, be content to mention a few of their characteristics. The unicorn perhaps interests us most as an important part of the royal insignia. You may remember that two unicorns were the supporters of the royal Scottish arms, and when King James succeeded to the English Crown he used one of them as his heraldic supporter, with the lion of England on the other side, as they appear to this day. In so doing, the Tudor dragon, the dragon of Cadwallader, was displaced as a supporter though it still remains a royal badge. The unicorn is of composite character, having the head and body like those of a horse with the legs and cloven hoofs of a stag. A twisted horn issues from the midst of its forehead and its tail is usually that of a lion, in some cases is that of a horse, but it also has a tuft under the chin and others on the legs as a lion has. An instance of the latter form occurs in the supporters to the arms of the Goldsmiths' Company. Another form of unicorn, shaped like a goat, was also described in the "Bestiaries," those early and very meagre natural histories which supplied information (of a sort) to the Mediæval artist. This suggested the goat-like type of unicorn, with a short tufty tail, that occurs in foreign heraldry, the German and Swiss work for example, and no doubt it was from one of these sources that Pugin took the type when he introduced it into the royal armorials in the windows of the Houses of Parliament.

Next to the unicorn the griffin is most popular, as is shown by the application of its name to a creature which is not a griffin at all, viz. the dragon supporter of the arms of the City of London, at the place in the Strand where Temple Bar formerly marked the dividing line between London and Westminster. Griffins are half eagle and half lion, a lion's body with eagle's wings and head, and with eagle's legs for its forelegs. It must be particularly noticed that the head has large ears, and these form the distinction—a necessary one when a head only occurs—between that of a griffin and that of an eagle. Griffins in pairs form admirable decoration, as is seen in the front of a fifteenth-century coffer in modelled and painted gesso that is in the Victoria and Albert Museum.

Dragons are imaginary rather than composite creatures, and vary much in character, in many instances having a hard scalliness that is suggestive of the Chinese variety. In other examples a greater sinuosity and a more leathery texture is apparent, recalling the idea of "the loathly worm" of some ancient dragon legend. It was made part of the royal armorials by Henry VII., whose favourite badge it was, and became one of the supporters of his arms after flying, as a badge on a banner, over the fateful field of Bosworth.

The character of the dragon's head has also varied very much, from being comparatively short and spiky, resembling somewhat the demons' heads of the Assyrian sculptures, to having a much longer and more crocodile-like form, and to this there is now a tendency to revert. It is important to note that in English heraldry a dragon has four legs, and that a somewhat similar creature which has but two is called a wyvern, but that it is the latter form which is known to foreign heraldry as a dragon.

The crest is next in importance to the armorial shield and therefore demands a similar attention. Originally it was the badge displayed on the top of the helmet, in which conspicuous position it was even more distinguishable than the arms on the shield. It was at first a purely personal bearing that was confined to such as were actually knights. The knightly rank was very important, and we find Henry III. swearing to observe a covenant "As I am a man, as I am a Christian, as I am a knight," and this importance accounts for the special estimation in which the crest was held, apart from its prominence in the mimic battle and from its position as the apex of the heraldic group. This also accounts for its tardy acquisition of that hereditary quality which made the shield a family matter no less than a personal one.

The first kind of crest-like ornament to appear on the helms, which became so intimately associated with this kind of device, was an artificial derivation from what may be called a natural crest, a plume or panache of feathers. This

was probably made of leather or of thin metal in the fan shape that appears on some of the seals. Some interesting crests of shaped leather occur on the Celtic headpieces in some of the painted MSS. as early as the ninth century, but it would be too far-fetched, perhaps, to suggest any special connection between them and the fan crests of four centuries later, for helmets had rarely at any period been without some kind of crest decoration. The crested helm of Pallas Athenê comes to mind as a classic instance, with its triple crest ridges adorned with owls and winged horses.

The fan-shaped crests developed into a flat form with a cusped edge, and this was treated as a space on which to repeat the arms (or perhaps a single charge) rather than as a definite bearing in itself.

It has been mentioned that a crest is a badge or device placed on a helm, and it is worth noting that when it is removed from its helm it may be used as a badge again, an adaptation that may be very useful in allusive heraldry in cases where the whole arms may not be suitable to the general design.

Few examples of actual crests survive from those picturesque times, among the most notable being the lion crest that was carried in the funeral procession of Edward the Black Prince, and afterwards hung over his tomb in Canterbury Cathedral, where it still is. Another is that of the Spanish hero, James (the Conqueror), King of Aragon, in the Royal Armoury, Madrid; and a third is the dragon's head crest that was formerly in the celebrated Bardini collection, now dispersed. This dragon crest is a very bold and striking example of Florentine work of the late fifteenth century, and is probably the best specimen of a tournament crest that remains. High and sinuous crests seem to have found great favour with the Italian nobility, as is evident in the armorial tablets and panels of the architectural decoration. The Bardini example is about 17 inches high, modelled in leather and painted, and the torse is also represented modelled in the same material.

Prince Edward's crest, which accompanies the shield that we have already examined, must have been a very fine piece of work when its eyes and tongue were in their places, and the tail, perhaps, had a more spirited pose, but even in its present state it is a very interesting example. Shaped in plastic leather finished with gesso (in which suggestions of hair have been modelled), it was afterwards gilt and painted. The eyes were probably of glass, or may even have been jewels. Leather, softened by soaking in hot water, was the ordinary material for modelling crests, a core of wood being often employed to give stability to the whole. In other cases crests were modelled over a framework of wicker, and paper and canvas were used, as well as leather, with which to build up the figure, the final surface being nearly always of painted and gilt gesso.

The comparative lightness of the materials of which crests were composed enabled them to be made of imposing size, a fact to be taken full advantage of in representing them, and this has been the custom in all good heraldic work, their heraldic importance and their artistic value at the top of a composition alike tending to exaggerate what was already large, until, in much of the work of the fifteenth and sixteenth centuries, they became enormous.

In depicting crests the sense of stability should always be kept well in mind, for the suggestion of being, as it were, a part of its support, and not of being merely balanced on it, is essential to good heraldic design. Doubtless it was due to such practical necessities that so many of the early crests were demi-animals, animal's heads and other objects which could be secured in their places with least difficulty. At the same time, whatever meaning or symbolism was intended by the complete figure was equally conveyed by its more convenient representative.

Here again practical necessities, and the way in which they were met, resulted in decorative excellence, the lines of the crest being thus brought into pleasant relation with those of the helm and mantling in a very admirable manner. Heads are particularly effective in this way. They were often treated as a sort of cap to the helm, and merged, without a break, into the mantling. Whole animals were usually in the statant position of the crest of Edward the Black Prince and of the royal crest of the present day, the militant rage of the lion in the shield being somewhat curbed in the crest by the necessity for a firm fixture.

These were some of the considerations that influenced early heraldic design, and are points that may be usefully kept in mind in interpreting it.

It would seem superfluous to say that animals as crests should face in the same direction as the helm, that is,

* From the Cantor lecture, by George W. Eve, published with illustrations in the *Journal of the Society of Arts*.

in the direction of advance, if it were not for the fact that surprising instances exist of lions and other beasts placed across a helm, and even being made to face towards the back of it. The position of a knight's crest looking over his shoulder, or down his back, would have somewhat astonished the heralds at a tournament, and the spectators would have "made remarks," without doubt.

In the general decline of decorative art in the seventeenth century heraldry came off very badly, and the crest especially suffered ill-treatment. This was intensified by the impractical nature of many of the large number of new crests that were devised during the period that began soon after the cessation of the tournaments and continued until modern times; such as objects of all sorts between branches or between pairs of wings that are posed fore and aft on the helmet, one pointing over the wearer's nose and the other down his back; objects placed with much confusion in front of each other; rows of small objects in front of the principal one, and even birds flying and quite detached from support.

In one sense the evolution of a modern crest is exactly the reverse of the ancient method. Then the device was first produced in the round, as an actual crest, and consequently its transition thence, to any form of applied design, gave rise to no trouble of a structural nature. In more modern times crests appear to be devised solely with regard to heraldic difference, and as though they were to be viewed from but one aspect, any possible treatment in the round being generally left completely out of sight, as though newels and finials (carved in wood or stone, or cast in metal) or silverwork (such as the handle of a cup-cover) had never been heard of. One feels a sense of injury at the very existence of things that almost defy good treatment, and even though it is the duty of an artist to tackle difficulties and beat them, he cannot help resenting their unnecessary aggravation.

The principal difficulties in an ordinary way occur in regard to objects that are between branches or pairs of wings, especially when the last are charged with other objects.

As already said, figures of living things naturally face the front, while other objects are posed in the way in which they can best be seen. Flat objects, such as roundels, roses, portcullises and so forth may be placed across, or fore and aft, as seems best in each case, both sides of the object being assumed to be painted with such details as may be necessary. With regard to crests, it should be remembered that the essential point is always complete legibility, combined with a definite and reasonable relation to the helm and to the rest of the composition.

Fleur-de-lis crests were sometimes made in a very effective way by two of them being made to intersect each other at right angles like a vane, so that the complete form of the object was visible from every point of view.

As an effective support for the crest, the helm next demands attention. Following the same plan as before, we will first consider its actual structure, so that, knowing the principle on which it was formed, we may be able to design any number of helms and so be spared the necessity of repeating one form too often, or of finding a new model for every fresh need.

With regard to this and other parts of armour (and much of it occurs in heraldry, from the mailed hand as a crest to the complete suit of a figure supporter) you cannot do better than acquire a good working knowledge of the actual thing, the practical reasons for the form of its parts and the manner of their working. By so doing you will learn to handle the subject with confidence, so that light and shade and the harmonious co-relation of lines may be secured, while the structure appears convincingly right.

At first the helm was short and was worn on and supported by the head over the camail. It was provided with eye-slits or ocularia, which were reinforced with an additional plate that was usually in the form of a cross, a feature which may be varied and elaborated at the ends to a very decorative extent. You may be interested to know that the endeavour to lessen the weight without weakening the defensive power caused the back plates to be made thinner than the rest. This is one of the means of detecting forgeries, by the way. By the end of the fourteenth century the efforts to find a more perfect defence had resulted in the various forms of helmet, the small helm lighter and with movable parts that was less fatiguing to wear than the great helm, which from that time forward was reserved for the tournament. The tournament helm for this purpose was much strengthened, was made longer until it rested on the

shoulders, and so became a part of the body armour, to which it was firmly fixed back and front by straps and buckles. By this means the head was relieved of the weight, which was transferred to the body, and so the use of large crests as well as strong helms became possible.

Helms were of many shapes, which were, at the same time, but variations of the same general structure. The slope of the crown plate took different angles, the projections of the front plate increased, with consequent variation in the line of the middle ridge, and so forth. This bold strong line is of great importance in the composition of groups, in linking together the crest and the shield. Sometimes the lower edge of the helm spread out into a large gorget, and to it were rivetted the various attachments by which it was fastened to the body armour.

The central position of the helm in the heraldic group, a position in which it is, as I have said, of great value, both as a support for the crest and as a link with the shield, has, however, the disadvantage of tending to over-emphasise it, and this must always be taken into account. In painting there will be no difficulty in bringing it into proper keeping, especially when it is remembered that helms were sometimes themselves painted and their rivets gilt.

In certain forms of black and white, such as strong simple line, the perforations and structural lines will be found very useful in supplying decorative detail that will also tend to lower the general tone. The perpendicular join at the side may also be ornamented, of course, in a metal-like way, as by filing into cusps the spaces between the rivets, and the latter may become small bosses. The value of such detail is well shown in most of Dürer's heraldic engravings. He, of course, knew perfectly well what he was about with armour, as may be seen in the death's-head coat-of-arms and in the coat-of-arms with a cock. The helms in these compositions are almost identical with the actual tournament helms that Dürer designed to the order of the Emperor Maximilian. Another point which keeps the due relations of the helm is its forward tilt, which produces a strong tone on the part of the helm that is between the eyes-holes and the gorget. This tilt is due to the fact that the highest point of a helm is considerably behind its centre, and, therefore, when the helm is fixed on the top of a staff or stake it naturally tilts forward, while at the same time the crest is brought upright. In the tournament helm there are holes in the crown plate, some of which were for fixing the crest and mantling, others being to secure a lining in the helm.

The great helm was that which was usually represented in connection with crests down to the sixteenth century, and is by far the most satisfactory in every way. It was always represented in profile, or nearly so, down to the first half of that century, and it therefore displayed the crest in a very satisfactory manner. With the cessation of the tournaments real touch with early heraldry was soon lost, and the helmet, the lighter and more flexible head-piece, took the place of the helm in contemporary heraldic art. About the same time began the over-elaboration of heraldic rules, and it was arranged that the helmet should signify the rank of its bearer by its pose, and so we got to the present official rule—that an esquire's helmet is in profile with vizor closed and is of steel with gold ornaments; that of a knight is of similar form, but full faced, with vizor open; a peer's helmet is protected with gold bars and is profile; while that of the sovereign is all gold, is barred and full faced. It was also attempted to make the number of bars denote exact rank, but fortunately that effort failed. There is really no necessity for anything of the kind except in the case of a knight. A peer is perfectly distinguishable by his coronet, as the king by his crown. The reversion to the great helm in heraldic art began with Foster's Peerage, and is happily now well established.

Unlike the closed helmet the barred helm, as a crest support, has the sanction of actual use, being derived from the special headpiece which was used in the tourney, as distinct from the joust—the duel with lances, as already indicated.

In the usual group of shield, helm and crest the helm usually faces to the left—that is to say, to its own proper right, the dexter side, but this is not necessarily so if there is any reason for the contrary position, such as its occurrence in a book border, when it might help the general composition of the page to face the arms inwards.

In architectural decorations it may be advisable to face all the helmets of a series in one direction in relation to some central point, and they are often so treated in early works. Armorial in a chapel, for instance, often face

towards the altar, and in domestic decoration they turn towards the fireplace.

When two or more crests are ranged above a shield they are usually faced inwards, towards each other, with great advantage to the composer of the armorial group. If, however, it is desirable to face them all one way, in relation to the composition of a larger design of which they form a part, there is no heraldic objection to interfere with such a course. In other words, you may pose helmets in any way you think fit, except the full-faced position, which may be fairly reserved for those who are entitled to it under the ordinary rule. In German heraldry the charges of the shield are also made to turn the reverse way on occasion, and those on quartered arms are sometimes made to turn towards each other on the same shield. Both methods are, however, contrary to English practice, and should be avoided.

In addition to the tournament helms and their derivatives, many other headpieces were sometimes used to support crests, such as the salade on the medal of René d'Anjou in the fifteenth century; but this instance may be ascribed to the influence of the Classic style, towards which all were looking at the period, rather than to heraldic suitability. Salades came between the helms and the helmets, but are rarely used in heraldic design, most of the existing instances being found in German work.

From the helmet the mantling starts, covering its crown and hanging at its side, in some one of the immense variety of its ornamental forms. Heraldic rules have nothing to do with the form of the mantling, only with its colour, and the great freedom of treatment thus made possible is, of course, extremely valuable.

The treatment of mantling as ornamental form should be such as to support and supplement the shield and its bearings, and to assist in linking together the whole composition. Endless variety will be found possible in its design, and also in the way in which its lines may help each other in direction and force. The facility of twisting the main parts and of folding over the edges and ends is extremely useful in correcting balance and adding detail, as well of form as of colour; twisting and folding in this way being practically without limit. Such details must, of course, be designed to assist the swing and flow of the whole thing, or else be in obviously intentional opposition in crossing over; otherwise they will be confusing and worrying.

As to the colour of mantling, the only point on which heraldic rule has anything to say, the matter is very simple, so far as relates to modern memorials and to English use, viz. that the mantling follows the tinctures (the first colour and first metal) of the arms, whether of peer or commoner. Thus, if there are but two there can be no question, but if there are more, the first colour and the first metal that are mentioned in the blazon govern the mantling.

The mantlings of the king and of the princes of the blood are exceptions, those of the sovereign and of the Prince of Wales being of gold lined with ermine, and those of the other royal princes are also of gold, but their lining or doubling is white.

Formerly peers used mantling of their colour lined with ermine, and this is still the Scottish practice. Those who deal with colour, especially perhaps the glass painters, will no doubt resent this restriction, but I fear that it cannot be helped. The quality of the colour is, however, at their disposal, so that one may paint the mantling in lower tone than the shield in order to emphasise and make brilliant the central motive, or otherwise treat it as in one's discretion may be thought fit. The colour side of mantling may be decorated with lines and veinings of gold, as is done with charming effect in embroidery, and in addition powderings of badges may help to give a rich and decorative effect. There are many instances in early stall plates, and there is no heraldic reason against the modern use of this method of obtaining diversity of colour and interest.

The mantling being laced to the helm, and the crest fixed in position at the top, a torse of twisted silk was, as you know, placed round it. This is the wreath which has been so hardly treated in modern times, generally as though it were the edge of a shelf on which the crest rested, instead of being, perhaps, a lady's favour.

In present design the colours of the torse follow those of the shield, and consequently of the mantling.

CULROSS ABBEY.

THE abbey church of Culross was on the 22nd inst. re-dedicated for public worship. The abbey dates from the thirteenth century, but it is enough for our present purpose to note that in 1633 it was declared to be "the lawful parish kirk."

In the course of the centuries, says the *Glasgow Herald*, it has undergone many repairs, additions and makeshifts. Frequently it has needed the healing touch to preserve it from utter decay, and until the present restoration its ancient masonry bore traces that vandal hands had done the healing. One of the crudest attempts at restoration was made early in the last century, to be exact, in 1824, when the building was modernised. The healers on that occasion went about their work with unsentimental thoroughness. Carved arches were destroyed to make a flat surface for lath and plaster, and galleries which spoiled the symmetry and dignity of the interior were erected. In this "modernised" state it remained until recently, a sore spectacle to the pious archæologist. But time told on the lath-and-plaster workmanship of 1824; a sagging roof and crumbling walls demanded again the hand of the healer. Happily the latest restoration has been carried out to plans prepared by Sir Rowand Anderson, of Edinburgh, whose name is sufficient guarantee that reverent regard has been paid to the original design. The actual work of the restoration was entered upon eighteen months ago. It will involve a total outlay of 5,400*l*. Towards that sum the heritors are responsible for 2,300*l*. The congregation and influential committees in Glasgow and Edinburgh have undertaken to contribute the balance, and it is gratifying to learn that very soon the whole cost will be met. It is not a lavish expenditure for such an object, but within the limits set the work has been carried out with a taste and reserve worthy of all praise. The workmen have been worthy of the architect, and under the vigilant guidance of Mr. John Anderson, an archæologist as well as a mason, the mallets and chisels of the workmen have not been like those of the iconoclastic masons of 1824 vandal instruments which obliterated old carvings; they have been directed to restore the broken architecture to something of its ancient dignity.

The history of the original churches of Culross is rather vague. There are no authentic records. It is stated that on the site of the present building stood a temple founded by Bridei, the son of Derile, in 700 A.D. It was a thing of "wattles and mud." That and kindred theories may be left for learned archæologists to wrangle over. But there is more than traditional basis for the statement that the present church has undergone extension at four different periods. Originally it extended from the manse gable to near the centre of the site of the tower; it was next extended to the west side of the south transept, and then to the east side of the south transept. The choir and chancel are all that remain of the original edifice. The tower was of later date. It is a notable feature, and though its fantastic pinnacles are evidence of the genius of some doubtless earnest vandal, it preserves its ancient dignity. It is an impressive square structure, rising sheer from the ground. It is a rare specimen of the architecture of its period, though not unique. Inchcolm provides a similar example. The restoration has been thoroughly gone about. The entire church was gutted from ceiling to floor, the plaster was torn from the walls, and the wooden galleries, which were as useless as they were inartistic, were removed. The arches which were closed up by the early nineteenth-century workers have been reopened, and the aisles have been rebuilt on the old foundations. The windows which those same workmen had debased have been restored to their original design. The masonry of the old windows received scandalous treatment from the masons of 1824. Their fine tracery was broken up in order to make rubble.

The church in its former state had the pulpit situated under the arch on the north side, which acoustically was an impossible place. The pulpit has now been removed to the east end of the church and the pews face in the same direction. The flat roof of the old church has been replaced by a timber barrel roof, which adds to the dignity of the interior. In the course of the work of restoration excavations were made outside the south wall of the abbey. The spades of the workmen went deep enough to disclose the more magnificent foundations of the original building—no 1824 architecture about these. Many interesting finds were made, and these have already been noted in the *Herald*. Among these are several Celtic crosses, evidences that the site whereon the abbey stands had a place of worship long anterior to its foundation by Malcolm, Earl of

Greek Papers announce that the Corinthian Canal, which cost millions of dollars, would be sold at auction on November 14 on a foreclosure of a debt for 193,000 dollars.

Fife, in 1217. It is suggested that these interesting relics should be placed within the church. Some kistvaens were also unearthed, and one of these, the only one intact, contained a mummified figure. Fragments of carved stone effigies have also been discovered. To the archæologist (with imagination) these relics are pregnant with meaning; they may be regarded as broken links of an historical chain. Especially significant is the stone torso of a knight in full chain-plate armour. His coat-of-arms emblazoned on his tabard leads to the belief that he was a Stewart of Lorne. In pre-Reformation days the Argylls from their Castle of Gloom held sway over Culross and its abbey, and the remains of a tomb which has been discovered on the north side of the church is believed to have been the burial-place of that noble family in those days.

So far as the masonry is concerned, the work of restoration under the scheme has been finished, though a more lavish expenditure would be needed to satisfy fully archæological ideals. The fittings are in keeping with the taste displayed in the masonry. The floor is laid with pine and the pews are of the same wood, oak stained, fortunately not polished. The chancel is raised above the floor, and is bordered with stone flags, filled in with tiles, and on both sides are choir seats. It was suggested that the barrel-roof should be tinselled, but fortunately that suggestion, which smacks of artistic vandalism, was not entertained. There is also talk of an electric-light installation, but it is to be hoped that will never be. When daylight dies the only appropriate illuminant for the abbey of Culross is oil or candlelight. At present the interior though, as we have indicated, in admirable taste, may strike some observers as barren; it wants furnishings. Presently it will have a couple of finely stained-glass windows. One of these is to be known as the "Arnot window," and will be commemorative of the late Mr. James Arnot, a loyal son of Culross, who was clerk of the Edinburgh School Board, and who took a valuable part in connection with the restoration. The Arnot window, which is expected to be placed next month, will be situated in the east of the church, just over the chancel. The masonwork is an exact reproduction of the ancient window before the masons of 1824 had put in their fine work.

CARCASSONNE.

FEW towns of Southern France possess greater archæological interest than does the ancient city of Carcassonne. It consists of two entirely distinct towns up on the rock above "La Cité," the fortress at one time impregnable to the enemy, and the "Ville Basse," into which the inhabitants were driven by St. Louis when he demolished the suburbs of the "Cité." These two towns, half a mile apart from one another, lie on the opposite banks of the river Aude. The Cité was originally founded by the Volces, and was only a "castrum" when it fell into the hands of the Visigoths in the fifth century. They held it until 713, when the town was seized by the Saracens, who were driven out by Pepin the Short, the father of Charlemagne. In 1096 Bernard Atton, the successor of the early Conuto, founded the dynasty of the Vicomtes Trencavel. Later on, Raymond-Roger, the fourth Vicomte, embraced the doctrines of the Albigenses, and a holy war was declared against him. The crusading army sat down in front of the Cité, but failed to take it by force. They therefore got him to come out of his stronghold, and arrange the terms of an honourable capitulation. On his complying with their demand, he was treacherously seized by the crusaders, his knights were hanged, and the whole population, robbed of all but their shirts and breeches, driven into exile. Simon de Montfort was then proclaimed Vicomte of Beziers, Carcassonne and Rayés, and disposed of his prisoner Raymond-Roger by poison, but Simon's son was unable to maintain his authority and had to cede it to the king. Later on the Lower Town was burned by the Black Prince. During the religious wars of the sixteenth century Carcassonne was a Protestant stronghold, but modern warfare has diminished its importance and it has ceased to be impregnable. Its fortifications had, indeed, almost fallen into decay until they were restored some fifty years ago by Viollet-le-Duc, the great architect of the Second Empire. So much for history. The legends attaching to Carcassonne are innumerable. Thus, there is a large deep well close to the castle whose curb was restored with much taste towards the end of the fifteenth century. A story was long accepted that the Visigoths on one occasion were so terrified at the approach of the Huns that they con-

cealed all their treasure in some underground passages that could only be reached by means of this well, and that these treasures had since then been consigned to the custody of the fairies, who held sway in the caverns below. This story had secured so firm a hold on the imagination of the people that a company was formed early in the last century and enough money was collected to make the necessary excavations to rescue these valuables from the fairies. The scheme was a failure, for nothing was found but a few medals and some arrow-heads, which are now preserved in the local museum.

Though "Carcasso" was its name in the days of Roman Gaul, a more modern explanation, according to a correspondent of the *Irish Times*, has been given of its present denomination, and this tradition justifies the presence of Dame Carcas's bust over the Porte Narbonnaise. Charlemagne once spent five years in endeavouring to take this stronghold. So long did he remain outside its walls that at last only one defender was left, a Saracen lady called Dame Carcas, not because it was her name, but because she was Queen and Lady of Carcasso. She was endowed not only with considerable courage, but with great genius. She got up bundles of straw to look like men at arms, and provided each one of these lay figures with a crossbow. She also constantly changed her headgear, and was ever on the move from one part of the battlements to the other, firing with deadly effect upon the enemy. Eventually she resolved upon persuading them that not only were the garrison numerous, but food plentiful, so she stuffed two pigs with corn and drove them over the walls, where they burst in the ditch beneath. When the emperor saw this he thought it was really time to raise the siege. She was, however, resolved upon making a clean breast of it. The army was beginning to move when they saw her throw open the gates and ask for a parley. The soldiers sought out the emperor, and said to him, "Dame Carcas te sonne," from which words, it is alleged, came the modern name of the town. Charlemagne was so much struck by the account she gave of her powers that he confirmed her in her rule, and allowed her to hand down the government of the city to her descendants.

In our own time the French poet, Gustave Nadaud, has immortalised the city in one of his most touching poems, when he tells the story of the peasant, bent with age, who had but one ambition, which was to see Carcassonne. His wife and his son had been to Narbonne, his godson had seen Perpignan, but he had never had either time or money enough to go to Carcassonne, that was only six leagues from his home, near Limoux. He hoped God would forgive him his one ambition, though the curate had told him in his sermon that ambition had destroyed many men. If only he could find two days at the end of autumn, when the grapes had all been gathered in. At last the poet heard of his great desire and determined to drive him there, but, alas! such is the vanity of human wishes, he died half-way and never saw Carcassonne.

When we leave the railway station we first find to our right, in the "Low town," the church of St. Vincent, whose fine west portal is ornamented with four statues, one of which is said to be an exact reproduction of the features of St. Louis. The church dates from the fourteenth century and possesses an almost unique nave, whose Gothic vaulting of 66 feet is said to be one of the boldest in conception. The choir has some beautiful windows of the fifteenth and sixteenth centuries. A little further on is the church of St. Michel, which dates from the latter end of the thirteenth century, and has been used as the cathedral for the last hundred years. It consists of a single nave with three apses. On the west are a beautiful rose window and a massive tower, square below and octagonal above. The museum, which contains a fine stone cross of the fifteenth century and some good pictures, is on the way to the Cité, which is best reached by the old bridge, which was thrown across the Aude in 1184. It is from here we can secure one of the most striking views of this magnificent pile, begun by the Romans, rebuilt by the Visigoths, altered by the Saracens, again reconstructed by the Albigenses, and finally completed and modified during the eleventh, the twelfth and the thirteenth centuries, furnishing even at the present day a most comprehensive history of the art of fortification as it passed through its many stages from the fifth to the fourteenth century. It was this fact which induced the great Viollet-le-Duc to devote the best years of his life from 1850 to 1879 to the work of its restoration, and to make it the subject of one of his most interesting text-books.

The fortress consists of two enclosures, protected by

some fifty round towers. The inner enclosure, which is some 3,600 feet in length, is separated from the outer walls by some 20 feet, these outer walls being themselves 5,000 feet in circumference. The outer was the line of the Visigoth fortifications, whilst the inner was built by Philippe le Hardi about 1280. The great projecting round tower, the "Barbacane," which commanded the river and bridge, and thus enabled the garrison frequently to replenish their stores, was the work of Philippe's father, Saint Louis. Behind this stands the castle, formerly defended on the side towards the town by a moat and barbican, and flanked by round towers of the twelfth century. It could hold out for a long time, even when the town had fallen, for the garrison still commanded the Aude, whose bed was much nearer its walls than is now the case.

One of the great features of the Cité is the circuit of its ramparts and towers which join the battlements to each other. The Visigoth tower, with its Roman foundation, the tower of the Inquisition, where this dread tribunal held its sittings towards the latter part of the thirteenth century, and where a glimpse can now be obtained of those "oubliettes" in which so many of its victims were buried; the square Bishop's tower, dating from the thirteenth century, with its vaulted halls resting the one upon the other; the "Tour du Moulin du Midi," with its quaint bosses; the "Tour Saint Nazaire," supplied with a well and with a kitchen, which enabled it to resist a blockade when the town had been taken by the foe, and several others can be visited in their turn. The most wonderful piece of work is, however, the Porte Narbonnaise, on the east side of the fortress, a model of the ideal of what fortification should be at the end of the thirteenth century. No defensive weapon has been neglected; everything has been thoroughly considered by its architect. Though it has been described as a wall pierced with windows and loopholes, yet it is so admirably built and is so impressive that, in the words of Viollet-le-Duc, one asks oneself whether the rigid observance of architectural requirements is not one of the most powerful means of producing an effect. It is, indeed, a fortress in itself, defended by two immense towers and commands a view of the whole country round.

BYGONE PEVENSEY.

THERE are two Pevenses known to history—the village that is of the British Empire and the city that was of the Roman Empire. The former lives its life of rural contentment, yet breathes the musty breath of the past; the other, save its walls, is buried in Cimmerian darkness, only pierced by the researches of our archaeologists and antiquarians.

The enclosure within those grim, ivy-clad Roman walls first echoed with the spade of the excavator four-and-fifty years ago, when, fostered by the Sussex Archaeological Society, investigations were carried on by Messrs. M. A. Lower and C. Roach Smith, F.S.A., but no striking discoveries were made. Existing information with regard to the early history of the ancient city is very meagre, and, says the *Sussex Daily News*, a committee to carry out a scheme of excavations which would throw considerable light on it has been formed. Mr. L. F. Salzmann, who contributed to the Victorian History the introduction and translation of the Domesday text in regard to Sussex and the political history of Sussex, and who wrote the "History of Hailsham," is superintending the excavations, and Mr. J. E. Ray is assisting. Both are members of the Sussex Archaeological Society.

Seven trial shafts were sunk, in some cases to a depth of 9 feet, and the ancient pathway from the north postern gate was disclosed at a distance from the walls. From the result of these trials the committee laid their preliminary plans, and the intention is to follow the path, commencing at the postern, until it converges with the ancient path from the main gate on the west to the one on the Pevensey side. Here it is anticipated foundations of buildings will be unearthed. No general plan, of course, can be drawn up, as future discoveries may render it necessary to alter procedure. It is also intended to secure a foundation plan of the great entrance or Decuman gate on the west, and a ground plan of the Mediaeval castle in the south-east corner of the Roman area, and to explore the mound in the keep. Mr. Sands will have charge of the work dealing with the castle.

The fact that the 10 acres enclosed within the Roman walls at Pevensey is the site of the Romano-British city of Anderida is, after years of controversy, now generally

admitted. All the Roman stations on the Sussex littoral were identified by both modern and ancient names except one. There were at one time seven candidates for the honour of being the long-lost city of Anderida, but Pevensey presented the best credentials and secured her birthright. Possibly some discovery will be made in these excavations which will confirm it. It requires but a slight stretch of the imagination to conceive the waves of Pevensey Bay, then a deeper indent, lapping the foot of the eminence on which the Roman strategists built their 12 feet thick walls about A.D. 300, and that vast alluvial deposit, Pevensey Marsh, a swamp. The fact that the main defence, the great gate, is on the west side and the towers closer together there supports the contention that the peninsula was accessible from that land side only. The Romans neglected the usual rectangular camp and adapted the walls to the configuration of the ground, thereby enclosing a roughly oval space. Excavations at most other Roman stations, therefore, can serve as no criterion for a plan here. Trouble across the Channel called the Romans away, and they left the Britons, who had received their civilising influence, at Andredceaster. They were "citizens," we are told, so the place must have been of importance. Then the South Saxons came along about the year 490 and "besieged Andredceaster, a strongly-fortified city." When they left there were no Britons there, and "only the desolate site of a very noble city is pointed out to those who pass." Deathly silence, historically, reigns over the once "noble city" for over five hundred years, although there are traces of slight Saxon "herring-bone" repairs to the walls.

Then the great event occurred which made the name of Pevensey ring down through the pages of history, as it will as long as English history lasts—the landing there of William the Conqueror. There are evidences of the walls of the "desolate city" being very convenient for defence, as they exhibit now traces of Norman masonry, and of a fortress being erected within. This was destroyed and the Norman castle, the ruins of which stand to-day, was evidently erected on the site. Pevensey then entered on lively times and things looked up locally. The castle was besieged several times. Stephen "found it too strong to be taken by storm," King John ordered it to be demolished, which was probably not done; deserting earls from the battle of Lewes took shelter there, and at last it fell into the hands of the Crown, more or less ruined. As a prison it held James I. of Scotland, Edward Duke of York and Joan of Navarre, queen of Henry IV. In 1587 the threatened Spanish invasion caused a survey of the coast of Sussex to be made with a view of defence. Then it was suggested that Pevensey Castle should be "re-edified or utterly razed," but neither appears to have been done.

The erection of the castle resulted in the original "floor" of the area being covered with a bed of stiff clay, and the seekers after Roman remains have in that an obstacle which makes the work of excavation difficult and more expensive than it would otherwise have been. The walls on the outside are between 24 and 30 feet high, yet so much clay has been dumped inside that it is but a few feet from the wall tops in some places. The digging of the moat accounts for some of the accumulation, but where the greater part of it came from is a mystery at present.

Numbers of Roman coins have been found among the ruins, and possibly more may now be dug up. In this connection it is interesting to note an attempted fraud about 1850. A man buried considerably over 800 sham coins in the ruins, and then reported that he had hit upon a "find." He made the fatal mistake, however, of burying them in a tower built in the reign of Edward II., and the numismatic gentlemen became suspicious and found him out. Many a house in the neighbourhood is indebted to the old fortress for its walls, as it served as a "quarry" for years. Stout brick buttresses were then found necessary to repair and prevent further damage. The kind permission of the Duke of Devonshire, the owner, and of Mr. William Elphick, the tenant, was extended to the excavators to carry on the work.

The Finance Committee of the Wilts County Council recommend that the County Council appoint Mr. Alfred Dryland, county surveyor of Herefordshire, to the office of county surveyor for Wilts at a salary of 500*l.* per annum, and that failing the acceptance of this appointment by Mr. Dryland, Mr. Joseph Slater, assistant county surveyor of Lancashire, be appointed.

A NEW LONDON STREET.

THE improvements committee of the London County Council have prepared the following report:—

We desire to bring to the notice of the Council a favourable opportunity for effecting an important improvement in the neighbourhood of the British Museum. The Duke of Bedford has offered to surrender, free of cost, about 53,600 square feet of land for the construction of a new street from Torrington Square along the course of Torrington Street, crossing Keppel Street and leading into Montague Place. The length of the street will be about 440 feet, and its width 130 feet, except at its junction with Montague Place where it will open out into a circus having a diameter of about 200 feet. The offer to surrender the land is made subject to His Grace being relieved of the cost of paving, &c., the land so surrendered. The cost of these works is estimated at 10,000*l.*, of which 6,000*l.* is the cost of paving the new street and 4,000*l.* the cost of altering the levels of Montague Place. The proposed improvement, by opening up an alternative route to Tottenham Court Road or Gower Street, or Upper Woburn Place and Southampton Row, will tend to relieve very materially the traffic in those thoroughfares. Greatly increased facilities will, we think, be afforded for the heavy traffic from the railway termini at Euston, St. Pancras and King's Cross and the districts beyond to pass through the central parts of Bloomsbury, and thence by the streets on either side of the British Museum, along Shaftesbury Avenue to the West End, or along Endell Street and Bow Street to Waterloo Bridge. We need not emphasise the importance of providing alternative routes, such as that now suggested, to existing thoroughfares. The present proposal may be regarded as an important section of an imposing thoroughfare, broader than any existing street in the central parts of London, between Euston Road and New Oxford Street. As the section now suggested forms an improvement complete in itself, there would be no necessity to press on with the remainder of the scheme until a favourable opportunity presented itself.

In connection with and bearing upon this improvement we desire to call attention to the following facts. The Trustees of the British Museum have recently acquired the property needed to extend the Museum buildings—on the west to Bedford Square and Charlotte Street, on the north to Montague Place and on the east to Montague Street—and the Trustees propose to undertake at once that portion of their scheme which consists of the extension northwards as far as Montague Place of the existing Museum buildings. The cost of acquiring the property mentioned above and of the works about to be commenced is estimated at 400,000*l.* Of this sum the greater part has been granted by H.M. Government; the balance will be met out of a private bequest. A deputation from the Trustees, consisting of Viscount Dillon, Viscount Peel, Sir John Evans and Mr. Cavendish Bentinck attended before us and urged that the Council might be advised to co-operate with the Duke of Bedford in forming the proposed new street from Torrington Square to Montague Place, so as to secure a worthy approach to the north side of the Museum in place of a row of houses which would otherwise shut in the view of the building. From the detailed plans shown to us by the Trustees it is clear that the Museum is destined to be one of the finest buildings in London, and we feel sure that the Council, as representing the whole of London, will wish to do all within their power to insure that this building shall be approached by suitable thoroughfares, particularly as this result can be combined with the provision of greatly improved traffic facilities.

It is not our practice to advise the Council to contribute towards the formation of streets on private estates, as in such cases it is usually found that the increase in value of the remaining property exceeds the value of the land surrendered and the cost of the incidental works. But the case of the present improvement is, in our opinion, exceptional, inasmuch as we are advised that, although the improvement will undoubtedly enhance the value of the Duke of Bedford's adjoining property, such enhanced value will probably not equal and will certainly not exceed the value of the land to be surrendered.

The suggested improvement will assist the local traffic as well as the general through traffic, and we therefore think it right that the Holborn Metropolitan Borough Council should bear some proportion of the cost. If the Council bears the cost (6,000*l.*) of paving the new street, and the Borough Council the cost (4,000*l.*) of altering the levels of Montague Place, we think that such an arrangement would be equitable. We have not yet communicated

with the Borough Council, but we propose to do so at once if the Council adopts our recommendation.

We have caused to be hung in the Council chamber a cartoon plan showing by red colour the proposed improvement, and we recommend:—(a) That the estimate (No. 5518) of expenditure on capital account of 6,000*l.* submitted by the finance committee in respect of the Torrington Square to Montague Place improvement, shown on the plan (Registered No. 769), be approved. (b) That, subject to the alteration of the levels of Montague Place being undertaken at the cost of the Holborn Metropolitan Borough Council, expenditure not exceeding 6,000*l.* be sanctioned in respect of the cost of paving, &c., works in the new street from Torrington Square to Montague Place.

The finance committee are not advocates of the proposal, for they say that, having considered the estimate in its financial bearings, they submit the same as chargeable to capital (original outlay) account. The Duke of Bedford has offered to surrender, free of cost, the necessary land for the construction of the proposed new street from Torrington Square to Montague Place. The cost of forming the carriageway and footways of the street is estimated at 6,000*l.* The cost of altering the existing levels of Montague Place is estimated at 4,000*l.*, which it is suggested should be borne by the Holborn Metropolitan Borough Council. The total estimated cost of the improvement is, therefore, 10,000*l.* It is for the improvements committee to justify the proposed apportionment of the cost of the improvement between the Council and the Borough Council, but apart from any question which may arise thereon they are of opinion that, having regard to the heavy capital commitments of the Council and to the present condition of the money market, the Council should carefully consider whether the proposed improvement should not be abandoned, or, at any rate, postponed for the present. The finance committee regret to have to report in these terms, as they recognise that the new street would make a fine approach to the extension of the British Museum, which is about to be erected. It is not proposed that any part of the cost should be contributed by the Government or by the Trustees of the British Museum.

TESSERÆ.

Geometry of the Hindus.

THE researches of the learned have brought to light astronomical tables in India which must have been constructed by the principles of geometry, but the period at which they have been formed has by no means been completely ascertained. Some are of opinion that they have been framed from observations made at a very remote period, not less than 3,000 years before the Christian era; and if this opinion be well founded the science of geometry must have been cultivated in India, to a considerable extent, long before the period assigned to its origin in the West, so that many of the elementary propositions may have been brought from India to Greece. The Hindus have a treatise called the *Surya Sidhanta*, which professes to be a revelation from heaven communicated to Meva, a man of great sanctity, about four millions of years ago; but setting aside this fabulous origin it has been supposed to be of great antiquity and to have been written at least two thousand years before the Christian era. Interwoven with many absurdities this book contains a rational system of trigonometry, which differs entirely from that first known in Greece or Arabia. In fact, it is founded on a geometrical theorem which was not known to the geometers of Europe before the time of Vieta, about two hundred years ago. And it employs the sines of arcs, a thing unknown to the Greeks, who used the chords of the double arcs. The invention of sines has been attributed to the Arabs, but it is possible that they may have received this improvement in trigonometry, as well as the numeral characters from India. The only fact here asserted which bears upon the question of the civilisation of the Hindus is that of their using the sines of arcs instead of the chords of the double arcs. Suppose that they invented this method. It proves nothing beyond what all men believe—that the Hindus made a few of the first steps in civilisation at an early period, and that they engaged in those abstract speculations, metaphysical and mathematical, to which a semi-barbarous people are strongly inclined. The Arabians were never more than semi-barbarous. The Greeks were no better at the early age when they were acquainted with the elementary propositions of geometry. If the Greeks or Arabians invented in the semi-barbarous state the mode of

computation by the chords, what was to hinder the Hindus from inventing while semi-barbarous the mode of computing by the sines of arcs? This is upon the supposition that the mode of computing by sines and the elementary propositions on which it depends really are original among the Hindus. But this seems not to rest upon very satisfactory proof, when it is barely inferred from the use of chords by the Greeks; and the possibility alone is asserted of the Arabians having derived the knowledge from the Hindus.

Leo Baptista Alberti.

Leo Baptista Alberti was a man who, if measured by the universality of his genius, may claim a place in the Temple of Glory he has not filled. He was the author of a Latin comedy, entitled "Philodoxios," which the younger Aldus Manutius afterwards published as the genuine work of a certain ancient Lepidus; a moral writer in the various forms of dialogue, dissertation, fable and light humour; a poet, extolled by some, though not free from the rudeness of his age; a philosopher of the Platonic school of Lorenzo; a mathematician and inventor of optical instruments; a painter and the author of the earliest modern treatise on painting; a sculptor and the first who wrote about sculpture; a musician whose compositions excited the applause of his contemporaries; an architect of profound skill not only displayed in many works, of which the church of St. Francis at Rimini is the most admired, but in a theoretical treatise, "De Re ædificatoria," published posthumously in 1485. It has been called the only work on architecture which we can place on a level with that of Vitruvius, and by some has been preferred to the latter. Alberti had deeply meditated on the remains of Roman antiquity and endeavoured to derive from them general theorems of beauty variously applicable to each description of buildings. This great man seems to have had two impediments to his permanent glory—one, that he came a few years too soon into the world, before his own language was become polished and before the principles of taste in art had been wholly developed; the other, that, splendid as was his own genius, there were yet two men a little behind in the presence of whom his star has paled, men not superior to Alberti in universality of mental powers, but in their transcendancy and command over immortal fame, viz. Leonardo da Vinci and Michel Angelo.

Followers of Michel Angelo.

The school of Michel Angelo, properly so called, consisted of the following disciples:—Raphael di Monte Lupo, a favourite pupil of his master, by whom are two statues in the tomb of Julius II., one on each side of the Moses; Nicholo di Tribulo, an excellent founder, whose best performances are the gates of San Petronio, at Bologna; Giovanni dell' Opera, a most prolific artist—the statue of Architecture on the tomb of his instructor is deservedly praised; Benvenuto Cellini, famous alike by the productions of his pen and his chisel, and by the romantic incidents of his life—the bronze statue of the Perseus is his well-known masterpiece; Vincenzo Dante so closely imitates the style and manner of his master that the labours of the former are sometimes attributed to the latter; Bartolomeo Ammanato is esteemed as an architect, but as a sculptor he scarcely attained mediocrity. Lastly, of all the scholars of Michel Angelo, from the number and magnitude of his works, the beauty of his style and the excellence of his genius, Giovanni di Bologna is deservedly celebrated as the most illustrious. This artist occupies a prominent station in the history of sculpture, and more particularly in the Florentine school, from the death of his master to the end of the sixteenth century, and closed the series of great names with which that period was adorned. The group of Hercules and Centaur, one of his most esteemed and latest works, was placed on its present site at Florence late in 1600. In examining his performances we ascertain the advances effected in the art during the last thirty years of the present era. From the death of Buonarroti the technical part is considerably improved, mechanical operations better understood and consequently execution facilitated. Hence in the works of Giovanni we discover no deficiency of a high and, in some instances, exquisite finish, although no preceding sculptor can boast of productions so numerous or more important. But even in his manner we observe the growth of those evils which the example of his instructor introduced—bold, rapid and masterly execution; grand and imposing composition preferred to delicacy of expression, truth of feeling, and attention to the study of nature. The deterioration is of course still more apparent

in the works of inferior imitators, who failed to acquire those nobler qualities by which the errors and extravagances of mightier spirits are redeemed.

Herculaneum Manuscripts.

Some of the manuscripts found at Herculaneum are of one palm high, others two or three, and the rolls which they carry are nearly four fingers thick, though some are only half a palm. They are, generally speaking, burnt to a cinder, and, according to the exterior, might be taken for petrified wood. As to square books in our fashion not a single one occurs. These manuscripts were written on Egyptian paper, and by the examination of many which are less dry and wrinkled, and which notwithstanding were rolled as close as they now appear, they have not been compressed by the heat into a smaller bulk than that which they now occupy. A roll of this sort is formed of many pieces, thin and as large as the hand, which, being fastened at the end of each other, form at their junction a fold of a finger's breadth, and are so well united that nothing is capable of severing them. The ancients had artisans called glutinatores, whose profession it was to paste these leaves, and they must not be confounded with common workmen, for the Athenians elevated a statue to one Philtatus, who had taught them the art of pasting the manuscripts, or, what appears more probable, had invented a kind of paste proper for books. Some of these rolls, composed of many pieces pasted together, were simply curled up; others had a tube of wood or bone (the umbilicus) round which they were entwined (like our pendulous maps and charts); others have been presumed to have had two, and both appear in a painting of Herculaneum, but no second tube occurs. They were opened and read as we should do pedigrees. The manuscripts are written upon one side only, and the written side is placed in the interior of the roll. Winckelmann concludes that manuscripts written on both sides were executed upon double or doubled paper. All these works are written in columns about four fingers broad, i.e. occupying as much space as a Greek verse of 6 feet. One column contains in some MSS. forty lines and in others forty-four. Between the columns the space of a finger is left blank. The columns have been framed in red lines, as usual with many books in the first copies. There is no appearance, as upon parchment, of ruled lines to direct the writing; but as the paper was exceedingly fine, and appears to have been transparent, they used a leaf of ruled paper beneath. Pliny speaks of manuscripts written upon double paper, i.e. composed of two leaves pasted upon each other, so that one of these leaves was placed upon the length and the other upon the breadth, and the grain of the paper was crossed.



The Cathedral Series.

SIR,—Having been a regular subscriber to *The Architect* for many years, I shall be very glad if you can inform me if your promise to the subscribers still holds good in regard to the publication of further plates of your splendid series of the cathedrals. Some time back—I forget the exact date—you stated in reply to a correspondent that you would publish additional plates of some at the end of the series. Some of the finest buildings have the fewest plates, viz. Ely 6, Lincoln 6, Norwich 7, Salisbury 10, Southwell 6 and Winchester 6, double sheets. My reason for asking for information is that I intend binding them in separate folios in alphabetical order, and I cannot proceed in arranging them at present. Also, do you intend to include the abbeys, ruined or otherwise, in the series? Some of your announcements include them and some do not. Trusting that I am not troubling you too much, I remain, yours truly,

H. FREDERICK.

11 Brynland Avenue, Bishopston, Bristol:
November 26, 1906.

[We publish this letter, as there seems from other letters we have received from time to time to be some doubt as to our publishing further views of the cathedrals referred to. We shall keep our word to our subscribers, and other views will appear at the end of the series. We have not yet decided about the abbeys, but will make an announcement later on.—Ed.]

GENERAL.

The Secretary of State for India in Council will, in the summer of 1907, make not less than twelve appointments of assistant engineers in the permanent establishment of the Indian Public Works Department.

Mr. W. J. Barry, a member of the Gaelic League, has been elected county surveyor of Sligo. The salary is 400*l.* a year. There were nineteen applications.

A Painting by the late Eugène Boudin, *Between the Piers, Trouville*, has been presented to the National Gallery by M. Van der Velde, of Havre.

The Receipts of the Société des Artistes Français amount for the past year to 320,841 francs. The funds will enable the Council to open the "Maison de Retraite" for artists offered by M^{me}. Jules Comte.

The Landlord of the Angel and Royal Hotel at Grantham has to pay yearly the sum of 40*s.* for a sermon to be delivered in the parish church against drunkenness, the preacher receiving the money. This is in accordance with the bequest of one Michael Solomon made in the year 1706. The two hundredth sermon was delivered on Sunday last.

Mr. J. A. Morris, architect, delivered a lecture on Monday on "The Application of Art to Industry," under the joint auspices of the architectural section of the Royal Philosophical Society and the Glasgow Architectural Association, in the rooms, Bath Street, Glasgow.

Mr. Imrie Bell, civil engineer, died recently at Croydon. In 1878 he joined the London office of Messrs. Bell & Miller. He moved to Glasgow in 1887, and became sole partner. He was associated with several engineering works in the West of Scotland, notably with bridges, one of the latest being the Great Western bridge over the river Kelvin. He was elected a member of the Institution of Civil Engineers in 1868, and read two papers earning the Telford premium in 1869.

The Maidstone Corporation, by the casting vote of the Mayor, at a meeting from which several members were absent, decided on Wednesday to entrust to the borough surveyor the work of planning and supervising the erection of the new elementary school to be built in St. Michael's district, instead of employing an architect.

The Council of the Senate of Cambridge University have received a largely-signed memorial requesting them to appoint a syndicate to consider the advisability of instituting a diploma in architecture, in view of the great importance of architectural studies, which has already been felt in other universities, where such studies have been successfully organised.

An Appeal is being made to the Kent Archæological Society to investigate the unsolved problem of an underground chamber at Richborough, near Sandwich, the ancient Rutupia of the Romans. It has been variously suggested that the works were intended as foundations for a large lighthouse or other building, as a reservoir, or as a strong room for treasure.

Mr. Henry A. Prothero, M.A., architect, died on Monday in his fifty-eighth year at Cheltenham. Mr. Prothero was a pupil of the late John Middleton, architect, and later on joined the firm of Middleton, Prothero & Phillott. He designed churches at Leeds, Carmarthen, Aberystwith and other places, and carried out restoration work at many ancient churches both in England and in Wales. From his plans the new chapel was erected as a memorial of the jubilee of Cheltenham (boys') College. He also designed the Delancey Fever Hospital and other buildings in and near Cheltenham.

Mr. Frank Craig, whose *Heretic*, which was exhibited at the last exhibition of the Royal Academy, was purchased through the Chantrey Bequest, has, with the sanction of the committee, made a replica for a private purchaser.

The Erection of the Wood Green Baptist church building has now been started, the contractors being Messrs. H. Knight & Sons. The contract amount is 4,620*l.* The accommodation provided is for 500 persons, all on the ground floor. The architects are Messrs. George Baines & Son, 5 Clement's Inn, Strand.

A Provisional Committee has been formed for the purpose of purchasing Mr. Holman Hunt's latest picture, *The Lady of Shalott*. A gift of 250*l.* has been promised on condition that nine other sums of a like amount were subscribed. It is hoped that a great deal of the necessary sum may be raised by donations of not less than a guinea.

An Exhibition by the pupils attending the Glasgow School of Art under the Board of Manufactures opened in the galleries of the Royal Scottish Academy on Saturday. In one section devoted to the National Art Survey of Scotland the work of the students is shown in the form of complete records of plans, so that in the event of a valuable building being destroyed these plans would be available for a restoration. Coldingham Priory, the old palace at Culross, Melrose Abbey, St. Michael's Church, Linlithgow, and Elgin Cathedral have been undertaken, and the drawings are hung in the north octagon. The majority of the Scottish cathedrals have also been under survey, and the records are bound to be of great value.

At the Recent Sale of Aboyne Castle pictures, in Aberdeen, one of the works disposed of was entitled "The Village Festival," which was attributed to D. Teniers. On the picture being cleaned, it was found that, instead of being a Teniers, it bore the signature of Jan Steen. Some correspondence on the subject has taken place with the National Gallery authorities, and experts who have seen it are of opinion that it is a fine example of Steen's work. The picture was bought for 10*l.* at the sale about two months ago.

As a Result of exposure to the weather for such a considerable period one of the Norman arches in front of the Royal Grammar School at High Wycombe has collapsed. The old arches, of which three still remain, are regarded as among the finest relics of Norman Domestic architecture in England.

Mr. Charles A. Jones, deputy constable of Carnarvon Castle, has received definite information from His Majesty's Office of Works that the sum to be applied to the scheme for restoring the castle would be 7,000*l.* There is no intention of making any part of the building habitable, but merely to maintain the existing state of the fabric.

The Surveyors' Institution have awarded the Council gold medal, session 1905-6, to Mr. W. R. Baldwin-Wiseman, M.Sc., F.G.S., A.M.I.C.E. (professional Associate), for his paper entitled "The Effect of Fire on Building Stones," read at the ordinary general meeting of May 14 last.

Selby Abbey.—In aid of the fund for the restoration of Selby Abbey, a recital will be given at St. Matthias's, Stoke Newington, after evensong on Sunday, December 2, by the organist of Ripon Cathedral, Mr. C. H. Moody. Before the High Celebration on the same day, at 11 o'clock, the Litany by Henry Loosemore, organist of King's College Chapel, Cambridge, 1627-70, will be sung in procession. Aided by the ecclesiological knowledge of Mr. T. Francis Bumpus, the well-known writer on English and Continental church architecture, the music at St. Matthias's, one of Mr. Butterfield's most strikingly original churches, has increased in richness and correctness under the present energetic organist and choirmaster, Mr. F. T. Kennard. The organ, one of the late Henry Willis's early works, is that upon which Dr. W. K. Monk, so widely remembered as musical editor of "Hymns Ancient and Modern," played from 1853 to 1889.

The Sheffield City Council decided some months back to erect new public baths at Primrose Meadows, and invited architects practising within the city boundaries to submit schemes. They also invited and appointed Mr. J. Lane Fox, architect, of Oxford Place, Leeds, as their expert adviser, to conduct the competition and act as assessor. As a result seventeen schemes have been sent in and adjudicated by Mr. Fox, who has placed scheme No. 8, submitted by Mr. A. Nunweek, first; No. 14, by Messrs. Charles Hadfield & Son, second; and No. 9, by Messrs. Potter & Sandford, third in order of merit.

The City of Birmingham will receive up to December 5 applications from local architects who desire to submit competitive designs for public baths at Nechells.

The Causes of the fifty-three fires which occurred in Glasgow during the four weeks ending the 13th inst. were:—Defective building construction, twenty-three—all in properties erected before the passing of the Building Regulations Act, 1892; dropped lights, six; curtains and goods in contact with lights, three; tobacco-smoking, escape of gas, heat from flues and sparks from fire, two each; friction of machinery, defective electric-light installation, fat boiling over, children playing with lights, candles and hot ashes, one each; and unknown, six. There were three malicious alarms.

The Architect.

THE WEEK.

AN instance of collision between a local authority and the London County Council which arose at this week's meeting is of grave import, for it may lead to costly litigation. The Marylebone Borough Council have authority over Oxford Street, and between the Marble Arch and Tottenham Court Road are erecting electric-light standards on refuges at distances varying from 20 to 160 yards apart. Both the refuges and the lights are a great convenience to foot passengers. Indeed, the statement has been often expressed that similar facilities for aiding the passage from one side of a thoroughfare to another would be a great improvement if more generally employed. The Royal Commission on London traffic, however, considered that cab-ranks, refuges, standard-lights were all obstacles to free and rapid movement in the streets. In other words, the Commission desired that the streets of the Metropolis should resemble railways, and that traffic should pass in up and down lines. The County Council agree in principle with the Traffic Commission, and desire that obstruction should be prohibited. The highways committee, therefore, proposed that the Council should protest against the placing of lamp standards in the centre of Oxford Street, and that power should be sought in the session of 1908 to enable the Council to deal with cases of obstruction by the erection of obstacles in the carriage-way. Sir T. BROOKE-HITCHING said that the true meaning of the recommendation was that the committee desire to run tramways along Oxford Street. The recommendation was, however, adopted. Oxford Street is only a test case, and we suppose it will be accepted that the carriage-ways in the principal streets are to be reserved for tramways, carriages, waggon, &c. alone.

It is very hard on lessees in London when towards the close of their tenure efforts are made to treat their houses as dangerous structures and to be taken down, secured or repaired at their expense. However great may be the outlay in the majority of cases, it would not necessarily lead to a renewal of the lease. A case of the kind in Lambeth came a few days ago before Mr. CURTIS BENNETT at the Westminster Police Court. Several houses in Wake Street were certified by the district surveyor to have front and back walls which bulged and were otherwise defective, and an order was sought to have them taken down. The houses were, however, unoccupied during several months, and they had been shored with heavy timber. The leases will expire in two years and a half. The representative of the County Council argued that shoring with timber was not held by the Act to be a removal of danger. The magistrate said that he considered the premises had been "secured," for the district surveyor admitted that by means of the shoring they might stand for a century. The magistrate therefore adjourned the summons for three months, and suggested that if at the end of that time the shoring remained secure it would be better to withdraw the proceedings. The case is really another example of the pernicious effect of the leasehold system. The builders of our time were not the first to discover how houses can be erected to serve for a definite period and no longer. The Wake Street houses have fulfilled their purpose within two or three years of the time specified, and that shows a rather exact knowledge of the endurance of materials.

ALTHOUGH the London County Council on Tuesday confirmed the decision arrived at in October 1903, to the effect that no alteration be made in the present northern line of frontage of the Strand between Wellington Street and the Law Courts, a great many

people will still continue to believe that a modification of the frontage may be approved. The proposals for amendment were all costly, ranging from 58,000*l.* to 249,000*l.* The most economical was that of the Council's architect. The Council state that the scheme which they have adopted embraces the suggestions of the Royal Institute of British Architects with slight modifications. They also declare that "we are not convinced that by throwing open to view various portions of the Law Courts building and of the church of St. Mary-le-Strand the architectural effect in the Strand would be considerably enhanced, and indeed there are objections to the proposal from the architectural point of view. After the most anxious consideration of the matter and with the greatest desire to give the fullest weight to the views of the distinguished artists who have favoured the Council by their views, we feel that the Council would not be justified in incurring the heavy loss which would be involved in securing a doubtful enhancement of the architectural view in the Strand. Having regard to the great width already provided (100 feet), it will be possible to secure under the Council's scheme an imposing effect for the buildings to be erected on the northern side of the Strand." The proposal to have the subject referred back to the improvements committee, in order to report as to the possibility of adopting the plan suggested by the Council's architect, was rejected on Tuesday, and a large majority decided that no alteration is to be made. If some projectors came forward who would be willing to treat for the land on an amended line there would probably be no difficulty in meeting their views.

AN exhibition of several works by Mr. HOLMAN HUNT was opened on Tuesday at the City Art Gallery, Manchester. The artist, who was present, recalled some of his own reminiscences of Manchester, and then narrated the circumstances connected with the early days of pre-Raphaelitism. What was for many the most interesting part of the discourse was his explanation of his treatment of *The Lady of Shalott*. It was charged against him, he said, that the picture was not painted by him. In the illustration in TENNYSON'S Poems which appeared in 1857 the figure is seen without any regard to elaborate light and shadow. That would be unnecessary in a book where all that was desirable was to suggest that the web which she had been weaving became like a spider's web and she was caught in her own toils. All that could be done by lines alone. But in the larger painting something more was sought after. Nineteen years ago it was commenced, and had been seen by MILLAIS, BURNE-JONES and ARMSTEAD. Several other witnesses examined it at that time, and there was not a line in the picture which had not been more or less prepared or developed then. But when Mr. HOLMAN HUNT's sight became affected he found that although he could distinguish the different hues of every colour on the palette and could tell the forms when looked at singly, yet he found it desirable to have an assistant by him to make sure the colours had blended before they dried. For that purpose he obtained the aid of Mr. E. R. HUGHES, A.R.W.S. If there is one quality more characteristic than another of Mr. HOLMAN HUNT it has been his veracity. It was the attempt to express that quality to an extent that was impossible which made so many of his pictures appear wanting in artistic qualities. It is therefore a saddening spectacle, and one which is enough to drive a sensitive painter to despair, to find such a man as HOLMAN HUNT, in his seventy-ninth year, explaining to the public that he was no REINAGLE endeavouring to put forth another man's painting as his own. The people of Manchester must have been convinced by his simple statements, and we hope *The Lady of Shalott* will be acquired by the nation, if it were only to show that slander is not appreciated in this country.

SPENCE AND LESSING.

THE name of JOSEPH SPENCE is not remembered among his countrymen. Yet he was for ten years Professor of Poetry at Oxford. He was an intimate friend of POPE, about whom he wrote, and he has left an interesting collection of anecdotes concerning that poet and other *literati* of the eighteenth century. One of the reasons of the failure to appreciate SPENCE in our time arises from the belief that he was the author of a folio volume which LESSING, the German writer, is supposed to have completely demolished. A defeated author cannot expect pity or fame. SPENCE'S "Polymetis: or an Enquiry concerning the Agreement between the Works of the Roman Poets and the Remains of the Antient Artists," was one of the causes which induced LESSING to write the "Laokoon"—a small volume which GOETHE, MACAULAY and others have declared was most influential in their mental development. While the German book must be admired as a surprising *tour-de-force*, it does not follow that it was in reality so deadly in its attacks on SPENCE'S theory. For the sake of fair play towards the earliest English writer on Classic archæology judgment should not be allowed to go by default, as has been hitherto the case, and our readers will not, we hope, object to a brief statement of some of the circumstances which have made LESSING appear more of a victor than he was in reality.

LESSING, we need not say, was the pioneer of modern German literature. HEINE did not hesitate to place him as coming next to MARTIN LUTHER in influence, and there was a sturdy courage and independence in the two which made them akin. But with all his power, LESSING'S hopes of obtaining a livelihood by scholarship were uncertain. There was not sufficient demand for German books to support him. He therefore resolved to apply for the post of librarian to FREDERICK THE GREAT, the king who was supposed by advanced Germans to be the hope of the country. LESSING wished to demonstrate the extent of his erudition in the hope of winning the favour of a practical man like the King of PRUSSIA. The most fruitful subject he could find related to the connection between the arts and literature, and accordingly he resolved to complete a work he had commenced entitled the "Laokoon."

JOSEPH SPENCE had already published his "Polymetis"—a series of dialogues in folio which he had adorned with copper-plates by VERTUE, BOITARD, and others. The object of SPENCE was to impart greater interest to the study of criticism and antiquities. In his time, as he said, criticism generally appeared as a mere scold and antiquity as an old pedant. SOCRATES was able to give an agreeable turn to his lessons and morals, and he was imitated by HORACE. "Something like this," said SPENCE, "might be practised in treatises of criticism and antiquities; and though I may have failed entirely in attempting it, I cannot help thinking that I have at least given no bad hint for someone that may come after me, who I hope may succeed much better in it than I have done." SPENCE, we should remember, was a Professor of Poetry, and it was only right that he should endeavour by every means to make his students take deeper interest in the subjects he taught. Confining himself to Roman writers, he could not help observing that they often appeared to be referring to works of art, and that there was a remarkable correspondence between the poets' descriptions and the works of contemporary artists, and which could be demonstrated by the aid of engravings.

He therefore supposed that a few friends used to meet in a rotunda erected by POLYMETIS, and there discussed his statues, drawings and engravings of ancient works of art. It was essential to begin with an account of ancient Rome, and the picture of the city, although confirmed by later archæological inquiries, must have seemed amazing to those whose ideas of the

capital were derived from the grandiose descriptions given in the playhouse:—

The city of Rome, as well as its inhabitants, was in the beginning rude and unadorned. Those old rough soldiers looked on the effects of the politer arts as things fit only for an effeminate people, as too apt to soften and unnerve men, and to take from that martial temper and ferocity which they encouraged so much and so universally in the infancy of their State. Their houses were (what the name they gave them [tectæ] signified) only a covering for them, and a defence against bad weather. These sheds of theirs were more like the caves of wild beasts than the habitations of men, and were rather flung together as chance led them than formed into regular streets and openings. Their walls were half mud, and their roofs pieces of boards stuck together; nay, even this was an after improvement, for in Romulus's time their houses were only covered with straw. If they had anything that was finer than ordinary, that was chiefly taken up in setting off the temples of their gods; and when these began to be furnished with statues (for they had none till long after Numa's time) they were probably more fit to give terror than delight, and seemed rather formed so as to be horrible enough to strike an awe into those who worshipped them, than handsome enough to invite anyone to look upon them for pleasure. Their design, I suppose, was answerable to the materials they were made of, and if their gods were of earthenware, they were reckoned better than ordinary, for many of them were chopped out of wood. One of the chief ornaments in those times, both of the temples and private houses, consisted in their ancient trophies, which were trunks of trees cleared of their branches and so formed into a rough kind of posts. These were loaded with the arms they had taken in war, and you may easily conceive what sort of ornaments these posts must make when half decayed by time and hung about with old rusty arms, besmeared with the blood of their enemies. Rome was not then that beautiful Rome whose very ruins at this very day are sought after with so much pleasure; it was a town which carried an air of terror in its appearance, and which made people shudder whenever they first entered within its gates.

It is then shown how the Romans were at first indifferent about the sculpture which they found in the Greek cities they captured. They were afraid of the consequences of reverencing foreign deities, and they looked on art as opposed to the martial spirit and natural roughness they considered it desirable to preserve. FABIVS MAXIMUS, when he took Tarentum, sent away the gold and silver to Rome. But the colossal figures of the battles between the gods and the giants he left behind, saying, "Leave the angry gods to the Tarentines; we will have nothing to do with them." Soon afterwards the younger Romans preferred the conduct of MARCELLUS to that of FABIVS. For MARCELLUS wished to adorn the temples, porticoes and public places with the works of art derived from Greek cities. As a consequence CATO, the censor, was heard complaining about the ridicule cast on the poor old Roman gods who had hitherto been so propitious to them, and who would continue to be friendly if they were not displaced from their pedestals by foreign gods from Corinth and Athens. Now SPENCE maintained that it was possible to see a correspondence between this growing love of art and similar changes in contemporary poetry. He pointed out that certain attributes which were introduced in verse were likely to have been suggested by sculptured figures, and that often there was a remarkable correspondence between the poet's descriptions and existing statues or gems. But there was no ground for suggesting that SPENCE asserted the precedence of the sculptor to the poet. He mentions the old legend about PHIDIAS declaring that he was indebted for his conception of ZEUS or JUPITER to the description of the god given by HOMER. SPENCE considered that some gods were endowed with local characteristics more prized in certain districts than elsewhere and these the poets would describe. The Greek JUNO does not correspond with the Roman JUNO, and the same would be the case with MINERVA and others. The artists who worked for Roman patrons would naturally act in the same way, and would introduce local associations. But all this is very different

from asserting that the poets depended entirely upon the sculptors for inspiration.

LESSING acknowledges that SPENCE often succeeded in extracting from the Roman poets solutions of ancient works of art which hitherto had been unexplained. He testifies to the English professor's classical learning and to his intimate acquaintance with works of ancient art. But in spite of all this SPENCE's book should be, according to LESSING, intolerable to every reader of taste. When we ask what particular example justifies this condemnation, we find it consists simply in a different theory which LESSING held about the introduction of thunderbolts on Roman shields. But when one analyses the argument we discover that LESSING has no definite opinion on the subject. The Englishman gives engravings; LESSING cannot say they are forgeries, and he is not able to bring other examples forward which would support his own views. Another instance of the curious spirit in which LESSING acts towards SPENCE relates to the goddess VESTA. Although he was describing an imaginary symposium and fictitious statues SPENCE was careful to avoid all exaggeration, and especially the tempting one of appearing to know more about sculpture than his experience had taught him. POLYMETIS, in describing his gods and goddesses, has to explain why he does not possess one of VESTA, and he says:—

• I have not yet got any statue of Vesta, who, if ever she should honour my collection with her presence, ought to stand here next to Vulcan. To tell you the truth, I have some doubts whether the figures that are generally looked upon as Vestas do really represent that goddess or not. There is nothing I think about such as I have seen which would not be as proper for one of the Vestal Virgins as for the goddess who presided over them, and who knows whether the figures that are called Vestas, even in the inscriptions of the artists who made them, may not signify only one of the virgins who kept her eternal fire? What first led me so far out of the common road of thinking was a passage in Ovid, which expressly says they had no personal representations of this goddess. To which I may add a thing which would otherwise have appeared very unaccountable to me. I have formerly, I think, told you that I took the pains to read over all the Roman poets, from the fragments of Livius Andronicus to the satires of Juvenal, and to mark down the most striking passages in them which any way related to the figures and appearances of any of the imaginary beings received as gods among the Romans. When I came to put these collections in order and to range them under their proper heads, I found I had but one single passage out of all of them relating to Vesta. This single passage was from Ovid. I would not hence absolutely assert that the ladies which are called Vesta in several pieces of antiquity are only representations of this goddess by proxy, but it is enough to make one doubt. And as I am still in some doubt about it, I have not yet placed any figure of her in this line of the other Great Deities her companions.

SPENCE in these words only expresses the anomaly which still continues. HESTIA or VESTA was worshipped throughout Greece as the great domestic goddess. Yet it is doubtful whether anywhere in the whole extent of the country there was a single temple in her honour. NUMA erected one in Rome. It is evident that SPENCE was keeping religiously to facts. LESSING answers him not by facts but by mockery. SPENCE does not say there was no figure of VESTA, but that he had never met with one. LESSING says that he had no grounds for drawing the marvellous conclusion that artists abandoned the right to represent the goddess. And then he goes on to mention the number of cases of figures of the goddess which fell from the sky, and of a figure that used to lift its eyes with shame whenever any crime was committed against her, and if the figure had certain attributes it was the goddess and not a priestess. All this ingenious special pleading merely reveals that LESSING had no acquaintance with sculpture either ancient or modern, and that he was endeavouring to supply its place by something drawn from his inner consciousness. Yet it was by such strokes SPENCE's

able book was cast aside and has remained neglected for a century and a half.

It was not within SPENCE's province to treat of such a group as the *Laokoon*, and it could not therefore be said that he had started any theory about the figures which LESSING was bound to oppose. But the German writer, observing there was a difference between the group and the description by VIRGIL of the attack on the priest, felt he was bound to repel all those who would advocate even an accidental relation between sculpture and poetry. Hence the attack on SPENCE. But the English writer had never maintained that poetry was to be subservient to sculpture, although it was allowable for the two to treat the same incident or for a poet to describe the works of a sculptor.

THE PARIS PANTHEON AND ST. PAUL'S.

IT was at one time believed by the majority of foreigners that a great change came over Englishmen in November, of which a common result was suicide. In modern times there is fortunately a less general desire for seeking a quietus. But it must be allowed that things in general assume a different aspect in the eyes of Englishmen with the commencement of winter. This may account for the exaggerated statements heard of late about the condition of St. Paul's. WENDELL HOLMES used to say that if a man were declared to be suffering from two or three incurable diseases, according to the opinions of experts, he might take it for granted that he was destined to live a great many years. A similar phenomenon is witnessed in buildings. They may be declared defective in construction, but they contrive to keep together. And it is only under extraordinary circumstances that the lath-and-plaster structures which abound in London suddenly collapse and give rise to surprise that they have held so long together. Although St. Paul's may be in imminent danger, there are other churches and public buildings which have suffered in the same way, and yet with or without repairs they serve their purposes. One remarkable instance is the great domed building in Paris now known as the Panthéon.

LOUIS XV. was known as the *Bien-aimé*. He received the title because when he was ill at Metz in 1744 Paris was all in terror, and seemed like a city taken by storm. The churches resounded with supplications and groans, and the prayers of priests and people were interrupted by sobbing. All this and much else is related by CARLYLE. Having recovered, LOUIS felt he was under an obligation to create a thankoffering. And when he was implored to repair the Abbey of Sainte Geneviève, the patroness of Paris, Louis resolved to erect a great church dedicated to the saint. At first, there was no money available. But it was decided that every ticket taken in the lotteries should be charged four sous higher than before, and the excess was to be used as a building fund. The works were probably commenced between 1755 and 1760, for in 1763 the subterranean church, which is now the receptacle of the coffins of a few Frenchmen who are supposed to be renowned, was completed. The commission for the building was given to JACQUES JEAN SOUFFLOT, who erected several buildings for the State, the Church and municipalities, and was probably the first architect in Western Europe to describe the temples at Pæstum.

In 1764 LOUIS XV. condescended to lay the foundation-stone of one of the piers of the dome. That seems to have been considered as a special honour to SOUFFLOT, for immediately afterwards French scepticism began to raise doubts about the safety of the structure. The foundations were said to be either shifting or collapsing. Paris is supposed to present everywhere excellent foundations. But elevated positions have peculiarities. The site of the church, like that of St. Paul's, had been selected on account of its associations. But the hill of Sainte Geneviève consisted of a peculiar kind of clay

which the Romans had utilised as a material for coarse pottery. The pits were in some places 80 feet deep. SOUFFLOT had them filled up, and apparently the foundations continue to be as firm as ever. The defects ascribed to them by the architect's contemporaries were in reality caused by defective workmanship in the piers. But the building was of a kind which demanded masonry of the highest class. As if in rivalry to St. Paul's, which was commenced about eighty years before the Paris church, SOUFFLOT resolved to have a great dome, and, as is usual in such cases, he determined to excite surprise by the apparently inadequate means adopted for the support of it. As FERGUSON said:—"The mode in which four piers of the dome, with their accompanying pillars, are projected into the centre of the church is very confusing, and the glimpse caught of the adjoining apartments behind them only adds to the complexity without increasing the appearance of spaciousness. It is evident that the object of the architect in adopting this arrangement was principally to display his cleverness in construction, and to seek to astonish the spectator by one of those *tours de force* which are so common with a declining art, but which are absolutely fatal to true effect wherever introduced."

To be successful the dressing of the stones should have been perfect. But, as we have said, there were difficulties about the money, for France was becoming more and more involved in debt, and in consequence the stones were not dressed throughout and did not lie evenly. The parts near the faces were even. But the inner part was not level. And the interior of the piers was made up not only with small stones, but with occasional fragments of wood, which were employed in order to secure horizontal beds at certain distances. When the centring was removed about 1776 it was observed that pieces of stone were broken off owing to settlements. SOUFFLOT endeavoured to remedy the defect by introducing saws at the horizontal joints, in order to remove some of the material and allow the stone to lie more evenly. It was a desperate remedy, and could not be considered successful. The disappointment caused much suffering to SOUFFLOT, who had anticipated the creation of the noblest building in Paris, and he died in 1780. The works were then suspended, and indeed the amount of debt incurred was large. It was, however, little compared with what was required to complete the building. According to an official estimate it would have required thirty-four years to carry out the works and nearly fifty to pay off the debt.

It is sometimes asked, "What's in a name?" but the proposal of the French Revolutionists to call the building a Panthéon, which was to express on its frieze that it was dedicated in gratitude to the great men of France, had a wonderful effect in imparting a new spirit to the work. Instead of grating the stones with saws, it was resolved to remove every one which appeared dangerous. That was no easy work, for in one pier there were nearly 400 cracks, sixty-four places where the stone was crushed, fifty-four openings of upright joints and 344 patchings. But the public had resolved that the building should serve its new purpose. It was no easy matter to discover what was to be done. First, a Commission of Architects was appointed, and they found that the weight of the dome had caused the piers to settle in one case to the extent of 5 inches. SOUFFLOT had really tried by experiment to determine the pressure on the stones, and he employed some kind of apparatus to help him. But the difference between his results and those of RONDELET was as 70 to 27, and the latter was considered too high. It may therefore be supposed that in reality SOUFFLOT's figures were about three times in excess, and it is no wonder the stone was found to be inadequate. Besides, from the defective dressing of the stone in some places, not more than a fourth part of the area sustained the pressure. The Commission of Architects hesitated about the extent of the works

demanded, and contented themselves with recommending the removal of all defective stones and the fixing of new centres to support the dome while that work was in progress.

The builder anticipated a different result. He probably expected more profitable work. He therefore appealed to the authorities to order an examination of the building by some of the officers of the Ponts et Chaussées. The new Commission considered the centring would be expensive and without any advantage; that the piers were less defective than had been asserted, and they decided that the strength of the building would be secured if a series of flying buttresses were constructed. Another Commission was appointed of the architects and inspectors as before, with some mathematicians. Their advice was not approved. Other Commissions followed, and eventually the building was entrusted to RONDELET by NAPOLEON, with instructions that it was to be prepared for a church under the original dedication. The building has been since that time alternately secularised and devoted to public worship.

Under the circumstances which we have narrated it was impossible for the structure to be sound throughout. It may be said that much of the strength is only skin-deep. Owing to want of funds all that RONDELET and the restorers could do was to hide the defects in the piers and other parts. To that extent they have succeeded. But however imperfect, no Frenchman would be afraid of forming part of an assemblage that would fill the area. With such an example of foreign encouragement only nervous people could suppose that a building like St. Paul's, which is no mere *tour de force*, is not able to endure, although occasional slight settlements can be discerned in the masonry.

EDINBURGH PUBLIC MONUMENTS.

SOME time ago the Town Council of Edinburgh decided to overhaul the public statues and monuments which the enthusiastic hero-worshippers of last century raised and presented to the community. This duty towards the public monuments does not appear to have been formerly fulfilled with any very zealous degree of care. Indeed, these works of art in sculpture and architecture have been for the most part left severely alone, with, in some cases, lamentable results, as was disclosed by an expert examination of the monuments. The Town Council appointed Mr. Pittendreich Macgillivray, R.S.A., to examine and report on the state of four of the statues—those of Sir Walter Scott and Allan Ramsay (in marble), and of George IV. and William Pitt (in bronze).

Mr. Macgillivray's report, says the *Scotsman*, was clear and practical. It made drastic recommendations as to what should be done to put the four statues in order, and gave a detailed statement of the methods to be employed in cleaning, restoring and preserving. The report also advised that Mr. Joseph Hayes, architectural sculptor, Dean Studio, Edinburgh, be employed to carry out the work. The committee lost no time in giving full effect to Mr. Macgillivray's recommendations, and they secured the services of Mr. Hayes, who at once began operations on two of the selected statues—George IV. and Allan Ramsay. By approved methods and energetic action he has in a remarkably short time brought these statues and their pedestals back to a more presentable condition. The bronze of the George IV. statue has been carefully freed from its dull, black impaste of soot and dirt. It shows now the surface of its natural patina, with a certain amount of metallic glint, which gives vivacity to the heavy folds of Chantrey's semi-classic manner. The massive granite pedestal of the statue has been chiselled back to its original greyness. Many will no doubt be surprised when they contrast the renovated Ramsay statue with what they remember of the dull grey, weather-beaten appearance which the statue presented about three weeks ago. This statue had come to look as if it were executed in grey stone instead of marble; it will now be seen in its pure whiteness, with an effect such as it might have had on the day of its unveiling forty years ago.

It is expected that the Town Council will continue the work that has been thus effectively begun, until all the monuments are put in order; and the suggestion has been offered that some arrangements should be made whereby these works of art would be placed under the supervision

of a competent authority, and no longer left as an omisable detail in the routine of some busy public office. It is said that there is a serious condition of affairs to be faced in connection with the monuments on the Calton Hill. That charming bit of architecture, the Dugald Stewart Monument, is specially known to be in need of skilled attention, if it is not already in some parts beyond redemption. The magnificent columns of the National Monument, which have long been regarded as fixed as the hill, are also said to betray some defects to the expert eye. Open joints and the percolation of rain-water into vital parts are believed to be the cause of the mischief.

ENGLISH AND FRENCH ARCHITECTURE.

A LECTURE was given on Friday last by Mr. W. H. Bidlake before the members of the Birmingham Architectural Association, at which he pointed out that Englishmen and Frenchmen had carried out their antagonism so far as to dispute each other's claim as to the origin of Gothic architecture, but in these days of the *entente cordiale* we were willing to make mutual concessions. While the French allowed that the high vaults like those of Durham and the English Decorated style were the precursor of the French Flamboyant, we, on our part, allowed the great French cathedrals to be the most perfect expression of Gothic art. The much greater loftiness of the French buildings entailed the scaffolding of flying buttresses to resist the thrust of the vaults and the suppression of the central tower; whilst great external magnificence was thus attained the English had as compensation a grander external effect in the triple towers of such cathedrals as Lincoln and Durham and the crowning steeple of Salisbury. Owing to the lower elevation of the English vaults, bringing it more within the range of the eye, the English architect was induced to elaborate the groining, and from this had resulted the magnificent vaults of Exeter and King's College Chapel. Mr. Bidlake then compared the simple square ending of the English choir with its large window with the complex system of radiating chapels of the typical French choir, and concluded by a series of illustrations of the west fronts of the great French cathedrals with their marked triple portals. He allowed that while we in England had no triple doors to compare with France we had at least in Peterborough a façade which might console us for their absence. The lecture was illustrated by a series of lantern slides.

ARCHITECTURE AND ARCHÆOLOGY IN LIVERPOOL.

THE annual meeting of the Liverpool University Court was held on Friday last at the town hall. Sir Edward Lawrence presided. In the report it was stated that amended ordinances were submitted relating to degrees in architecture and diplomas in special branches of medical science, embodying and extending principles upon which the University has already acted. In the former case the University was endeavouring to supply a scientific foundation for technical training, and to do for students who sought to qualify themselves for the profession of architecture what it was doing already for students who intended to enter the professions of law, medicine or engineering. It did not seek to go beyond the limits of its true functions, or to teach in the lecture-room the methods and details that belonged to the office. It proposed to deal only with the historical development and progress of the art, and with the scientific laws by which practical processes must be determined. It was not their first experiment of the kind, but the earlier regulations—tentative in character, and the result of compromise—had failed to serve the purpose for which they were designed. In framing that amended scheme they had been able to secure the advice and the concurrence of the Architectural Society of Liverpool and the Board of Architectural Education in London, so that they might reasonably hope that the new regulations would prove more successful than the old. A professorship of classical archæology had been established for three years with the aid of a guarantee fund contributed by Mrs. George Holt, Miss Holt, Mr. A. Booth and Mr. Charles W. Jones. By the election of Mr. R. C. Bosanquet, formerly the director of the British School at Athens, Liverpool had secured a scholar exceptionally qualified to develop fresh interest in the study of ancient literature by associating it with a more intimate study of ancient life.

Mr. John Rankin, by adding to the original endowment of the Lectureship in the Methods and Practice of Archæology, founded by him rather more than a year ago, had now converted the Lectureship into a Chair, and at the same time Sir John Brunner had endowed a Professorship of Egyptology. Those three Chairs placed the department of archæology in an exceptionally strong position. To those who had combined to equip the University for that special service on a scale without parallel in other British universities the Council expressed their sincere gratitude. Special importance attached to the proposed ordinance relating to degrees in architecture. The University of Liverpool was, so far as he knew, the first British university to include architecture in its course for the B.A. degree. Though that experiment had by no means failed, it had not been as successful as they could have wished. They were now trying an experiment—the first of its kind in any British university—of establishing a separate and special degree for students in architecture. The arrangement would probably enable them, in conferring degrees, to take into consideration not only the work that was done in the lecture-room, but the work that was done when the student passed into the architect's office. Having had the honour of attending conferences in London on the subject, he could testify to the great help and sympathy which they had received from the representatives of the Royal Institute of British Architects and of the Liverpool Architectural Society.

HERALDRY IN RELATION TO THE APPLIED ARTS.*

THE heraldic group of armorials is called an achievement, hence hatchment, the lozenge-shaped panel that is sometimes placed on the front of a house of mourning. An achievement consists principally of shield and crest, with the helmet and mantling, but, in addition, mottoes, coronets, supporters and other accessories may form part of it. The proportion of its parts varies very considerably. During the Middle Ages it was something like two-fifths of the whole height for the shield, and three-fifths for the helm and crest, but these proportions were much modified by circumstances. In some cases, as in the monument to Lord Bouchier in Westminster Abbey, the shield was very small indeed, because the arms were adequately displayed elsewhere on the monument, while the crest was not. The armorial group on the keystone of the arch of Henry V.'s Chantry, also in Westminster Abbey, is similar in this respect. The general proportion that I have indicated is a very satisfactory one, however, which brings the helm a little above the centre of the composition, in which it serves as a point on which the other objects group themselves. This proportion also affords scope for clear definition of both arms and crest, and has a satisfactory and dignified appearance. The whole design of an achievement should, of course, be directed to the most distinctive display of all the armorials, and their relative importance will in some measure dictate the proportion. Thus if a shield be quarterly, or otherwise complicated, it may be enlarged and will still look right because the reason explains itself.

Whatever the style of the design, it should express its subject in the most explicit way, not allowing scrolls to outshine the crest nor badly composed mantling distract attention from the arms.

The general method of grouping armorials may have been suggested by their actual relative position (as may be seen in the equestrian seals), as well as by the custom of carrying armorial insignia in procession, when they were borne suspended from staves, or in stationary ceremonials were hung from stakes or small trees.

There is nothing of special heraldic significance in any particular grouping of the shield with other objects, and the shield and the crest may be placed side by side or in any other way that suits the general design. Shields and crested helms may alternate in a frieze or a string-course, for example, and in such a case the mantling may be found useful as running ornament with which to tie up the whole design. And similarly, in circumstances which make undesirable the piling up of the components of an achievement, they may be placed side by side with complete propriety.

The principle of concentration on the most significant part of the heraldry is nowhere more habitually violated than in the treatment of supporters, for they are often

* From the Cantor lecture, by George W. Eve, published with illustrations in the *Journal of the Society of Arts*.

designed with little regard for the armorials that they support. Their privileged character, as accessories to the arms of peers and of other persons of exceptional distinction, has resulted in their treatment in a way that is by no means in accord with their relative importance. Originally derived from badges, their evolution from that state to their present condition is well illustrated in the seals, which it soon became customary to ornament by filling with decoration the spaces between the triangular shield and the surrounding circle. And this was done in various ways—at first with scroll ornament, then with badges which, from being small and as it were accidental devices, increased in regularity and importance until they acquired a recognised status as supporters, and in later times have been allowed to dominate the whole group, which development has been assisted by the natural readiness of sculptors and others to make the most of an inviting subject, but the result has been to belittle the more important shield. It is very necessary to bear in mind that the perfect legibility of the arms on the shield is the essential point, and that the whole achievement should be designed accordingly.

Supporters still retain a greater amount of freedom than other heraldic objects in regard to pose, which in their case is by no means so rigidly prescribed. Thus, although an animal is usually in a rampant position, it is not necessarily so, and is not so described in the blazon. A lion, for instance, is not blazoned a lion rampant or otherwise, but simply a lion; so that if the occupied space renders another pose desirable it may be adopted, though at the same time there can be no doubt that the rampant position is best whenever possible. Thus, in horizontal positions, such as friezes, a shield may have couchant supporters, and when an animal supports a banner it may be *sejant*, that is, sitting. Again, the supporters need not be placed exactly at the sides of the shield if there is any reason, with regard to design, for another position. In the seals they often occupy spaces a little above the shield, and sometimes seem to hold up the helm and crest or the coronet. In other cases they are below the shield, really seeming to hold it up, as in the windows at Ockwells, that beautiful series of armorial glass which contains the arms of Henry VI. and of his queen Margaret of Anjou, supported by heraldic antelopes, the king's device, and by her own eagle. It will, of course, be noticed that the perpendicular form of the window space suggests this treatment. Apart from such controlling reasons, the places at the sides of the shield are without doubt most satisfactory.

Remembering that the shield is the principal point, the supporters should be composed with due regard to it, and their lines should lead into and emphasise it as the central motive. An effective amount of symmetry should also be established between the respective figures when it is possible, and the main composition lines of supporters will need special emphasis when animals have their heads turned away from the shield in the position of *guardant* (and still more so when they are *regardant*), in order to counteract the dispersing effect of those poses. Here it must be noted that freedom of pose in supporters does not extend to the head, for when a supporter is blazoned *guardant* it must be full faced, or nearly so, and when *regardant* must look backwards.

Actual physical support need not be insisted upon, so that there is still less obligation to over insist on it. As we have seen, birds as well as beasts are used as supporters, and an interesting instance of fish supporters occurs on the seal of Dauphiny, and another case is that of the city of Glasgow.

Besides the actually heraldic supporters, other figures are used in a similar way but in a purely decorative manner, such as angels and amorini. Of these there are, of course, numberless examples, among them the groups of angels which hold the shields on the spandrels of Henry V.'s Chantry in Westminster Abbey, and the demi-angels with badges arranged in Henry VII.'s Chapel and other parts of the abbey, which latter, by the way, were closely followed by Pugin in the decoration of the Houses of Parliament.

Interesting examples of angelic supporters occur in the tapestry at Hampton Court Palace. They contain the arms of Cardinal Wolsey and those of the archiepiscopal see of York impaling the insignia of an archbishop, each shield being supported by kneeling angels. The arms of the great cardinal were sometimes supported by griffins or again with amorini. A beautiful instance of the latter occurs in the panel in high relief which faces the Crown Court at Hampton Court.

A word of caution regarding such non-heraldic figures may be useful in order to avoid possible misunderstanding, namely, that their purely ornamental character should not be confused by the addition of details or drapery that might have heraldic significance, such, for example, as the angels clothed in tabards of the royal arms of France, which formerly supported the French shield.

Among other insignia that may accompany armorials, crowns and coronets are of conspicuous importance, and present excellent opportunities for decorative treatment. In their origin they were simply circlets of dignity, which, however, soon took regular form and symbolic significance.

The king's crown is composed of four crosses and an equal number of fleurs-de-lis, raised alternately on the rim, and has two arches which rise from the crosses and support at the top an orb which also terminates in a cross. These, which are the essential parts of the crown, may be treated ornamentally, with great freedom. Tudor architecture is especially rich in examples of great variety and beauty, and of these some of the best are in King's College Chapel, Cambridge, and on St. George's Chapel at Windsor. There is a series on the exterior wall of the latter chapel of which no two are alike in detail, though, of course, they are all essentially the same. However varied the treatment may otherwise be, the arches always rise from behind the crosses, never from the fleurs-de-lis in the case of the English crown, though in the Scottish one they do so in some instances.

It must be understood that the king's crown is an imperial crown, and has for centuries been so held to be, certainly since the time of Queen Elizabeth. Indeed, it is quite probable that there was some such intention when it was first enarched by Henry V. However that may be, there is no distinction in our heraldry between a royal crown and an imperial one, and when crowns occur as charges they are invariably described as "imperial crowns."

The shape of the arches has varied very much from time to time and even at the same period, for it has never been thought necessary in decorative design to follow the exact pattern of the actual crown. This has remained constant since the time of Charles II. The Tudor crowns were in general either pointed like a Gothic arch or flat at the top, as are those at Windsor and Cambridge. The latter form gives a squarish line that is suggestive of strength, but it unfortunately led in later times to a less satisfactory shape, that of the Georgian crown, in which the arches were much depressed at their intersection. The present shape, as approved for official use, is a return to the more beautiful Pointed arch.

The decoration of the arches may take many forms—large pearls, architectural crockets or oak leaves, and so forth. With regard to the treatment of the crosses on the rim and on the orb at top, there is an unfortunate tendency to spread the ends of the limbs until they almost touch at the corners, and the result is to suggest the form of a square that is perforated saltirewise with radiating vesica-shaped holes, and not that of a cross at all. The earlier more open form is much more beautiful.

As to the jewels, it is well to show them as *en cabochon*, rather than as cut into facets; and it is to be understood that their arrangement and colour is quite conventional and need follow in no way the details of the actual crown. The same remarks apply equally to the coronet of the Prince of Wales, which, however, has but one arch.

The coronets of peers, which had taken definite form for various ranks in the seventeenth century, were officially regularised by Charles II., and their various forms can be seen in any peerage.

About the caps which they enclose there is sometimes a little question, however, but there is no doubt that the coronet itself is the essential emblem of rank, and that the cap may be omitted if necessary. Indeed it was so admitted, and in official work, soon after the definite rules for the wearing of coronets were made. Of course, if one is painting a portrait of a peer in his coronation robes, his coronet will be represented with a crimson velvet cap lined and turned up with ermine, but in ornamental design it is non-essential.

It should be noted that peers' coronets must not be jewelled, and that the so-called pearls that are on those of all ranks below dukes are really silver balls and must be so represented. Jewel forms are indicated on the circlets of all above the rank of a baron in engraved or other metallic surface decoration in place of actual jewels. The rim of a baron's coronet is plain with the exception of a slight decorative line that may run round it.

I have before pointed out how boldly and decoratively crowns and coronets were treated in relation to the shield down to the sixteenth century, extending at least from side to side of it and sometimes beyond as though enclosing its top, and this point is illustrated effectively on the tomb of the Countess of Richmond, mother of Henry VII., in Westminster Abbey. Comparison is impossible between the strong dignified treatment of this beautiful monument and the small and mean way in which the thing is done in most modern work.

A series of coins and seals is very instructive in this way. Thus the golden bulla, probably designed by Holbein, with which Henry VIII. sealed the treaty of the Field of the Cloth of Gold, has the crown treated expansively in the way that I have described, from side to side of the shield. Turning from that to modern coinage, we see the crown more suggestive of the top of a pepper-box. There is improvement in this respect, but there is still evident a fear to make the crown of full decorative proportion.

Badges and devices, forms of personal allusion from which heraldry sprang and to which it has returned now and again with renewed interest, are among the objects that are most useful in heraldic decoration because of the freedom with which they can be handled. Like mottoes, they are outside the restrictions of heraldic rule, and may be invented and applied or disused with perfect facility. Historic badges without number are to be seen in architectural decoration where they usually occur with splendid effect. Many badges allude to events, as does the sword chape of Lord Delawarr, whose ancestor took prisoner the French king, or the purses which commemorate the Lord Treasurership of Lord Cromwell on the mantelpieces of Tattershall Castle; but the majority, especially such as were devised in large numbers in the fifteenth century, are full of a more purely symbolic meaning. Thus, the porcupine of Louis XII. was an emblem of offence as well as defence, however, for it was believed to be able to shoot its quills, and so attack at a distance. The lithe little ermine of Anne of Brittany was emblematic of unsullied purity, as well as allusive to the conventional ermine shield that was her coat of arms. A beautiful representation of a badge of clasped hands is sculptured on a marble frieze that is attributed to Matteo Civitali, of Lucca, in the fifteenth century, and is shown in the slide.

At Westminster Abbey may be seen the splendid bronze gates, with the badges of Henry VII. and his queen, Elizabeth, and of his mother, Margaret, Countess of Richmond, which close his mortuary chapel.

The royal badges of the present time are regulated by warrant, among them the rose, thistle and shamrock, both singly and joined together on one stem in the Union badge; also the red dragon and the harp.

The distinctive ostrich feather plume badge of the Prince of Wales consists, I need hardly say, of three feathers ensigned with the Prince's coronet, of necessity without the arch, and having below two scrolls of garter blue bearing the motto, "Ich Dien," in gold letters. These are the heraldic facts, but the artistic interpretation may vary very much; whether the badge be treated in the early and more severe style, or in the freer curves of Renaissance work, it is always a very decorative and interesting object. Its origin is obscure, but a feather was a favourite royal badge from early times, and its symbolism is said to be that of steadfastness; for, however bent it may be, it returns to its original form. Edward the Black Prince directed that his ostrich-feather badge should attend his funeral, and so it appears on his tomb. At this time the badge was a single feather with its quill enfiled with, that is to say piercing, a scroll. In this form it is thrice repeated, two and one, on the shields which alternate with the Prince's regular armorials. He described the shield bearing the three (separate) feathers as his "Arms for Peace," and that indeed seems to be the character of most badges (though there were others), and it is a character that is very much in harmony with modern feeling, and therefore very appropriate to a motive for present decorative use. The Prince's badge in its present form was not used until the middle of the sixteenth century, and since then has remained unchanged. Its free spreading treatment was perhaps suggested, at a time when Italian influence was strong, by the Medici badge of three feathers interlacing the familiar gem ring of that family's device.

The more recent and approved fashion is to draw the feathers stiffly upright, after the manner of the single feathers of Mediaeval times; but though the treatment is, perhaps, preferable to that of the Renaissance in some

respects, it has hardly the full convincing rightness of Mediaeval style. One feels that if it had been done in the fourteenth century, the symbolism would have been expressed in a somewhat freer manner and still without loss of strength.

Quite recently a more distinctively Welsh badge, the red dragon of Cadwallader, of King Arthur and of Henry VII., has been assigned to the Prince of Wales in addition to the feather badge. This, being also one of the King's badges, is differenced for the Prince, with a label of three points, as are His Royal Highness's other armorials.

As I explained when dealing with crests, badges may be made out of the details of a coat of arms, or the crest itself may be used as a badge by the omission of the helm and torse, where, for any reason, it is not desired to use the actual armorials; or the badges may even be used in conjunction with them.

Insignia of knighthood, the badges and collars of the various orders, are other objects of significant importance that present ample opportunities for artistic treatment. The execution of the actual things in goldsmith's work and enamel would afford especially interesting occasion for applying taste and skill to objects that have become commonplace by careless repetition.

It will be understood that, like other heraldic insignia, those of orders must be accurately rendered with regard to the character and sequence of their components, but at the same time there is no obligation to follow a particular style.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE third general meeting (business) of the Session 1906-7 was held on Monday, December 3, when the chair was taken at 8 o'clock P.M. precisely, for the following purposes:—

The CHAIRMAN brought the following proposal before the meeting:—

By-law 3, as amended at the general meeting of June 6, 1904, not having yet received the sanction of the Privy Council, the old form of by-law is still in operation. The Council suggest, however, that, pending the settlement of the larger questions involved in the revision of the Charter and By-laws (suggested by the registration committee and adopted in principle by the general body, but referred to the Council for a report), they continue to act under the old by-law until such time as all the changes may be made together, the Council undertaking in the meantime to act in accordance with the spirit of the proposed by-law until it comes regularly into force. A number of nominations to the Fellowship have, however, lately been made from the Colonies and elsewhere, some of which had to be referred back for further information. The Council propose to deal with these, in common fairness to the candidates, on the old lines.

Resolved, that the date December 31, 1906, in the resolution of February 29, 1904, be extended to December 31, 1907.

Mr. LACY W. RIDGE moved the following resolution, and it was resolved, "That the Royal Institute of British Architects is of opinion that the provisions of 'The Public Health Acts (Building By-laws) Bill 1906,' which has already passed the House of Lords and is now sent to the House of Commons, will, when enacted, prove advantageous in facilitating building operations in rural districts."

Resolved, "That the Royal Institute of British Architects considers it inadvisable in the interests of architecture that public officials should act as architects for public buildings unless they have had an architectural training."

A Meeting of the Executive Council of the proposed Scottish National Exhibition in Edinburgh in 1908 was held last week. It was reported that a very encouraging response had been made to the recent appeal for subscriptions to the guarantee fund, and that the fund now amounted to upwards of 23,000*l*. A preliminary building and construction committee was appointed with instructions to prepare the necessary conditions to be observed by architects in submitting competitive plans for the exhibition. A preliminary advertising committee was also appointed, and was authorised to prepare the conditions for competitive designs of a poster for the exhibition.

NOTES AND COMMENTS.

ON Monday last a deputation from the Royal Institute of Architects of Ireland interviewed the Lord Mayor and Corporation of Dublin respecting the preparation of plans for the new technical school. Mr. MITCHELL, R.H.A., the president, said it had been resolved to have the plans prepared by Mr. M'CARTHY, the city architect. They made no objection to him, but on public grounds they considered the new school should be worthy of Dublin, and that no effort should be spared to secure the highest Irish talent in designing it. It had been stated that by the employment of an outside architect fees would have to be paid which might be spared. But if a superior design could be obtained by competition or otherwise the Corporation were morally bound to adopt it. Besides, the city architect was too engrossed with his official duties to think out a design involving so many problems. Dublin would have presented a different appearance if private architects were neglected in obtaining designs. Finally, the architects paid rates and taxes, and it was not right to deprive them of their means of livelihood. Sir THOMAS DREW acknowledged that during the past forty years the Corporation had done much towards beautifying Dublin, and expressed the hope that a generous view would be taken of the request. The Lord Mayor promised that the views of the deputation would be carefully considered. In Dublin unfortunately there is a very strong spirit of centralisation, for the Corporation wish to be masters in practice as well as in theory. It is doubtful whether any prominent member of the Irish Institute is a Nationalist or is able to discourse in the Irish language. These last qualifications seem indispensable for all officers, high or low. It is also doubtful whether any outside architect would gain much by the commission, for we believe the site has not yet been fully defined.

It is remarkable in Paris that in spite of all the power of the Government and the ease with which buildings were appropriated under various reigns there is still insufficient accommodation for some of the Ministers and their officials. The Louvre is imperilled because the authorities responsible for works of art cannot evict departments which might be as well housed in a remote part of the city. The venerable Archbishop of Paris is about to be turned adrift because the episcopal palace is wanted for the Ministry of Labour. When a few years ago it was announced that the National Printing Office was to be removed from the buildings in the Rue Vieille du Temple, it was anticipated that the opportunity would be taken to effect a great improvement in a part of Paris which requires to be aerified. But already the Director of the National Archives demands the premises in order that he may fill them with the countless documents at present heaped in wooden structures which can be easily destroyed.

THE Portrane Lunatic Asylum, in the county Dublin, seems to be one of those buildings which possess qualities irresistibly fascinating to litigants. Although a new building it has acquired already a legal history, and apart from the proceedings in the courts there has been a long arbitration before Sir T. DREW, P.R.H.A. On Monday an effort was made by the contractors to reopen the case by an application for documents. The reasons given were somewhat unusual. The original contract amount was accepted as 167,000/. This was, however, a "mutual mistake," for the amount should have been given as 167,830/. It was stated that the authorities of the asylum admitted that work was done on the larger amount, but that legally they were not bound to pay the balance. As the demand had not been claimed within six months the amount could not be recovered under the Local Government Act. They also alleged that the contractors had committed an error to the extent of 400/., and that one should act as a set-off against the other. The Master of the Rolls declined

to reopen any question about the larger amount, but advised that counsel should agree about the documents required in the 400/. error and to make an application respecting them. It is not often such a comedy of errors comes before a court in respect of building.

FOR anyone who can enjoy rows of figures the "Statistics of Public Education in England and Wales" will have attraction. Owing to difficulties in obtaining returns an additional period has had to be included, and the volume consequently refers to 1904-5-6. It appears that on January 1, 1906, there were 20,883 recognised schools with accommodation for 7,042,966. About two-thirds of the schools, or 13,837, were "voluntary." The technical institutions to which grants were paid number only 23, and are attended by 2,509 students. Grants amounting to 8,542/. were paid in respect of students attending a full course of instruction, and 1,507/. for those attending a partial course. In architecture and building 48 students attended a full course and 20 a partial course. In engineering the respective numbers were 539 and 174. There were at the beginning of the year 231 recognised schools of art and 45,562 students. The amount paid by the State was 55,008/. The total expenditure of the Board of Education out of the Parliamentary vote has amounted for the year to 12,611,349/. Out of that sum the Royal College of Science received 21,798/., the Royal College of Art 11,884/., and the Geological Museum and Survey 20,592/.

ILLUSTRATIONS.

CATHEDRAL SERIES.—MANCHESTER: THE CHOIR, EASTWARDS.

STABLING AT LINGFIELD.

RANDALL'S FARM COTTAGES, LEATHERHEAD, SURREY.

THESE three cottages are built of local red bricks and rough-cast and roofed with Brosley tiles. The builders were Messrs. G. & W. BROWN, of Leatherhead. The architect was Mr. H. D. SEARLES-WOOD, F.R.I.B.A.

DESIGN FOR HOUSE.

THIS house was built at Benhilton, Surrey, for Mr. W. K. APPLETON. The builders were Messrs. R. JONES & SON, of Sutton, Surrey. The architect was Mr. H. D. SEARLES-WOOD, F.R.I.B.A.

BAPTIST CHURCH, SHOOTER'S HILL ROAD, BLACKHEATH.

TOTTENHAM TOWN HALL, FIRST-FLOOR LANDING.

BUSINESS PREMISES, 363 OXFORD STREET, W.

THIS building, just recently completed on the site of the Horse and Groom public-house, has been let by Messrs. MAY & ROWDEN to the International Aspirator Company. The front is of Portland stone, and all the floors are constructed to let for business purposes, with a hydraulic passenger-lift by Messrs. MEDWAY & SON, of Rolt Street, Deptford. The carving to the front was executed by Mr. HEARN, of Little East Place, Kennington Road, and the works generally were carried out by Messrs. H. & E. LEA, of 3 and 4 Warwick Street, W., under the guidance of the architect, Mr. E. KEYNES PURCHASE, 20 and 22 Maddox Street, W.

BUSINESS PREMISES, 66 CONDUIT STREET, W.

THIS building has just been completed by Messrs. PATMAN & FOTHERINGHAM for the London and County Properties, Ltd., from the designs and under the supervision of Mr. E. KEYNES PURCHASE, 20 and 22 Maddox Street, W. The front is of Portland stone, and the carving to same has been carried out by Mr. HEARN, of Little East Place, Kennington Road. The premises, which run back to New Burlington Place and have a back entrance therefrom, have just been let by Messrs. MAY & ROWDEN to Messrs. MILLER & SONS, of 178 Piccadilly, W., who are now going into occupation.

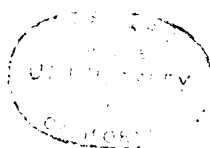
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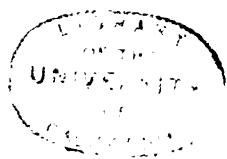
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BUSINESS PREMISES: 353, OXFORD STREET, W.

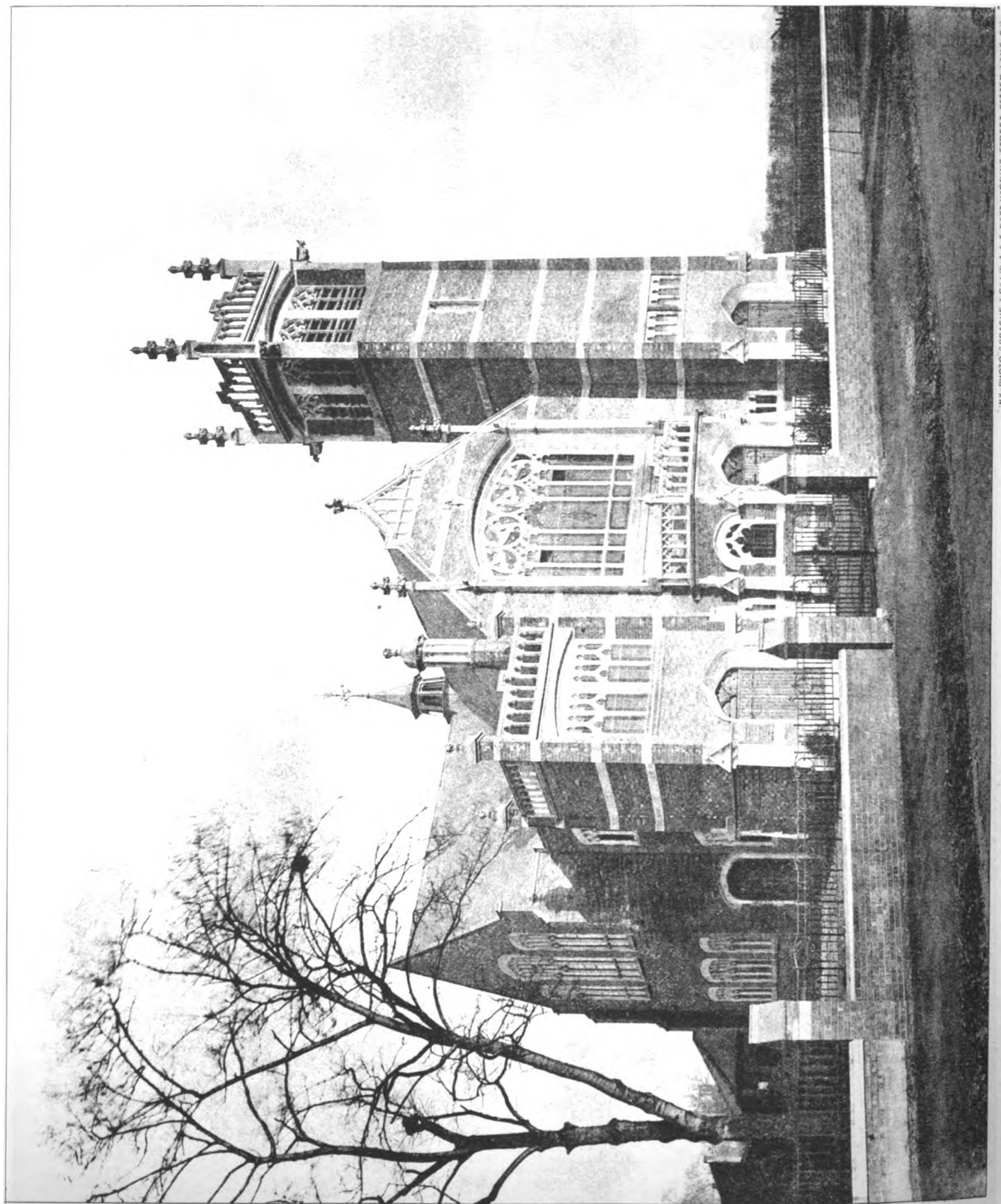


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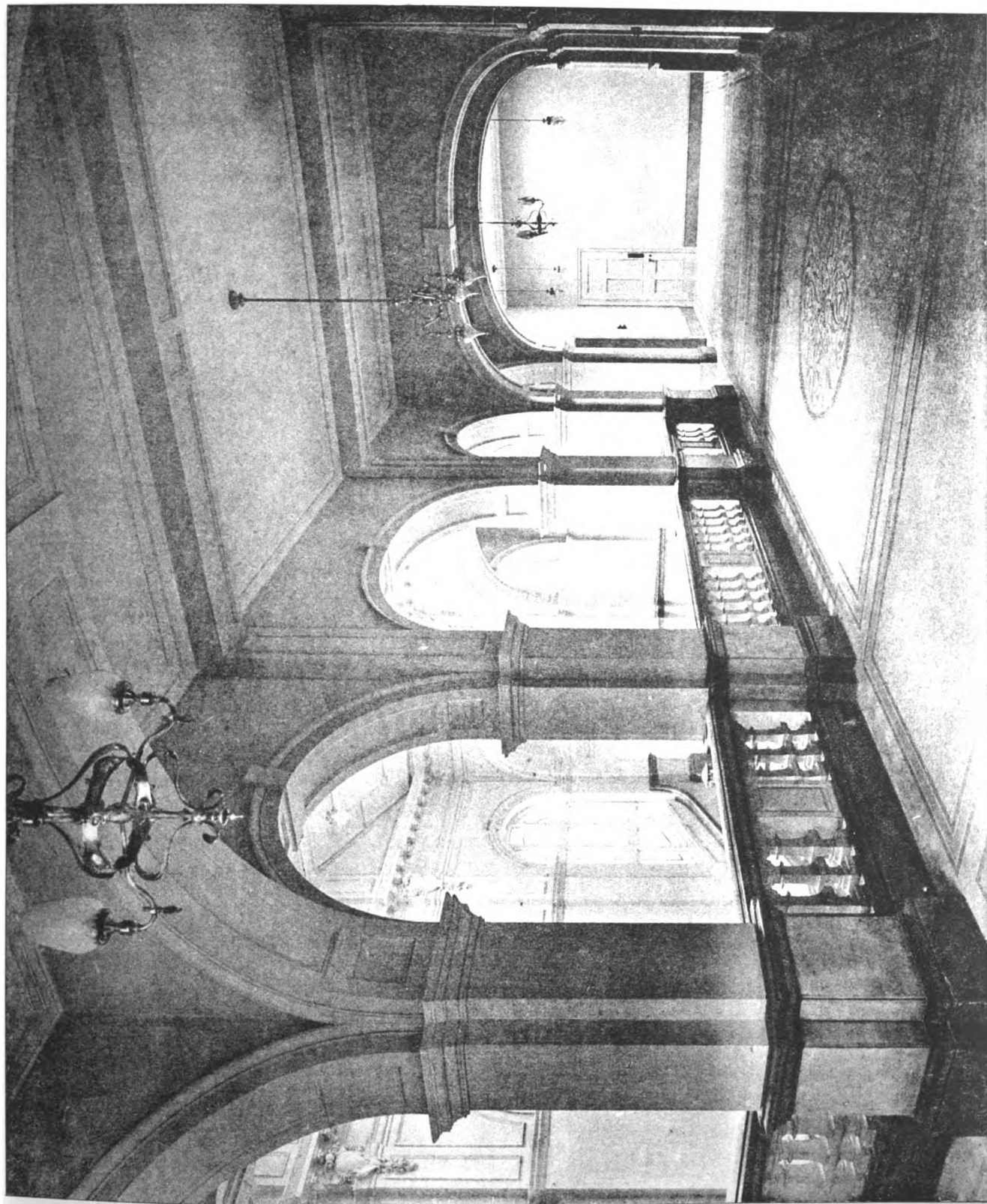


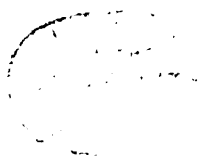
The Architect, Dec. 7th 1906.



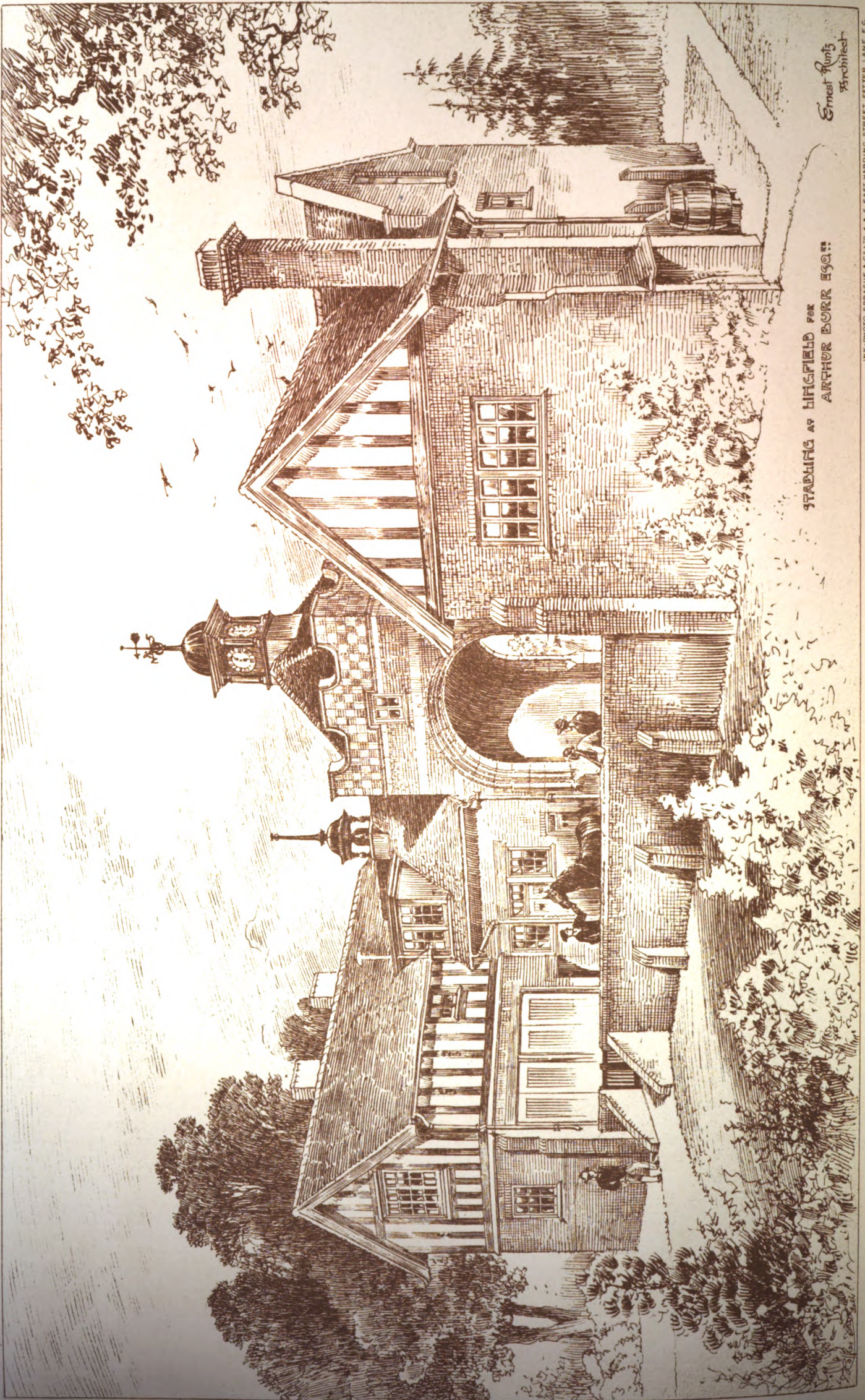
BAPTIST CHURCH, SHOOTER'S HILL ROAD, BLACKHEATH.
SAMUEL S. DOTTRIDGE, Architect.

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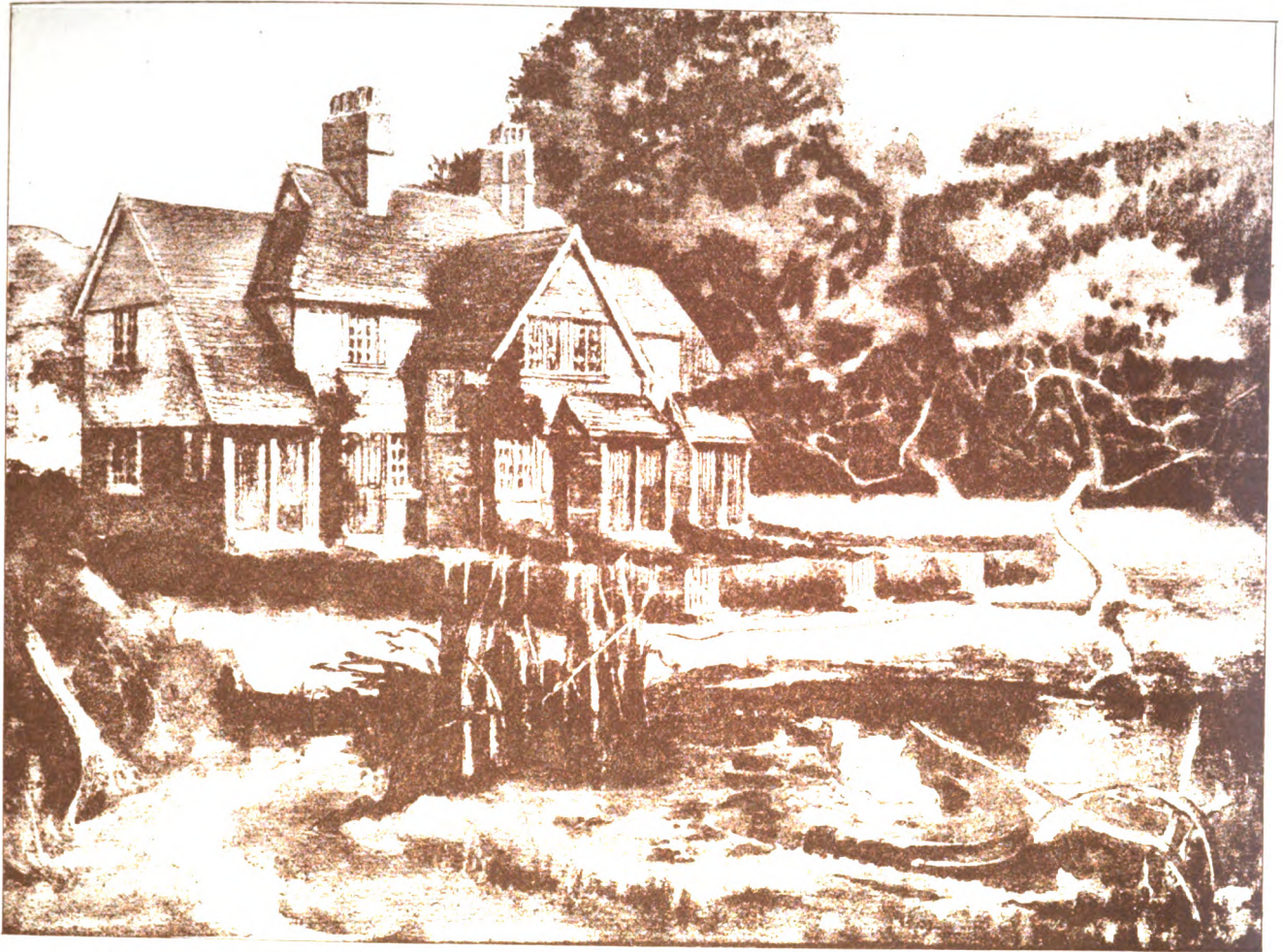




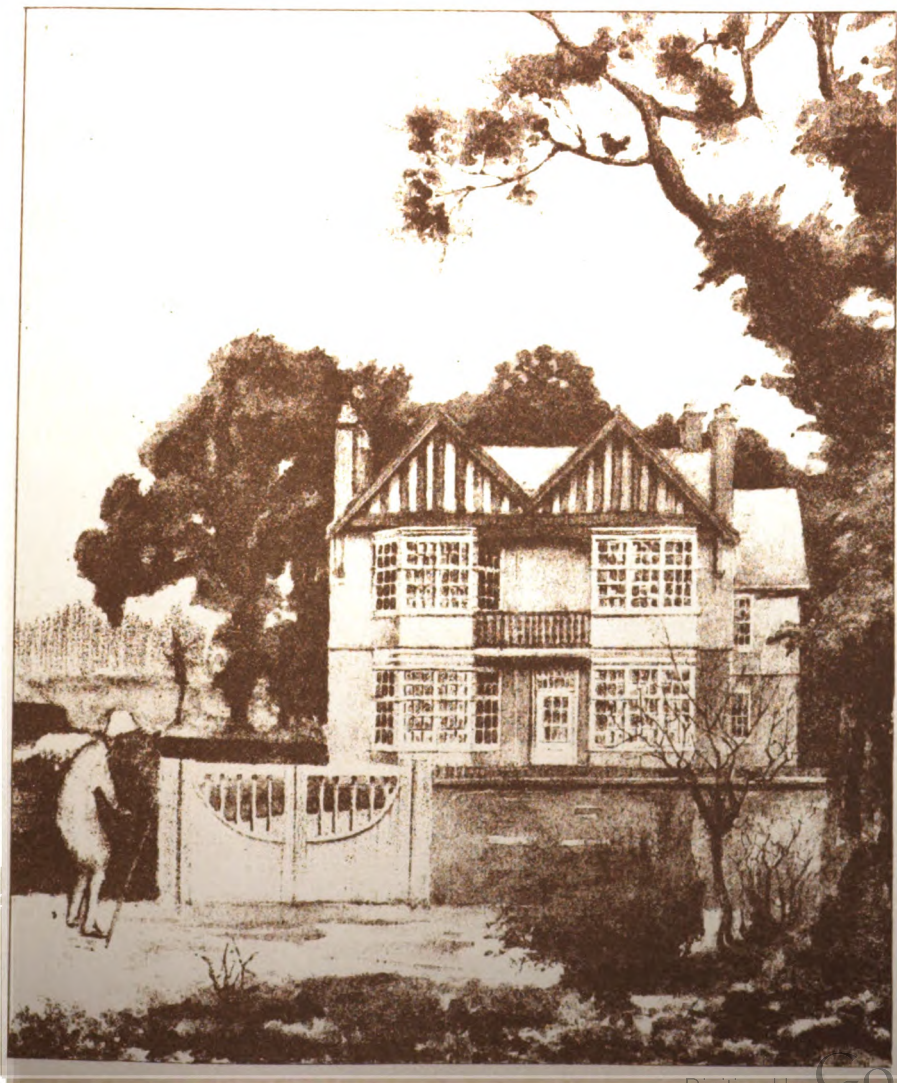
STADING AT HINGFIELD FOR
ARTHUR BURN ESQ.

Ernest Hunt
Architect

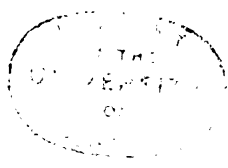
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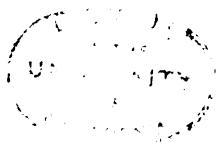


RANDALL'S FARM COTTAGES, LEATHERHEAD, SURREY.—H. D. SEARLES-WOOD, F.R.I.B.A., Architect.

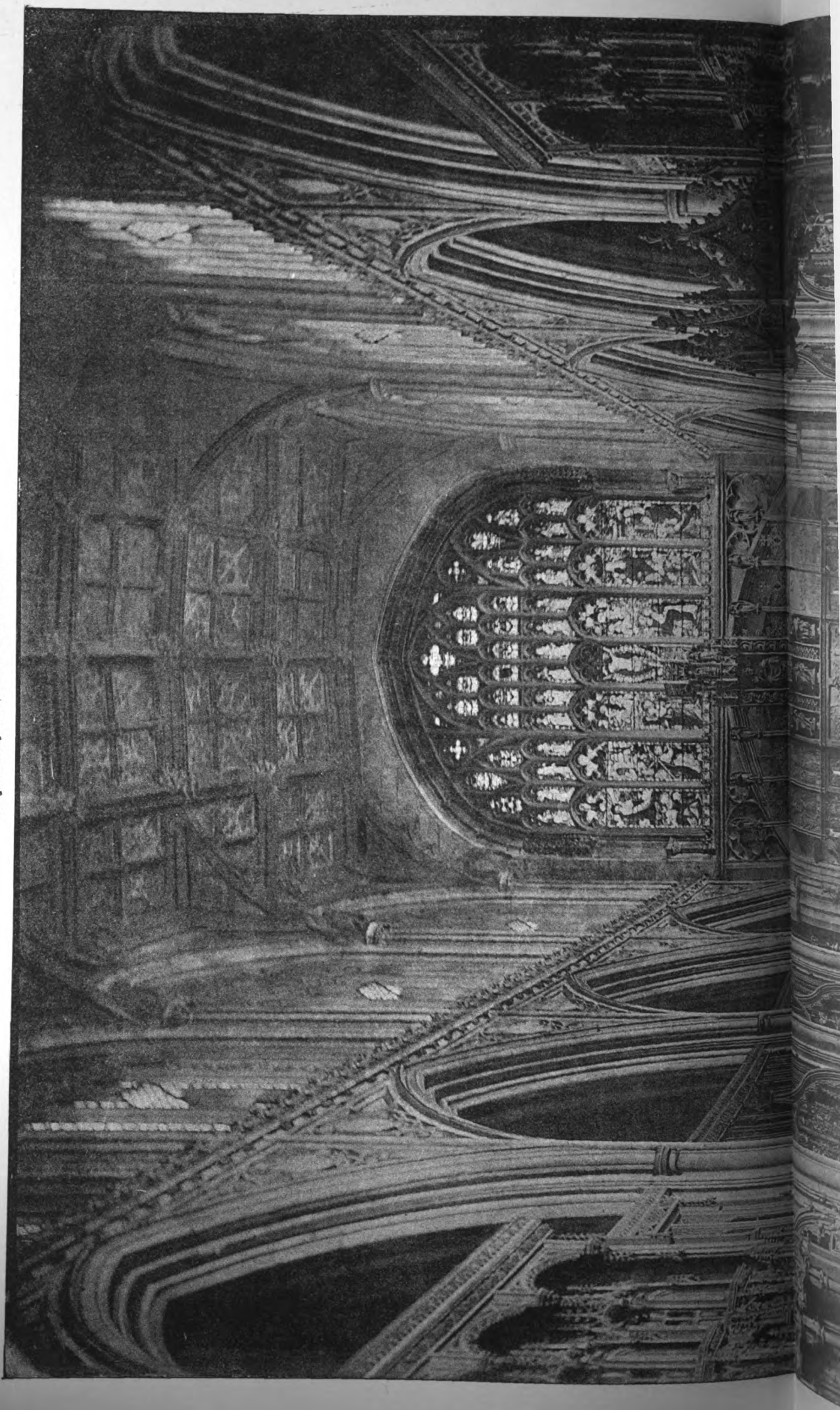


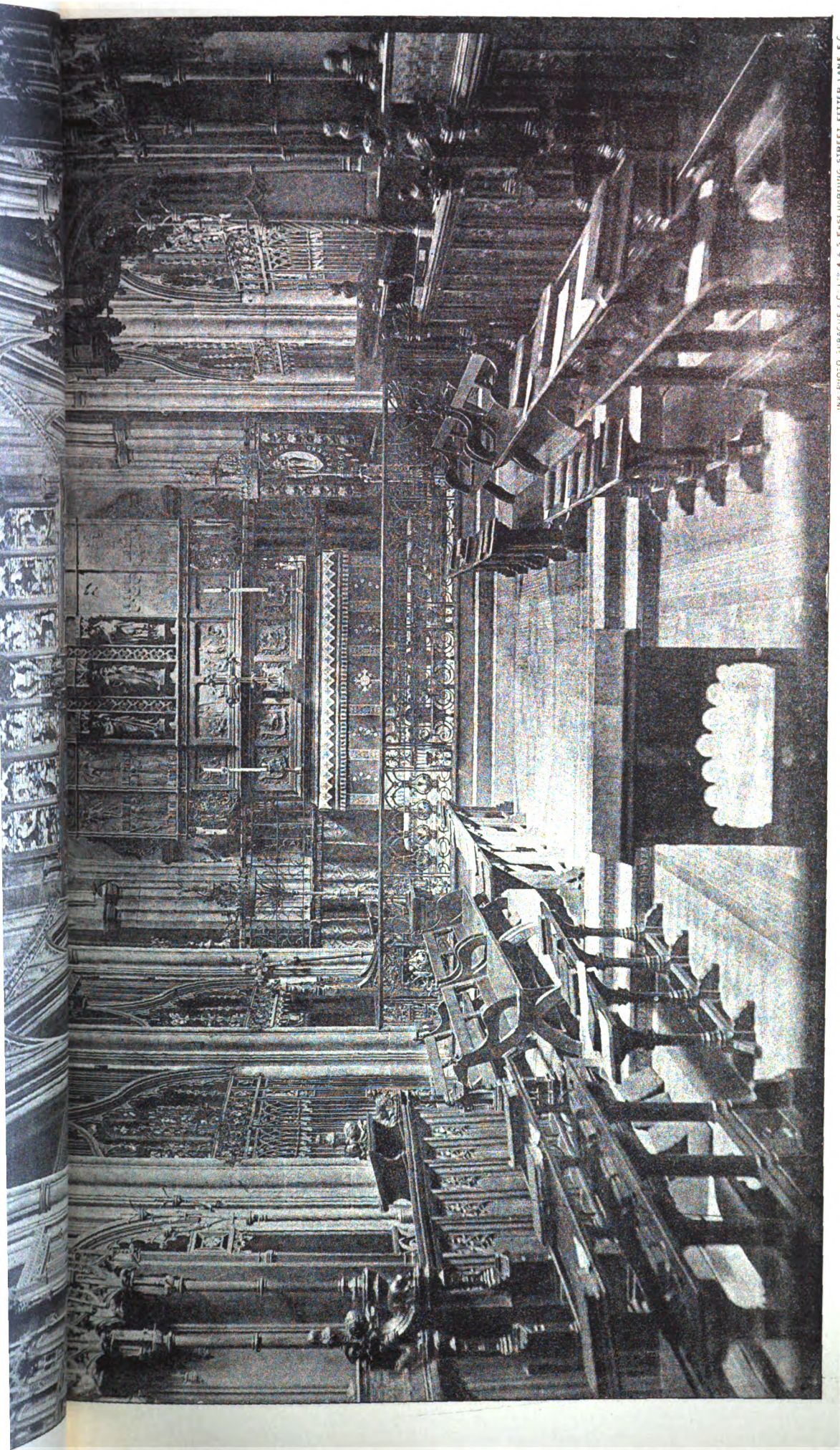
DESIGN FOR HOUSE.—By H. D. SEARLES-WOOD, F.R.I.B.A.





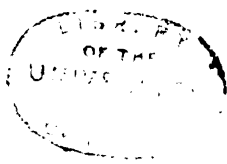
Die Architektur, Dec. 7th 1906.





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CATHEDRAL SERIES, No. 587.—MANCHESTER: THE CHOIR, EASTWARDS.



THE ARCHITECTURAL ASSOCIATION.

A MEETING of the Association was held on Friday evening last at Tufton Street, Westminster, Mr. Walter Cave, vice-president, in the chair.

The CHAIRMAN expressed the regret of the President, who, through illness and a serious operation, was unable to attend to his duties and be present at the meeting.

Messrs. E. P. Jay, J. M. Kendall, J. A. Slater, M. S. Adams, R. A. Holland, H. A. Gold, A. J. Manton, H. Brine and R. Lowry were elected members.

The CHAIRMAN reported the "Thomas Garner" bequest, which consisted of more than 200 books.

Mr. E. PRIOLEAU WARREN explained how the bequest came about. Mr. Garner, before his death, wished to consult the speaker, who had been a pupil, as to the disposal of his books, but owing to many postponements through illness Mr. Garner's wish was never fulfilled. The widow, however, knowing it was the intention of Mr. Garner to give to his former pupils and friends certain books, asked Mr. Warren to undertake the task of allotting them. After this Mrs. Garner wished that the main body of the collection should be kept together, and form a library for students of architecture. The speaker said he told her of the Association, and on hearing that it existed mainly for the benefit of the young architect Mrs. Garner readily consented to his recommendation and placed the admirable collection in their hands. Mr. Garner, continued the speaker, was very little known, because he was a shy and retiring man. He was in partnership with Mr. Bodley, but left everything in the latter's hands. The rapidity with which he worked was astonishing, and there was always a strong individuality in his designs. Mr. Garner set an extreme store on precedent, certainly more than most of his contemporaries, but he was not a copyist. In his partnership with Mr. Bodley the deceased was almost solely responsible for the civil and domestic work done by the firm. In conclusion the speaker said he felt sure that all who made use of the books would feel under a debt of gratitude to Mr. Garner and his widow.

Presentation to Mr. W. G. B. Lewis.

The CHAIRMAN said his next duty was an extremely pleasant one, which had been foreshadowed in their last meeting. They all knew Mr. Lewis and the work he had done for the Association in the past. He was elected to the A.A. in 1874, and had been one of its most indefatigable workers during the last fourteen years. The Chairman then presented Mr. Lewis with a cheque for 50*l.* and a copy of "Renaissance Architecture in England." The inscription in the first volume of the work reads:—"Presented to William George Blackmore Lewis by friends and fellow members of the Architectural Association, together with a cheque for 50*l.*, as a token of esteem and appreciation of his work done in the interests of the Association, especially in connection with the studio during the last fourteen years."

Messrs. W. MILLARD and F. G. FELLOWES PRYNNE spoke in high appreciation of Mr. Lewis's ability as a teacher and the work he had done for the Association.

Mr. LEWIS said he scarcely knew how to return thanks for the kindness shown to him in their testimonial. In his work for the Association he had always endeavoured to do his best, and it was by this spirit which others had also shown that the Association had been enabled to accomplish so much without greater financial assistance.

Mr. W. WOODWARD read the following paper, entitled

The Difficulties which beset an Architect in London, with Special Regard to Existing Legislation and other Controlling Authorities.

I suppose as one gets older one chafes at what one conceives to be unnecessary control. Nobody in this room would attempt to deny that there is much virtue in fresh eyes and in fresh minds being fixed upon our work, as the benefit of fresh experiences is brought to bear upon the subject which may be under discussion. It is equally certain that, if each architect or building owner in London were permitted to exercise his own uncontrolled free-will, London would assume a picturesqueness, to say the least, which would be instructive if not satisfactory, and, in considering this question of control, I intend to devote myself not so much to the non-necessity of such control as to the manner in which it is administered.

Any individual who is able to look back, say, for forty years, must be startled at the difference between the way in which building works were permitted to be carried on then, and the way in which they are permitted to be carried on

now. Not only in strictly building works, but in the more general municipal operations in London, a grandmotherly legislation has sprung up and is increasing every day, with the apparent object of stifling all individuality and bringing everybody within a code of Acts of Parliament, rules, regulations and by-laws, most of them the result of officialism and red tape, and many of them the result of that inadequate knowledge which begets nervousness and want of self-reliance.

The architect who has to erect a building in London is pulled up at every stage of his operations by the London County Council, borough councils, medical officers of health, sanitary inspectors, district surveyors, surveyors to freeholders, litigants in "light" cases, party-wall awards, and sometimes, to add to his miseries, an interfering and objectionable client.

One interesting feature of these various items of control is, to my mind, this—that so many of these bodies, in staying the hand of the architect, take upon themselves, sometimes quite unwittingly, responsibilities in case of accident or failure which they need not at all take; in other words, they wander outside their provinces in dealing with detailed matters of construction, &c., which might, and should, be left entirely to the personal responsibility of the architect.

For example, the London County Council forgets, say, in the case of covered ways and projecting iron and glass shelters, &c., that its duty is merely a question of projection beyond the line of frontage, and having found that there is no objection to such covered ways, they might well leave the construction of the work and the safe erection of it to the architect and building owner; but, instead of that, they employ a staff of gentlemen to examine into every minute detail of construction, and thereby, of course, in the case of any failure, they would be held responsible for the results. All this, of course, in addition, entails heavy expenditure on the part of the ratepayers, who have to meet the large establishment charges of the London County Council.

The borough councils are far too particular in many cases as regards the works which come under their control, and we all know that at times we have to meet the fads and fancies—and they are really nothing more nor less—of medical officers of health and sanitary inspectors. Recently, too, an enormous amount of unnecessary work is placed upon the architect's shoulders in preparing plans and sections of water-closets, &c., which a practical-minded surveyor could settle in five minutes without any such drawings.

A word as to district surveyors. Every architect in practice has to meet district surveyors in different districts, and he becomes sometimes painfully aware of the different way in which the provisions of the Building Act are administered by different district surveyors. In some cases the whole intention of the Building Act is maintained, and the public interest looked after without causing any friction with the architect. But in other cases a policy of pin-pricks and unnecessary interferences are carried on by straining to its utmost extent every section in the Building Act of 1849, and where one section does not apparently give sufficient elasticity for worrying the architect and the builder, the district surveyor will sift out some other clause which will better enable him to pursue his worrying tactics.

Surveyors to freeholders, again, take upon themselves responsibilities for construction, &c., which they are not bound in any way to assume. As a rule the building leases are granted for eighty or ninety years, and the reversion to the freeholder does not occur till the end of these periods, and, if a building is erected in a thoroughly substantial manner, with due regard to appropriate architecture, the surveyor to a freeholder ought to be satisfied, and not worry himself and drive the architect to desperation by interferences in minor and trifling matters of detail, which in no way concerns the reversion at the end of eighty years. Here, again, such surveyors accept, in consequence of their interferences, heavy responsibilities in the case of failure, which they need not have accepted.

It may be quite true that, according to the building agreement, the building has to be erected in accordance with drawings to be approved by the freeholders, but that approval only means a general approval, and should not be construed to mean that every minute part of the structure is to be the object of concern and alteration on the part of the freeholders. This is clear by the manner in which drawings are approved by the various surveyors to London freeholders.

Now let us assume that, after many months of patient endeavours on the part of the architect, the production of dozens of unnecessary drawings and the consumption of an enormous amount of unnecessary time with all these various bodies in simply obtaining official sanction to what is proposed, the building starts, and almost before the demolition of the old premises is completed, down come a little army of adjoining owners with purely imaginary grievances as regards interference with "light," and, after obtaining injunctions, which stop all building works, the case is fought out in the Law Courts, with two or three eminent surveyors on one side who swear that if the building goes up as designed the owner of the dominant tenement may as well go and drown himself at once, as he can only die a lingering death in consequence of being closed in in tomb-like fashion, deprived of every particle of "light" and every particle of air that is so necessary to sustain life in London; and, on the other side, three equally eminent surveyors will swear that the erection of the new building will not only not interfere with the "light" hitherto enjoyed by the dominant owner, but his "light" will be very materially improved by the erection of a building double the height of the old building pulled down.

We all know the building has not gone so far without being the subject of sometimes several party-wall awards; and in the communications between architect and architect as regards these party-wall awards, considerable experience is gained as to the real knowledge of architects, and their propensities to adopt the methods of the lawyer in arriving at a conclusion on very simple practical matters; and the architect to the building owner also discovers how varied the ideas of the architect to the adjoining owner are in the matter of fees. I have myself had instances where, with precisely the same award, which I have myself drafted, and with precisely the same work on the part of the adjoining owner's surveyors, in connection with the same building the fees have ranged from two guineas to twenty-five guineas; and may I make an observation upon the additional unnecessary trouble and expense incurred in stamping the awards and counterparts? Personally, I never require this stamping to be done. It is true it only costs 2s., but it is the unnecessary trouble and time which it involves of which I complain. I have been advised that, inasmuch as any dispute as regards the awards is referable to the third surveyor named therein, it would not be necessary to produce the document in a court of law in the first instance, because if a dispute arose upon the award of the third surveyor, that document would be stamped, and could be produced in court when an attempt was made to upset it.

Then comes the interfering and objectionable client, whose doings can, of course, be put down to entire ignorance of building matters; but they are none the less vexatious and in most cases unnecessary.

What should be the limits of legislation are well defined, I think, by Humboldt, who says that "the law should prevent one man from wronging another, and should protect the rights and liberties of all." If the law attempts to do more or less than this, we are told it will be liable to be harmful rather than useful. Whether this limitation is correctly defined or not, it would appear to be applicable for the guidance of those who wish to make building laws and regulations workable and useful, but we all know that frequently Humboldt's dictum is ignored altogether by many of our controlling authorities.

You will now expect me to make some practical suggestions for improving the present state of things; and I would suggest the following, leaving my hearers to fill in the voids.

Let us take the London County Council. I would suggest that the Building Act committee be put an end to, or reduced to, say, four members, these members being selected specially for their knowledge of building operations, and for their non-political tendencies. In the case of the new Building Act (Amendment) Act, as regards risks from fire, there can be no doubt whatever that the London County Council are unnecessarily worrying, simply because an unfortunate fire occurred in Queen Victoria Street, which entailed a loss of life, for which the London Fire Brigade were not wholly irresponsible. The London County Council requirements, in the shape of lobbies, ventilating trunks and other absolutely unnecessary and untried ideas, are the source of a large expenditure of money and serious interference with the building, and I feel quite sure that, if the architects were left to themselves to provide reasonable means of escape in case of fire, far better results would be obtained.

The setting back of the building line at the rear of certain buildings, and the angle of 63½ degs. is a monstrous interference with the disposition of property. The control exercised by the London County Council over simple projections at the rear, or porticoes and covered ways in the front of buildings, should be shifted from that central body to the surveyors and councils of the respective local boroughs, who are far better able to judge of the effect of such additions than the central body, who can know very little indeed of the local requirements of such a vast area as London.

For a sample of the petty interferences of local authorities I would point to a case in Charing Cross Road, in which a bookseller was summoned before a magistrate by the Westminster County Council for projecting his book-stall some 18 inches beyond the line of frontage, while, at the same time, that same Westminster City Council permits hundreds of yards lineal of the footways of the Strand and other congested thoroughfares to be occupied for hours by intending visitors to the theatres, music halls, &c. A more glaring instance of the petty interferences of the London County Council was brought before the Lord Chief Justice and Mr. Justice Darling on the 17th of last month, where the Palace Theatre Company had been summoned in consequence of an advertisement in front of the theatre, which had been certified to be in some parts 14 inches and 16 inches, and in others 22 inches in front of the building line. Many of us have seen the very artistic advertisement referred to, and the idea of interfering with it is, as I say, monstrous. The fight in the High Court is as to whether the erection was a "structure" or not within the meaning of the Act. The case is not yet decided, so that all I can say is, for myself, that the idea of trying to convert that temporary and movable advertisement into a "structure" shows the pains the London County Council put themselves to to secure a conviction on so trifling a matter.

Take, again, their requirements as to theatres. We all agree, of course, that proper means of rapid exit should be provided in every building frequented by large numbers of the public, but the Council does not stop there. They must needs grope about in theatres to look after gas taps, opening of doors in certain directions, which would probably be more mischievous in case of fire than if they had let the old doors alone. Certain staircases, in the eyes of the Council, are safe if they have a certain tread and rise and a certain number of steps in a flight, and absolutely unsafe if half an inch or so is taken from the tread or added to the rise. But why an additional step or two should make the building unsafe only the London County Council body could say.

Then, again, the London County Council requirements in their building agreements for letting land are too much on one side. The conditions in the building agreements of the great ground-landlords of London are, Heaven knows, sufficiently stringent, but the London County Council requirements are such that every building owner, with due regard to his financial prospects, would hesitate before binding himself to such one-sided conditions. If the great ground-landlords of London get the ground rent they stand out for—and of course they do, or they will not let the property—why should they impose unreasonable conditions when, as I have said before, their reversion is eighty or ninety years hence? And in the case of failure on the part of their lessees these same ground-landlords would be only too glad to step into the shoes of their lessees and take over the building, for which they could obtain a rack rent instead of a ground rent.

Take, again, the borough councils. Simply because a man desires to make some little alteration to the drains of his dwelling-house, he has to go through the paraphernalia of submitting plans and sections, all in duplicate and at considerable cost, because the councils will not leave the matter in the hands of their surveyor, who, after looking at a rough idea of the drainage, could take his pencil and make such alterations as he might desire in ten minutes, leaving the sanitary inspector to see that the more important requirements were carried out, such as the main drain, the inspection chamber, the disconnecting trap and the ventilating pipe. But when one finds medical officers of health requiring walls to be built across areas for fear that the male occupants of water-closets on one side of that area might look at the female occupants of the water-closets on the other side of the area, I think grandmotherly legislation is going a step too far. Much of this unnecessary interference on the part of borough councils could be obviated if their works committee and public health committee were reduced to, say, four members, instead of the unwieldy

numbers in committees composed mostly of men who have not the least knowledge of what they are considering, but have the power to air their fads and fancies to their hearts' content.

As regards the district surveyors, I would frame another Building Act, limiting their jurisdiction very much indeed, and only securing that the building should have its walls and floors of a substantial character.

As regards rights of "light," I would prevent any question on that subject being brought before learned judges in the High Court who have never seen the buildings in question, and who are quite unable to understand the effect of a new building upon the "light" of the dominant owner. Such matters should be left to the decision of a tribunal of experts, similar to that which works under the Building Act of 1894.

As regards surveyors to ground landlords, I think it would do well to both sides if some case of unnecessary interference and unwarranted straining of the building agreement clauses were fought out in a court of law. We should all then know better "where we are."

I am not aware, in looking back forty years, that London was a very much worse place then, under the Metropolitan Board of Works and under the old vestries, than it is now, under the swelled body at Spring Gardens, and under the equally swelled bodies called borough councils. Regard for open spaces was secured by the then Lord Brabazon (now the Earl of Meath), the chairman of the Metropolitan Gardens Association; and although the London County Council takes credit for maintaining as open spaces what would otherwise have been built upon, much of that for which they take credit is due to the Association I have referred to; in fact I was myself, as honorary architect to that Association, the principal mover in preventing the London County Council building upon the triangular plot at the junction of Oxford Street and Bloomsbury Street; and equally in preventing the erection of a block of buildings, projected by the London County Council, right in the centre of Piccadilly Circus.

In all these matters I can, as I have said, see a growing consumption of red tape and officialism, in fact, ink and paper instead of the sound practical knowledge which existed thirty or forty years ago, and which I hope soon to see again revived; but this end will not be attained unless active opposition is made to the unnecessary interferences to which I have referred. Large building speculators are, to my knowledge, shutting up their pockets and thereby adding to the long list of unemployed in the building trade, simply because they will not submit to the delays, petty interferences and results of inadequate knowledge forced upon them by those various bodies. Surely some credit should be given to architects of repute and experience for knowing nearly as much about healthy and sound construction of a building as an assembly of greengrocers and cheesemongers, or perhaps youthful scholars who come from technical schools, armed only with superficial knowledge, without any experience in active building operations, but who are led away by the crude ideas of faddy councillors who do no good whatever to buildings in course of erection, but, on the contrary, manage to make them inconvenient inside and mutilate them outside.

It may be that there are architects who do not object to this infantile instruction on the part of these constituted authorities, and who know that the more drawings they make to satisfy the whims of such authorities the more money they get from their clients; but I thoroughly believe that the majority of architects would prefer to get on with their building without such interferences and without such opportunities of adding to their professional charges.

We know, going from London to the provinces, what wretched results have arisen from the interferences of the Local Government Board in building operations, and especially in cottages. We all remember the picturesque cottages throughout the kingdom, which have lasted for two or three centuries, which are generally composed of wood, with thin party divisions and picturesque tile roofs and half-timbered exteriors, and that they have not led to any considerable loss of life from fire, and I believe that the only few losses of life through fire in these cottages throughout the kingdom has been the result of inebriety on the part of the occupiers; the Local Government Board, however, must needs try to apply to these country cottages the impossible provisions of the London Building Act, with brick external walls, the absurd carrying up of party walls above the roof, and other perfectly ridiculous requirements which have done so much to stop the building of country cottages and the consequent loss of many a decent family, who come up to London

because their landlords cannot afford to properly house them at the rents the poor people are able to pay by reason of these unnecessary and uncalled-for requirements of the Local Government Board. I hope that this meeting will discuss the subject in a bold and fearless manner, and whether the meeting agrees with me or whether it disagrees, I can only say that I have prepared this short paper with much pleasure for the Architectural Association, and I hope that if it does no good it will do no harm.

Mr. J. DOUGLASS MATHEWS proposed a vote of thanks, and said they all no doubt agreed that there was more legislation than there was any necessity for. In former times between architects and between other professions there was more honourable understanding than there was in the present day; the simple adjustment of matters under dispute had been taken away from individuals by grandmotherly legislation, and the result was that official control was forced upon them, and certainly the life of an architect was not an enviable one. He attributed this to the way in which the Acts of Parliament and by-laws were framed. The more Acts of Parliament there were the greater seemed the difficulty in interpreting them; but, on the other hand, in dealing with the buildings of London, they could not shut their eyes to the fact that some controlling body was essential. Mr. Woodward had suggested a committee of four would be able to deal with the work undertaken by the London County Council. The speaker said he did not envy the four members of such a committee, nor did he think better administration would be the result, since it was not likely that even a small committee would always agree. The borough councils were necessarily strict in their authority, for they must remember, he said, that the borough councils were charged with certain duties, and therefore they were bound to make stringent rules as to how work was to be carried out. There was no doubt, however, that if there could be a little more common sense and a little less law it would be a good thing. Alluding to the duties of district surveyors, the speaker said in former days the appointment to such a position was looked upon as the blue riband of the profession of architecture. Many distinguished men had acted as such, but some people nowadays seemed to think the district surveyor was a kind of policeman. There was also the idea that they were the servants of the London County Council, but district surveyors were not mere inspectors, since their duty was to administer Acts of Parliament.

Mr. GEO. HUBBARD seconded the vote, of thanks, and cited some interesting cases which illustrated the unnecessary restrictions put upon architects in various sections of the London Building Act.

Mr. H. LOVEGROVE agreed with the author of the paper that the insistence upon drawings of sanitary details by borough councils might be obviated. He thought, too, more discretion might be left to surveyors.

Mr. C. H. BRODIE said he wished to say that both the last speaker and Mr. Woodward were unfair in their remarks on the borough councils. The regulations in sanitary alterations were handed over to those authorities by the London County Council, and they were compelled to see them carried out. He asked what was to be the outcome of the paper and the discussion, and whether they were going to try and remedy the hardships under which architects practised. He ventured to suggest the following resolution:—"That this meeting of the Architectural Association, having listened to a paper on the difficulties which beset an architect in London and a discussion thereon, declares its conviction that the ratepayers of the Metropolis are put to a large amount of unnecessary trouble and expense by the excessive and often absurd requirements of the various authorities having control over building and sanitary works."

Mr. W. WOODWARD seconded the resolution, which was carried *nem. con.*

Mr. B. J. DICKSEE and Mr. SAXON SNELL supported the vote of thanks to the author of the paper.

The CHAIRMAN said they had had the good fortune of hearing several district surveyors at the meeting, and it must be gratifying to the younger members to find they were not such terrible people as they were often made out to be. Tact was of the first importance when they had to do with people placed in authority, and insured a way out of many difficulties.

A Tablet is to be affixed to No. 18 Kensington Square by the London County Council, which was at one time the residence of John Stuart Mill.

ARCHITECTURAL ASSOCIATION OF IRELAND.

AT the meeting of the Architectural Association of Ireland on the 27th ult. Mr. E. St. John Lyburn, mineral expert, Department of Agriculture, delivered an address on "Irish Stone Quarries." Mr. Lyburn said he agreed with the opening address given by their president, Mr. Holloway, in impressing upon the people the importance of using Irish stone. Ireland must look to the rising generation of architects for the utilisation of her stone deposits. She was now in a better position to supply the demand owing to the amount of capital which had recently been put into the mineral development of the country. It was no longer necessary for architects to import their marbles from Aberdeen and other countries. In Galway they had now one of the most up-to-date granite works of its size in any part of the world, and were able to supply polished or rough material in any quantity. The limestone deposits were now being fully developed. The sandstone quarries of Mount Charles were being fully worked. Corporations and others wanting paving setts need not turn their attention to foreign setts, as they could be supplied by a number of quarries. As regards marbles, he had no hesitation in saying Ireland was one of the richest countries in the world. The lecturer pointed out the great opportunity which existed in this country for up-to-date cement factories. They were importing about 100,000 tons of cement annually. Attention was also called to the fact that at present no glazed bricks were made in Ireland. There was a fallacy that Irish clay would not take a glaze. The Department of Agriculture had exploded that idea.

Mr. Allberry proposed and Mr. Bradbury seconded a vote of thanks to the lecturer.

ORDNANCE SURVEYORS.

THE following official statement has been issued respecting pensions for civil assistants employed in connection with the Ordnance Survey:—The Treasury cannot, of course, admit that any of the temporary Civil assistants who have been appointed since January 4, 1873, have any right to be pensioned on retirement; but at the same time, after considering the nature of the work of the Survey, the Treasury considers that there are grounds to justify the grant of pension rights under certain conditions to a proportion of certain classes of the staff.

Of course, it will be necessary to retain a considerable number of unestablished employes.

The following are the conditions to which the Treasury are prepared to assent:—

In future every Civil assistant shall enter the service in an unestablished capacity, as at present, and shall not be eligible for the establishment until he has served for fifteen years. At the end of that period, if the Department desires to retain his services, he may be placed on the establishment, subject to his obtaining a certificate of qualification from the Civil Service Commissioners. His pay will thereafter be fixed at a rate of 5 per cent. below that which he would be receiving if he were employed in an unestablished capacity; and on his final retirement he will be pensioned on the whole of his established service and on half of his unestablished service.

It is not intended to include either the artificers, labourers or women employed on the Survey in the class to be entitled to pension.

The above provisions will be applied to members of the existing staff who are not already entitled to pension in the following manner:—

1. Those who have served less than fifteen years will continue on their present footing until they have completed that period.

2. Those who have already completed fifteen years' service may, if recommended by the director, elect to be placed on the establishment, subject to their obtaining the necessary certificate from the Civil Service Commissioners. A similar option will be offered to those who have served for less than fifteen years, on completing that period.

3. On being placed on the establishment their pay will be reduced as follows:—

Those who have served less than twenty years 5 per cent.
Those who have served twenty years and less than thirty years $7\frac{1}{2}$ per cent.

Those who have served thirty years and upwards 10 per cent.

4. On their final retirement they will be pensioned on the whole of their service from the date when they completed

fifteen years' service and on one-half of the previous service.

5. Those who are now qualified for the establishment must exercise their option before April 1 next.

6. These provisions will not apply to those officers who are already holding posts on the establishment entitling them to pensions, but on vacancies occurring in these posts they will not be filled up.

SOCIETY OF ANTIQUARIES OF SCOTLAND.

AT the annual general meeting of the Society of Antiquaries of Scotland the secretary submitted a report on the progress and work of the Society, from which it appeared that its 127th session opened with a membership of 701.

The fortieth volume of the Proceedings, of which an advance copy was on the table, contains twenty-four papers, the most important of which is a description, very fully illustrated, of the excavation by Mr. Alexander Whitelaw, of Gartshore, F.S.A.Scot., of the Roman forts on Bar Hill, Dumbartonshire, communicated to the Society by Mr. G. Macdonald, LL.D., and Mr. Alexander Park, F.S.A.Scot., with a note on the architectural remains by Mr. T. Ross, architect, F.S.A.Scot. These excavations have brought us for the first time into certain contact with the handiwork of Agricola—have yielded, besides an abundance of the usual, and some very unusual, relics, the largest and finest collection of Roman architectural fragments hitherto found in Scotland. Special mention was also made of a paper by Mrs. Place, of Loch Dochart, describing the clearing out of the ruins of the sixteenth-century castle on the Isle of Loch Dochart. An ornament to the volume is an illustration of the beautiful bust of Paul Jones by Houdon, and equally noticeable is the fine series of illustrations to Mr. A. J. S. Brook's paper on two table clocks in the museum. The excavation of the Roman military station at Newstead, Melrose, begun in February 1905, has proceeded steadily during the year. A preliminary report of the results, which have far exceeded the most sanguine expectations, will be presented to the Society at the first meeting of the session, on December 10, by Mr. James Curle, to whose unremitting exertions the splendid success of these operations is due.

MELBOURNE TOWN HALL COMPETITIONS.

IN the latest Journal of Proceedings of the Royal Victorian Institute of Architects is the following statement:—

In connection with the competition for the extension of the Melbourne town hall it was reported that negotiations between the Institute and the town hall committee had been broken off. Originally, when the town hall committee prepared its draft conditions a copy was forwarded to the Institute. After careful consideration the Council suggested numerous amendments, all of which, with one exception, were adopted by the town hall authorities. The amendment not accepted dealt with the substitution of a board of eight, viz. five members of the City Council, the city surveyor and two members of the R.V.I.A., in place of a board of five, viz. two members of the City Council, the city surveyor and two members of the R.V.I.A. The original intention was that the board's functions should cease when it had reported that the designs submitted complied with the conditions as to size, cost and other details. The Institute maintained that if the board were enlarged both in numbers and functions the competition would result in a better class of design being submitted. The board, as suggested, was to have power to recommend designs in order of merit. The town hall committee declined to accept this suggestion, and, in order that there might be no misunderstanding, the president, vice-presidents and hon. secretary met the town hall committee and discussed the situation. The town hall committee stated that if the R.V.I.A. would accept its original proposal there would be no doubt that after the report as to compliance with the conditions had been sent in the board would be asked to further advise. The committee of the Council asked that this assurance should be stated in the conditions. But as this request was refused there was nothing left save to ask that any reference to the R.V.I.A. in the conditions of competition should be deleted. It was clearly stated to the committee that the City Council would not let the right of selection pass out of its hands. Therefore any architect competing must distinctly understand that the R.V.I.A. as a body had nothing to do with the competition.

THE VALPARAISO EARTHQUAKE.

THE following letter from Mr. George L. Duval, treasurer of the Merchants' Association, who was on his way to Chili at the time of the disaster, gives information concerning the calamity:—

The published reports and illustrations of the havoc wrought by the earthquake will give but an inadequate idea of the character and extent of the damage done. One must see it in its entirety to appreciate the devastation. The old, original part of Valparaiso was located upon solid ground on the only section of the bay partly sheltered from the violent northerly winds, which expose the shipping and water-front to great damage every winter. This section, called the Port, enlarged by reclaiming lands from the bay, is the fiscal, financial and commercial centre. The custom house, Government stores, courts, post office, city hall, the banks and large foreign houses are here located. Except in isolated instances buildings erected on natural land in the Port have escaped destruction, while those constructed on the reclaimed land are badly shattered. Thus our building on the land side of the Calle Blanco is one of the oldest in Valparaiso, reinforced by heavy Oregon-pine timber and steel beams, and remains intact, while across the street Williamson, Balfour & Co. have had to desert their office, and Duncan, Fox & Co. have replaced the front and rear walls, which fell, by temporary coverings of galvanised iron.

The damage by the earthquake throughout the zone affected has been in proportion to the character of the soil built upon and the character of construction. Immunity for many years from serious shocks developed carelessness in construction which has now paid the penalty. From the central plaza, de la Victoria, south and east, covering the entire district known as the Almendral and Bella Vista, the prospect is the most dreary imaginable. Here and there some insignificant buildings which capriciously escaped only emphasise the appearance of desolation. In this district fire finished whatever the earthquake spared. It spread over fully one-quarter of the area and it is impossible to estimate the relative damage.

The bay front of the Almendral and Bella Vista district and extending back for an average of a quarter of a mile to the Calle Victoria, the central thoroughfare, gave its modern character to Valparaiso. Here entire blocks of solid three and four storey stone structures had been erected in the past twelve or fifteen years, all of which have been totally destroyed. From the Calle Victoria back to the hills, an average width of a quarter of a mile, was the populated part of the city on the plane where the poorer classes were crowded in. This became the scene of the greatest distress. The former inhabitants have appropriated every available open space on which, with the assistance of the authorities and relief committees, shacks of wood and galvanised iron have been erected and are the homes to-day of about 50,000 people, a good proportion of whom are accustomed to genteel and even luxurious surroundings.

It is not the poorer classes who have suffered most from the disaster, as they, being provided with shelter, food and clothing for the time being, are in little worse condition than they were before, and have, besides, the certainty of plenty of work at good wages. The great burden really falls upon the middle class, on a vast number of clerks and employés whose savings were invested in their homes, which are now destroyed, and on the shopkeepers who lost everything.

The hill residential section, where the more opulent foreign colony dwells, was not badly damaged, although many families lost their homes and are now doubled up with their neighbours. The neighbouring cemetery hill seems to have been a focus of the shock. No tomb or monument escaped serious injury; most of them are wrecked, and the niches employed by families having no plot of their own, situated on the brow of the hill, were undermined, and with their contents fell to the plain.

The earthquake clause in the insurance policies almost certainly exempts the companies from claim for damage by fire which immediately followed the earthquake. The companies, however, make the formal announcement that they will not respond for any claims whatever, holding that all the fires were caused by the earthquake. It is expected, nevertheless, that they will be obliged to differentiate and pay at least a portion of the loss by fire which occurred several days after the earthquake and after the original fires were under control. These later fires are variously ascribed to short circuits on resuming electric service, smouldering cinders and to incendiaries; but, whatever the

cause may be, the companies will doubtless find that the payment of these losses is a good basis of compromise and the best means of demonstrating the value of insurance to many who are rendered sceptical by the general repudiation as announced.

The Welicias section, in the south-east extremity of the plain, was badly shattered and shows enormous damage by earthquake only. The more southern extension, at the Baron section, shows scarcely a sign of commotion, and thence for a stretch of three or four miles there is little evidence of disturbance until reaching the suburban sections of Miramar (slightly affected), Vina del Mar (seven miles from the port, badly shaken), Poblacion Vergara, Chorillos and Miraflores, a succession of ruins leaving hundreds of families homeless.

In San Francisco the damage by earthquake and by fire was estimated at 1 to 9 respectively. Here I should say the reverse will hold. The fire department is voluntary but efficient, and but for the breaking of the water-mains, would undoubtedly have checked the flames. The new water system of Valparaiso is highly efficient, but the mains could not withstand such a rude shaking. They were set right, however, in forty-eight hours and in complete working order four days after the catastrophe, which is a very creditable showing.

The wonderful work done by Captain Luis Gomez Carreno of the Chilean navy, who was vested with supreme command under martial law, in maintaining order and establishing sanitary conditions, has drawn unstinted praise from all classes. The emergency developed the man. Captain Carreno has been ordered away to recuperate his health after the severe strain of the last six weeks without rest.

An inspection which I made some days ago of the principal encampment on the Avenida Brasil, where destitute thousands of all classes are temporarily housed, disclosed conditions of surprising care and cleanliness, a guarantee against sickness and epidemic which many feared as the worst effect of the disaster.

Coming down the coast, the reports of lawlessness and horrors immediately following the earthquake were sensational, but in the main unfounded. There were looters as there were in San Francisco, but they were summarily dealt with by Captain Gomez. Some fifteen or twenty were shot. Reports magnified this to 500. The resolute hope and cheerfulness of the people, Chileans and foreigners alike, is amazing and encouraging. It doubtless reflects the conditions which followed the calamity in San Francisco and shows a creditable spirit of emulation.

The Government plans to expropriate the ruined district, and either to lay out broad avenues and parks, disposing of the remainder at prices which will probably recoup the entire outlay, or to employ part of it in building a sheltered port instead of carrying out the Krause scheme of a new port, which is of doubtful feasibility. The objection to this plan of a port in the Almendral is that the entrance to the new port would be in the most exposed part of the bay, and that it would mean the relinquishment of the present custom house and big public stores, and would measurably contract an already limited plane which the importance of Valparaiso has outgrown. Another plan, to build the sheltered port under the hills in the extreme north-west of the port district, is favoured by many because it would have a maximum of natural protection from the northerly winds, preserve the existing conditions as to Government buildings, and make of the wrecked district a valuable shopping and residential section. Whichever plan is adopted, the Valparaiso of the future is sure to be a more attractive place than the Valparaiso of the past, and the great resources of the country and its phenomenal prosperity for the past five years will justify the cost.

EARLY CHRISTIAN IVORIES.*

I HAVE long held the opinion that with regard to very many of the early Christian ivories, instead of carrying them back to the earliest speculative period, instead of assigning them to the age of Justinian, we ought rather to postpone their dating from one to perhaps three centuries later, to admit that we cannot be precise even within these limits, and to hold that they are the work of the monasteries carrying on for centuries favourite types and traditions,

* From the Cantor lecture delivered at the Society of Arts by Mr. Alfred Maskell, F.S.A.

copying, adapting and reproducing from examples which they happened to possess, and from notes and observations made on their travels or brought by stranger pilgrims and missionaries.

Within a century of the acceptance of Christianity monasteries had been founded in the West in considerable numbers, and continued to increase. It would not be difficult to compile a list of over 1,000 founded between the fifth and eighth centuries. The great monasteries were not, as nowadays, imposing buildings, surrounded perhaps by a park, but vast walled-in enclosures, comprising and governing almost a town, such as we find to this day in Russia. "In the shades of its walls," as Montalembert says, speaking of one of them, "there dwelt a whole nation." They were situated often in remote and secluded places; comparatively seldom in the cities or their neighbourhoods. They were self-supporting, and we know that they were hives of industry, especially in the arts and in the making and illuminating of manuscripts. These latter required sumptuous bindings, and I think it is hardly likely that the monks would have sent to the towns for them. It is possible that the great cathedrals and churches of the Empire, numbering by the time of Justinian over eighteen hundred, may also have required splendid book-covers and reliquaries, but even if so, it is far more likely that in their case these would have been supplied by the monasteries. There were immense establishments as early as the time of St. Martin of Tours [A.D. 400], the apostle of Gaul, in the south of France, in Calabria and Otranto. Greek monks of the order of St. Basil came from the East, from the Nile, from Asia Minor, from Mount Athos to fill the monasteries of the West. They were workers, and they fostered and preserved what arts existed in the troublous times of the seventh and eighth centuries, when the great arts in Europe were almost non-existent. They were the artists, the miniaturists, calligraphers and sculptors to whom we owe many of the ivory carvings we shall presently consider. Not only Greek monks and artists, but crowds of Irish and Anglo-Saxon missionaries swelled their numbers, and contributed, under Byzantine influences, to form a mixed art, tempered, as it could scarcely fail to be, by the Western surroundings, by the still existing monuments of classic times and the first Christian ages, and by the art of the calligraphers and miniaturists of the Celtic and Anglo-Saxon MSS. There must have been a struggle between these Eastern and Western forces even if the East dominated, and there would always have been a special incentive to interchange and to adapt from the MSS. and from the works of art—scanty in number—which the strangers brought with them, or the sketches they had made on their journeys. The chronicles of monasteries, such as those of St. Gall, of Cluny or of Monte Cassino, abound with references to the work of their monks in sculpture as well as calligraphy. From Leo of Ostia, the chronicler of Monte Cassino, we learn that great works were carried out—carvings in wood and ivory—and we are told that they were executed by Byzantine and Moorish artists. One name we know, Tutilo, the monk of St. Gall, in the ninth century. Nor must we forget the founder of the great order of St. Benedict in the sixth century, whose rule expressly enjoins the cultivation of the arts. Doubtless, also, the iconoclastic persecution of the eighth century had the effect of driving numbers of artist monks from the Eastern to the Western monasteries. In those two centuries, so commonly called the Dark Ages—dark, indeed, they were outside the limits of the peaceful monasteries—it is certain that the art of ivory sculpture must have been assiduously practised in these retreats, if only for the adornment of the magnificently-illuminated manuscripts. Then came the Carolingian epoch, the Western Empire of Charlemagne and his successors, under whose rule the monasteries flourished more than ever. It is to ivories of this period that our attention will be frequently called. We shall be obliged in many cases to be contented with the general term Carolingian, for, owing to the conservatism and persistent copying and adapting, national variations were not yet distinct enough to justify with certainty a more specific one. Nor do I think we need hesitate even in the case of such Oriental inspiration, tempered by models taken from nearer home, as in the Lorsch book-cover. We may remember that we call English the work of Solon, of Herkomer or of Tadema. Shortly, it is not disputed that from very early days, before the time of St. Benedict, great monasteries were firmly established. There must have been in them a high degree of cultivation, for even in Merovingian times and until the thirteenth century, nearly all were not

only founded, but were also largely peopled by great princes and nobles. Contemporary writers testify to this.

In ivories, certainly, from the time of Constantine to the Byzantine Renaissance, it is impossible to ignore the persistence of certain types carried from country to country, copied and imitated during many centuries. If there are variations they are not great, for models were probably scanty in number. With the Byzantine Renaissance that art attained its zenith; but the examples of ivories are not many in which we find the qualities of this Renaissance. They are rather of the class produced under the conditions upon which I am now insisting. Certainly, when we come to the ninth century or a little later, Oriental workmanship is easily to be distinguished. The Carolingian sculptors evidently availed themselves of models which we can trace from the still existing examples. I shall refer presently, for instance, to the Carrand St. Paul diptych, the Bodleian book-cover and others, and it is of course from classical sources that the characteristic borders were in some cases directly borrowed. There is little evidence of originality and creative genius. The artists borrowed freely here and there: from the squat figures of the sarcophagi, whether directly or indirectly filtered through the mosaics. They availed themselves of Anglo-Saxon and Celtic MSS. with their foliated borders, or the looped curtains of classical art, and adapted the figures themselves; in fact, from whatever fell into their hands, whether originals or sketches. We seem to find ourselves frequently in the presence of the natural born artist—I ought perhaps to say of the amateur rather than of the cultivated professional. Though there were no doubt schools or ateliers in the monasteries, much as now would have been left to individual initiative: the designer and the sculptor were often, I imagine, not the same or of equal talent. For instance, in the Paris book-covers of the Lupicinus gospels, the sculptor seems to have carried out to the best of his ability designs given him perhaps by the graphic artists of the frescoes. We can well imagine the carver of the capitals of columns trying his hand at this smaller and more delicate work, doing his best but proving in the result that it was not in his line. It is difficult to believe that the sculptor of the Paris book-covers could have had before him the Berlin book-covers if it were from these that he drew his inspiration, or the originals of the small surrounding panels. Of the work of such exceptional artists as the sculptors of the Lorsch tablets or the Munich Ascension plaque, little indeed seems to have come down to us. Here indeed is independent talent of a high order both in design and execution, and if they showed a fondness for and imitated the style of the sarcophagi it is to be remarked that it is strange they should have restricted their choice to comparatively so few models and subjects. We rarely find instances of the symbolism, especially that derived from pagan sources; the vintage scenes, the little genii gathering grapes, the sheep and lambs and rams, the goats, lizards, birds, the variety of crosses held by our Lord, the Good Shepherd, and so on; nor ornaments such as the strigil, which one would have thought they would have seized upon and adapted. Nor when so persistently copying and adapting do they seem to have availed themselves much of the many subjects, ornaments and styles of treatment to be found in the mosaics. The few to which they limited themselves suggest all the more that the sculptors were men shut up in remote parts of the country having access only to the few pieces of small sculpture and to the illuminations of MSS. which found their way to the monasteries or were produced there. I find little evidence to force the conclusion that the ivories in which we see resemblances to the art of the sarcophagi were necessarily executed directly from them, and still less that our ivory sculptors were acquainted with, or had ever visited the catacombs, of whose paintings and ornaments, abundant as was the material, there are no traces of influence whatever. We must remember also in the consideration of the examples which some authorities will have it must be given to Rome that there were other places where sarcophagi abounded, the models for which very frequently came from the ateliers of Rome. In taking into account the influence of Anglo-Saxon and Celtic MSS., we must be careful to bear in mind the Oriental sources—Byzantine, Coptic or Syrian—from which the miniatures and ornaments of these MSS. were themselves derived.

The Painting known as *A Spring Evening*, by the late Arnold Böcklin, has been purchased at the Munich Exhibition for 5,000l.

THE NATIONAL GALLERY.

THE following additions have lately been made to the National Gallery at Trafalgar Square, and the National Gallery of British Art, Millbank:—

"Lady Cockburn and her Children," by Sir Joshua Reynolds, P.R.A. This picture was bequeathed to the National Gallery in 1892 by Lady Marianna Augusta Hamilton, but it was proved in 1899 that that lady had no power to make this bequest to the nation, and the picture was accordingly withdrawn from the collection and handed over to its proper owners. It was subsequently purchased by Mr. Alfred Beit, who generously bequeathed it to the National Gallery. The picture has now been rehung in its former position in Room XVIII. at Trafalgar Square.

The two following works have been presented by the National Art Collections Fund:—"The Harbour at Trouville," by Eugene Boudin; "Portrait of Henry Newbolt" (a pencil drawing), by W. Strang, A.R.A. The former work has been hung in Room XVII. at Trafalgar Square; the latter will shortly be placed in the Gallery of British Art at Millbank.

Mrs. Furse has lately lent a large unfinished picture of "Lord Roberts, with Indian Troops," by the late Mr. C. W. Furse, A.R.A. The picture is hung in Room VI. at Millbank.

TESSERÆ.

Painting and Poetry.

FROM the acknowledged similarity in the principles and effects of the two arts of painting and poetry, the one has been called mute poesy and the other speaking picture. Such is still the very great diversity in their modes and means of exerting their powers that the study of one can, at best, be considered as a general only, and not at all as a technical help to invention in the other; the roads they take, though parallel, lie as entirely apart and unconnected as the senses of hearing and seeing, the different gates by which they enter the mind. The one operates in time, the other in space; the medium of the one is sound, of the other colour, and the force of the one is successive and cumulative, of the other collected and instantaneous. Hence the poet, in his treatment of a story, is enabled to bespeak the reader's favour by a graceful introduction, describing his characters, relating what has already happened and showing their present situation, and thus preparing him for what is to come, to lead him on, step by step, with increasing delight, to the full climax of passion and interest; whilst the painter, on the contrary, deprived of all such auxiliary aid, is obligated to depend on the effect of a single moment. That, indeed, is a critical moment, in which all the most striking and beautiful circumstances that can be imagined are concentrated—big with suspense, interest, passion, terror and action; in short, the moment of explosion, which illuminates and brings at once into view the past, present and future, and which, when well rendered, is often more equivalent to all the successive energies of the poet. The contrariety in their means in some degree separates and limits their fields of operation, and (though there are many subjects equally adapted to both arts) calls, in general, for a different principle in the choice of them. The most striking beauties, as presented to one sense, being frequently wholly untranslatable into the language of another, it necessarily results that many interesting passages in history and poetry are incapable of affording more than a bald and insipid representation on canvas. Of this description is the incident in the Iliad, where one of Priam's younger sons, fallen before the superior force of Achilles, solicits his life on account of his youth. "Wretch!" exclaims the furious hero, "dost thou complain of dying, when thou knowest that Achilles must shortly die?" Such, also, is the celebrated passage in Corneille's "Horatii," where the father of one set of the combatants, on being informed that his son, left single against his three antagonists, had turned his back, appears much agitated and enraged; and when one of his attendants asks, "What should your son have done against such a disparity?" instantly retorts, "He should have died." Enthusiastic strokes of energy and sublimity like these irresistibly command warm and universal admiration; but, unfortunately for the pencil, they defy utterance by any power but words.

Locks in Antiquity.

Denon has engraved an Egyptian lock of wood of very clumsy construction, and such were those of the Greeks

and Romans, or at least some similar. Bars or bolts suspended by chains were drawn backwards or forwards by means of a hook or key, or raised out of a latch and let fall, or a bolt cogged was caught in one of the teeth and drawn back by the key. Sometimes there was a box with a pin, which box received a bar that the pin (balanos) confined. A key in the form of a vice, called balanagra, disengaged the pin, and the bar fell or turned aside. This is the best explanation which can be given of the ancient locks from the descriptions, which are exceedingly obscure. But wooden locks existed in the Highlands, so artfully contrived by notches, made at unequal distances, withinside, that they could only be opened by the wooden key which belonged to them. These were probably Celtic, for locks and keys of metal are found in British towns occupied by the Romans. Before the use of keys and locks they fastened their doors with knots, according to fancy, which were very difficult to unloose, because the secret was known only to the makers. The locks upon scrinia resemble our trunk locks. Those at Herculaneum are very awkward. Du Cange mentions the pessulus versatilis, or turning-latch, box-locks, chain-locks or padlocks, as early at least as 1381; gate-locks, the speldolum or crook by which a chain was let into the lock, and the vertevella not easily defined. The lock and key of Taillebois Castle was vast and substantial, in the form of a fetter-lock. The locks of our old church doors and chests familiarly show their construction. On opening a small ancient brass ring lock the letters on each ring were thus placed together E:R:C:O:L. Nares mentions also a padlock formed of rings marked with letters (AMEN), which when placed to form the word would open, but not otherwise. This therefore is not a modern fashion. It seems that on chamber-doors there were often two locks, one called the privy-lock.

Lawrence's Difficulties.

Much has been said of the pecuniary embarrassments of Sir Thomas Lawrence, and it is to be lamented that the evils of getting into debt were experienced by him at so early a period that nothing short of his passion for his profession could have made him become a great painter. Harassed by day with duns, and fleeced by lawyers and bailiffs, for every pound he owed he paid five; yet such was his resolution that the lost daylight was compensated by his working at night. He has been known, whilst residing in Jermyn Street, and subsequently in Old Bond Street, to paint by the overpowering blaze of a large screen reflecting several Argand lamps, from nine or ten at night until three, four or five in the morning, and after a few hours' rest, take up his palette again, be subject to his daily interruptions and annoyances, and again repairing these evils by his nightly labours until his visage became pallid as that of a marble statue. It is almost appalling to think what a victim the painter for many, many years had been to the cruelty and rapacity of those who live upon the distresses of men like him, who, without even the imputation of vice, are libelled with the want of principle because, being in receipt of a large income, they cannot pay debts thus charged with the exactions of law. He was passive, and submitted to every exaction without a murmur; the moment he had silenced a creditor or had purchased the forbearance of a lawyer, adieu for the moment to all worldly considerations—his whole soul was again wrapt in study. It may be averred in extenuation of censure which has been heaped upon his memory that though he could not liquidate his debts, he had for many years applied more out of the hard-earned profits of his daily and nightly labours than would have five times paid a great proportion of the amount which he owed; and if much of this was swallowed up in law, creditors were too often shamefully culpable in employing such legal agents as those who were let loose upon him—one whom they knew availed not himself of legal means to dispute their claims. Lawrence, though expensive in his pursuits, wished to pay every one, but he was neither an economist nor a financier; and even touching his pecuniary errors—for some he had—he was a man more (aye, almost infinitely more) "sinned against than sinning." Unfortunately for Lawrence he was more than princely-minded in his munificence, for he took all things at every man's own appreciation. He was too generous to be suspicious; and consequently with the class with whom he had to deal he was in nine bargains out of ten the dupe to cunning and stratagem. If a picture or drawing or any object of vertu was offered to him for sale, he did not practise the common habit of the rich and wary, namely, that of depreciating its

value; on the contrary, so that the article was good, even if the proprietor knew not its worth, he was so open, so candid, that he would exclaim, "This is a treasure indeed; it is very beautiful!" and so on; when the dealer, availing himself of the information, would exact a price accordingly.

GENERAL.

The University Court of Aberdeen have agreed to the request of the Royal Academy for the loan, for their winter collection of the works of old masters, of Sir Joshua Reynolds's picture of Dr. Beattie, "The Minstrel." The picture is to be insured for 10,000*l*.

The Scottish Patriotic Association are supporting the movement to have the Borestone at Bannockburn scheduled as a national monument. The Association has sent to H.M. Board of Works a resolution urging the desirability of undertaking the guardianship and preservation of the national relic. They represent that there is grave danger of the ground and relic being encroached upon by mining, industry, tramway extension and building enterprise, and claim that "the relic is identified by the tradition of centuries as the actual stone in which Bruce's standard was set, and the people of Scotland are unanimous in their regard for it."

The Holborn Borough Council at a special meeting last week defeated a motion to rescind all resolutions imposing obligations upon the present Council in respect to the new town hall. The mover estimated they could save the rate-payers 20,000*l*. by the adoption of the alternative scheme. The contractor, the architect and other officials could be compensated.

The City Lands Committee of the Court of Common Council have presented a report on a reference with regard to the removal from the walls and columns in the interior of the Guildhall of the plaster and stucco with which they had become encrusted. The committee stated that it was desirable to free the walls, and recommended that the work should be proceeded with at the early part of the year at a cost not exceeding 350*l*. An amendment that the report should be referred back, and that a full panel should be cleaned to show what could be done in improving the appearance of the interior of the Guildhall was defeated.

An Archaeological Society is about to be organised for the co. Roscommon, similar to that so successfully founded in the co. Galway. Roscommon possesses monuments of antiquarian and historical interest, and many objects of artistic excellence have from time to time been discovered in it. A provisional committee, of which The O'Connor Don is president, has been formed.

The Westminster City Council last week considered a letter from the Further Strand Improvement committee expressing the hope that the City Council would support the application for permission to erect a hoarding 30 feet high between Aldwych and the Strand in order that the public may realise, before it is too late to make any alteration, what would be the effect of building on the present line of frontage. The improvements committee of the Council is not in agreement with the proposal, and recommended accordingly. The recommendation was adopted by a large majority.

The Lord Provost's committee of Edinburgh Town Council recommend approval of the appointment of Mr. J. Dick Peddie as architect for the new municipal art school in the city.

A Sessional Meeting of the Royal Sanitary Institute will be held at the Parkes Museum on Wednesday, December 12, at 8 P.M., when a discussion will take place on "The Advantages and Disadvantages of Heating Buildings by Gas Stoves of Various Types," introduced by Mr. S. Rideal, D.Sc.Lond., F.I.C., to be followed by Mr. T. W. Aldwinckle, Mr. F. W. Goodenough, Professor H. R. Kenwood, Dr. Louis C. Parkes and others.

Mr. André Cernogio has informed the Vice-Rector of the Académie de Paris of his intention to endow the University with 12,000 francs a year for the encouragement of students of all nationalities who work in the laboratory created by the late Pierre Curie and Madame Curie. They are to be known as Bourses de Curie.

The Late William Linnell, of 40 Elm Park Gardens, Fulham, the landscapist, who died September 26, left estate valued at 29,801*l*. 14*s*. 10*d*., with net personalty 22,827*l*. 14*s*. 6*d*.

Mr. T. Fairman Ordish, F.S.A., will deliver an address on "London as Seen by Shakespeare" at the annual meeting of the London Topographical Society at the Society of Antiquaries on Tuesday.

The Institute of Oil-Painters have elected the following members:—Messrs. J. Buxton Knight, Hugh Riviere, Adam E. Proctor, C. M. Q. Orchardson, W. Ayerst Ingram and G. C. Haité.

The Leicester Town Council have instructed a special committee to consider the question of erecting a public hall. This action arose out of a communication from the local executive of the British Association with reference to the provision of a public hall available for use at the meetings of the Association in Leicester next year.

Promises Amounting to 1,000*l*. have now been received by the committee formed with the object of raising 7,000 guineas to purchase for the nation Holman Hunt's *The Lady of Shalott*.

The Salford Town Council have appointed a sub-committee to ascertain the accommodation which would be required by the various departments if a town hall was erected.

Mr. Mervyn Macartney, architect to St. Paul's Cathedral, states that in consequence of his report on the condition of that building, the Dean and Chapter, in view of the great importance of the matter, have decided on his recommendation to invite Mr. T. E. Colcutt, Sir Aston Webb, R.A., and Mr. John Belcher, A.R.A., to form a committee of inspection as to the condition and circumstances of the structure. He adds that "the public may therefore be assured that their report and investigation will be an impartial one."

Mr. MacGregor Chalmers, architect, has prepared plans for the erection of a new parish church at St. Andrews. The cost is estimated at between 23,000*l*. and 24,000*l*. Work will be commenced in the spring.

The Corporation of Glasgow have extended the date for sending in competitive designs for laying-out the estate at Reddrie with small dwellings from December 12 to January 12, 1907.

The Following Resolution was passed at a recent meeting of the council of the Cockburn Association with reference to the proposed restoration of the Chapel Royal at Holyrood:—"That this meeting hails with the greatest satisfaction the prospect of the restoration of the nave of Holyrood Abbey Church. It regrets that this part of the building has so long been allowed to continue a desolate ruin, but rejoices in the prospect of what still exists of one of the most interesting buildings in Scotland being preserved from further dilapidation. Accordingly it desires to record its high appreciation of the patriotic spirit which inspired the late Earl of Leven and Melville to make provision in his will for carrying out the restoration, and for the thoughtful care displayed in the appointment as architect to take charge of the work of Mr. Thomas Ross, than whom, in the opinion of this meeting, there is no person better qualified. Further, this meeting humbly and respectfully ventures to express the hope that His Majesty the King will be graciously pleased to consent to the proposed restoration."

Mr. Mond, M.P., recently asked the Secretary for War whether, in view of the admitted danger caused to the National Gallery in case of fire by the recruiting station immediately at the back of the Gallery, and the promises already made for the removal of this building, he would give instructions to have this carried out without further delay. Mr. Haldane, in reply, said he could not admit that the proximity of the London recruiting depot was a cause of unusual danger to the National Gallery. There were some shops distant from the west end of the Gallery about 22 feet only, whereas at the nearest point there was a space of 110 feet between the Gallery and the War Department buildings. The buildings which stood upon this intervening space were pulled down at the end of 1902.

The Highways Committee of the London County Council recommend that the quantity surveyors to be employed for measuring up the work in connection with the erection of the Holloway (Pemberton Gardens) tramways car-shed be paid at the rate of 2 per cent. upon the cost of the building.

The Gas Committee of the Birmingham City Council have provided a recreation-room for the men employed by the department. The building has been erected in Devon Street on land belonging to the department, and, together with the necessary equipment, will involve an expenditure of about 3,500*l*. It is to be used by the employés for social and recreative purposes, the principal apartment being of sufficient capacity to accommodate 400 people.

The Architect.

THE WEEK.

STRANGE claims have been put forward under the Workmen's Compensation Act, but we doubt if one resembling that on which a case was based in the Irish Courts has been heard in England or Scotland. Last year a man was employed in Castletown Bearhaven as foreman in carrying out a contract for the drainage of the town. One holiday several drunken fishermen amused themselves by breaking the pipes which were exposed. The contractor demanded payment for the damage and was attacked; the foreman went to his assistance and was stabbed. He subsequently died from his wounds, and the culprit was convicted of manslaughter. The widow of the foreman brought an action against the contractor under the Workmen's Compensation Act, on the plea that her husband's death was caused through an accident arising out of and in the course of his employment as foreman. The County Court Judge awarded her £41. 16s. The Lord Chancellor of Ireland, relying on the judgment in *CHALLIS v. The London and South-Western Railway*, held that the accident was not one of the kind that came under the Act; it was not incidental to the work, and was strongly repugnant to the nature of the employment. The two Lords Justices concurred with the Lord Chancellor; the award was therefore set aside and the compensation was not approved. The case casts a lurid light on the peculiar conditions under which work has to be executed in Ireland. In the first place, there is a wanton destruction of the contractor's property, and the demand for payment gives rise to a fight with knives. In England the manslaughter of the foreman, if such an event could occur, would not be considered as incidental to the employment, but it cannot be said the same distinction applies in Ireland.

THE public health committee of the London County Council are desirous of obtaining more stringent powers for dealing with houses let in lodgings. Three years ago it was stated that although 672,030 tenements of less than five rooms were found in London, only 16,433 were registered under the by-laws. It is estimated that 7.9 per cent. of the tenements are in blocks of artisans' dwellings which could not be registered. The small number of registered houses is supposed to be due to exemption clauses in the by-laws. The Council have been advised that the clauses are illegal, but the Local Government Board take a different view. Owing to the exemption there cannot be efficient supervision of sanitary defects, nor can overcrowding be prevented. If it were less easy to secure exemption there is no doubt that overcrowding would be less general in the Metropolis, which would be advantageous to the public health.

If the report of the Housing of the Working Classes Committee should become law not only will a large amount of work be necessary in carrying out improvements throughout the country, but there will also be an increase in the number of officials employed by district and other councils. It is proposed, in the first place, that a register should be prepared on which every building used for human habitation will be entered. The owners of such property will, moreover, have to send in a return every year describing the sanitary condition of all the dwellings, and penalties are to be inflicted for false returns. "Sanitary defects" will have a wider signification. The Local Government Board is also to have a housing and public health department, with a staff of travelling inspectors, who will hold inquiries into any complaints. Loans are to be granted on easy

terms. In such cases the whole of the expense should fall on those who derive profit from the insanitary property. But it may be taken for granted that more or less of the outlay will be borne by other people.

ONE of the signs of degeneracy is the increase in the number of lunatics for whom the public have to provide. The necessity for expedition in building asylums is indicated when we find Mr. VICKERS-EDWARDS, the architect of the West Riding of Yorkshire, advocating the creation of an architectural department for lunatic asylums alone, with architects who would not be allowed to accept other commissions. Under the present system of submitting plans to the Lunacy Commissioners, who in turn consult various architects, it may take ten years before an asylum is completed. The exigencies of the time do not allow of so long a delay in providing accommodation. In the West Riding, before one asylum is ready for use it becomes necessary to look out for a site for another. As with workhouses, there appears to be too much of a monopoly in respect of designing asylums, and the Lunacy Commissioners should take care to avoid giving encouragement to a system which is likely to give rise to serious inconvenience.

IF Essex is to become a diocese there could not be a more appropriate place for the episcopal chair than the borough of Colchester. It is believed that HELENA and CONSTANTINE, who were the earliest of the great Romans to take the Christian Church under protection, were connected with the Essex borough. Indeed, it was believed that HELENA could claim Colchester as a birthplace. The late Mr. MORANT, the historian of Essex, and who largely contributed to *The Architect*, says that Colchester was a bishop's see, and that in the fourth century the bishop was present at two at least of the Councils. There are several remains testifying to the importance of Colchester in Mediæval times, and the circumstance that there are sixteen parishes in the borough is enough to show that it was no lax supporter of the Church. The town has also advanced with the times, and presents to the visitor a rare combination of the new and the old. It has also the advantage of possessing a building that would serve as a pro-cathedral in the large church of St. James. A cathedral site committee has been already formed, with Mr. C. A. BENHAM as honorary secretary, and there is little doubt their efforts will be crowned with success.

THE Board of Education in their last report for 1905-6 point out the unsuitability of some of the Municipal secondary schools. Although much is done to remedy the worst defects, new buildings will be required in various places. The following is the official description of a typical example:—"The building in which the school (a Municipal dual school) is conducted has to accommodate both the secondary school and also boys and girls' elementary departments, each of which comprises three standards. The building is not well planned for the purpose of a secondary school; the classrooms have all been designed and are seated to hold sixty, so that much room is wasted. The accommodation is also deficient. The highest class has to be taught in the science lecture-room, which is not suited for class purposes. The large halls in both the boys and girls' departments are occupied by classes, so that they are apparently not available for prayers and assembly in the morning. On some occasions also it is necessary to take two classes in the same room." The designers of such buildings are not to be blamed. They were commissioned to produce elementary schools. The scope of the official system has since been widened, but neither School Boards nor the officials in the Education offices were able to anticipate that very different purposes would have to be subserved by the ordinary schools.

THE ROYAL HIBERNIAN ACADEMY.

IN July 1905 a committee was appointed by the Government to "inquire into the work carried on by the Royal Hibernian Academy and the Metropolitan School of Art in Dublin, and to report whether any—and if so, what—measures should be taken in order to enable these institutions to serve more effectually the purposes for which they are maintained." The inquiry occupied five days in October and November. It may seem remarkable that a whole year was required for the preparation of the report. But that period will not appear to be excessive if we remember that the issue was whether a Government system or a body of individuals was better fitted for the purpose of advanced art teaching in Ireland.

The members of the committee were selected with care. The chairman, Lord WINDSOR, now Earl of PLYMOUTH, served as First Commissioner of Works. He has written on art, and he is known as a patron of the arts. Lord WESTMEATH is an Irish peer who has held various offices, and who has taken an interest in educational subjects. Mr. Justice MADDEN is known as a lover of the *belles-lettres*. Mr. G. C. V. HOLMES, the chairman of the Board of Public Works in Ireland, is an Irishman who made a reputation in England as a mechanical engineer. Lastly, Mr. J. P. BOLAND is an Irish member who was educated at Oxford. With the exception of the chairman all the members were therefore Irishmen, and we are afraid it will be said that was the reason for the appearance of two reports. It would, we think, have been an advantage if one of the committee had been a member of the Royal Academy. But, on the whole, there can be no doubt such a committee was well adapted to deal with the subject.

In one sense it was also to be regretted that the inquiry was not confined to the working of the Royal Hibernian Academy. To contrast an institution with a settled income of 300*l.* a year with a Government department on which at least 4,000*l.* is annually spent, and for which much larger sums are available, is like a testing of the physical work performed by a giant and by a dwarf. The dwarf's work may be infinitely more graceful and useful in the end, but it appears insignificant when the dynamometer alone is employed. To a committee composed mainly of officials it must necessarily appear that officialism alone can cope with the difficulties, however varied, which arise in any civilised country.

The Royal Hibernian Academy would not be worthy of its name if it did not present many anomalies. At no time did Ireland require an academy of art. In the belauded days prior to the Union the Irish nobles and gentry occasionally employed a native portrait-painter or miniaturist. But they seemed to have a craze for works of old masters. The numbers of such products which still exist throughout the country are astounding. The premises of the Royal Hibernian Academy are not extensive, yet even there big Italian pictures were discovered of which there was no record. Occasionally when the Treasury was more full than usual the Irish Parliament used to make a grant to one or other improvised society of artists. But the money did more harm than good. Rivals were created, and it is on record that on one occasion at least an opposition society took possession of an exhibition, closed the gallery, and then made it over to one of the invader's agents. As late as 1815 we find the Hibernian Society of Artists appealing to the Dublin Society for protection, giving as a reason that they at least did not appropriate the funds gained from exhibitions to their own personal use, but conscientiously applied them to the relief of aged, decaying or distressed artists. The explanation of the unseemly disputes is found in the small sums which were obtained by the sale of paintings, and the unfortunate artists had to fight for any windfalls which were forthcoming.

Irishmen have a superstitious belief in the virtues of documents coming from the English Government. One

party of the artists thought they had gained the upper hand by obtaining a Royal Charter on August 2, 1823, constituting a Royal Hibernian Academy, which was to consist of fourteen Academicians and ten Associates, who were to be professional painters, sculptors or architects. It was characteristic of disunion that about the same time the Royal Irish Institution was founded to hold exhibitions of the works of ancient masters, or, in other words, to confound the present by the past. The first president of the Academy was WILLIAM ASHFORD, but he held office for only a year. FRANCIS JOHNSTON, the architect, succeeded him, and on the king's birthday in 1824 laid the foundation-stone of a building in Lower Abbey Street, which has since been used by the Academy. It was erected from his design, and he made it over to the Academicians at a rent of 5*s.* a year. A plate in the foundation-stone stated that the building was to serve for the use of the members and to form a national school of art. After JOHNSTON'S death a statue gallery was erected by his widow and assigned to the Academy on similar terms. Hence it is that the total rent is only 10*s.* a year.

It should be observed that the Academy was under no obligation, so far as we know, to use the building as an art school. There was no grant originally from Parliament. In 1832 a grant of 300*l.* a year was given. But for what purpose does not appear to have been stated. One fact, however, is manifest, that although the Academicians may have been generally wanting in skill as artists, in no instance have they neglected any of their obligations. What knowledge they possessed they were ready to impart. The first exhibition was held in 1826, and pictures were shown annually until 1838. Then there was a collapse. The painters found that purchasers were not forthcoming, and it was in vain they laboured. Visitors objected to exhibitions which mainly consisted of inferior portraits, sketches and landscapes. The establishment of an art union gave some impetus to the Academy, and the exhibitions were resumed. That they still failed to be attractive is evident from an account given by THACKERAY of a visit in 1842. It was the last week of the exhibition, and crowded rooms might be expected. THACKERAY found he was alone, with the exception of the money-taker and the porter, who were discussing some recent murders, and "the echo took up the theme and hummed it gloomily through the vacant place." Then two ladies came in, to whom he presented his catalogue. Yet at that time the Academy possessed some excellent artists.

The Academy continued to receive their grant under a special vote of Parliament until 1858. Indeed, for a time it was the only institution of the kind in Great Britain which received public money. HENRY COLE could not approve of so much independence, and Mr. NORMAN MACLEOD, his lieutenant, was sent over to investigate matters. He considered that it was useless for the Academy to depend on artists residing in Dublin, and he proposed that while there should be a sufficient number in Dublin to form a Council, the Academy should contain the names of all the best Irish painters, sculptors, architects and engravers wherever they were to be found. Mr. MACLEOD said that the answer invariably given when the question was asked why the exhibitions were so unremunerative was that the Irish public were not competent to appreciate art. To that he replied that public taste might improve in Ireland; that the wealthier classes might learn to appreciate the work of native artists and to encourage them sufficiently to stay at home. The result of Mr. MACLEOD'S visit was that the Royal Hibernian Academy was subjected to the Science and Art Department, and that the 300*l.* a year was only to be granted after a yearly visit and a report from one of the Department's examiners.

The optimism of Mr. MACLEOD has not been justified. The "appreciation" of art by the wealthy classes can be tested by the commission on sales of works exhibited at the Royal Hibernian Academy. A return has been made of the amount received during

thirty years, beginning with 1875. In that time the sum realised was 2,282*l.* 14*s.* 2*d.*, or a yearly average of 76*l.* 1*s.* 9*d.* That amount, if compared with the returns of the Royal Academy, would be considered as insignificant. But it becomes more strange if the receipts are considered in decades. During the first ten years the average per annum was 124*l.* 16*s.* 2*d.* During the second ten years the average was 64*l.* 16*s.* 3*d.*, and during the third ten years 38*l.* 13*s.* The commission obtained in 1904, the last year mentioned, was only 27*l.* 9*s.* 9*d.* The same peculiar sort of "appreciation" has been seen in the number of visitors. During the first ten years the average number of season-tickets sold was 542; during the second period the average was 303, and during the third the average was eighty-four. Last year there were only twenty-five sold. Some of the witnesses ascribe this remarkable falling-off to the position of the Academy in Lower Abbey Street. The north side of Dublin, of which the street is part, has been declining in value, and Abbey Street was never what could be called a fashionable thoroughfare. Any stick, it is said, will serve to beat a dog, and people who are indifferent to art in general, and to modern Irish art in particular, may offer as an excuse the inaccessibility of the Academy's building and the depressing effect of the interior. Dublin was once described as the most "car-drivingest city in the world," and Abbey Street could be reached at a cheap rate from all parts of the city and the suburbs, while now tramways, with other means of conveyance, exist in excess.

Three of the committee, viz. the chairman, Lord WESTMEATH and Mr. HOLMES, cannot bring themselves to recommend a change. They say:—

"Although admitting that the site in Abbey Street is not an ideal one, taking into consideration the circumstances we have already mentioned, and bearing in mind that all the main lines of electric tramway of Dublin pass within sixty paces of its doors, we do not consider that there is at present sufficient justification for recommending the purchase of a new site and the rebuilding the Royal Hibernian Academy near Merrion Square. Unless the Corporation of Dublin, following the example of Glasgow and Edinburgh, offered substantial assistance, the proposal would involve the expenditure of a large sum of public money, and there is no reason to suppose that the change of site in itself would necessarily improve the status of the Academy, or raise the standard of its exhibitions, without which it could hardly look for increased public support."

The minority report by Mr. Justice MADDEN and Mr. BOLAND, on the other hand, declares that—

"It is plainly essential to the prosperity, and, indeed, to the continued existence of the Academy, that it should be properly housed in a suitable position, and the action of the State in regard to the Academies of England and Scotland justifies us in reporting that this should be done at the expense of the State."

When the indifference of the people of Dublin to the Hibernian Academy during the whole term of its existence is considered, it would seem to be a waste of public money to increase facilities which are likely to be neglected. People who are expected to look at pictures need not contemplate the state of decay in Abbey Street or elsewhere. Irishmen and Irishwomen will visit picture galleries in continental towns which are not so easy of approach as the gallery of the Academy in Dublin. On the other hand, they can say that in London care is taken to make picture galleries, whether public or private, easy of approach. In London a similar rule seems to exist for theatres and picture exhibitions, for they are separated by the shortest distances. People in Dublin who are penurious, idle and indifferent expect to be treated like the people of London, who are sure to repay any outlay made for their convenience.

The recent grouping of some new buildings connected with art, literature and science is also enough to persuade the perverse Irish intellect that the

Hibernian Academy and the works it exhibits are outside the things worth visiting. Sir THOMAS DREW, as president of the Academy, might be taken as a prejudiced witness when he advocates removal. But Sir JAMES GUTHRIE, the president of the Royal Scottish Academy, was most emphatic about the necessity for placing the Academy in the vicinity of other educational institutions. Sir CHARLES CAMERON, who is well known as an officer of public health and as a professor of science, has lived for a great many years in Dublin. He believes that if the Academy stood in the region suggested more pictures would be contributed, a larger number of persons would visit the exhibition, and some of them probably would be induced to study art. Colonel PLUNKETT, the Director of the Science and Art Institution, Dublin, considers that the Academy is handicapped by its very bad situation, and that a new building should be erected provided with studios in which students could work under the direction of artists of experience. Sir WALTER ARMSTRONG, who, as director of the National Gallery with its ancient masters, might be thought to represent rival interests, also testified to the unsatisfactory character of the building belonging to the Hibernian Academy, and he gave instances of some modern exhibitions which were successful when held in the part of Dublin which is preferred, but which must have been failures if held in Lower Abbey Street. Sir WILLIAM ABNEY, who at one time was sent over to study the question, recommended that the Board of Works should secure suitable premises for the Academy in the neighbourhood of the new National Gallery. In fact, the majority of the witnesses were decidedly in favour of a change, although three of the five members of the Committee take a different view.

We hope for the sake of Irish art that after consideration of the evidence the Government will not approve of the recommendation of the majority report, that the Hibernian Academy should be retained for exhibition purposes only, and that repairs be carried out at the public expense. Simple as it may seem, that course if adopted would be a death warrant to the Royal Hibernian Academy. As we have said, FRANCIS JOHNSTON made the foundation-stone testify that the Academy was not intended solely for the purpose of exhibitions of works by the members, but that it was to become a national school of art. To take away that power from the Academy and to suggest that the members should serve merely as occasional visitors in the Government school of art would be to create a condition of affairs of which we hope the Academy will not approve. The appendage R.H.A. to their names would be dearly purchased by the sacrifice of the essential principle of the Academy. In spite of the inadequate encouragement teaching was always recognised by the Academy, and under new conditions in the newly created educational oasis a fresh impetus would be given to improvement. In its way the Hibernian Academy represents the academic principle, which at least dates from the beginning of the Renaissance. To substitute for it a sort of machine-like cramming would be fatal to Irish art, for if the Academy comes to an end or is deteriorated there is no existing society to serve as a substitute.

HOUSES AND GARDENS.*

THERE was a time when everyone would know that a book on houses if not on gardens was addressed to architects alone. Of late years its destination is expected to be the studies of people who are likely to become clients. If there were any doubts about the purpose of Mr. BAILLIE SCOTT'S volume they would quickly be dispelled by some of the earlier pages. In the introduction we read:—

The art of building as practised in modern times is not so much an art as a disease. In the early stages of the

* *Houses and Gardens.* By M. H. Baillie Scott. (London: George Newnes, Ltd.)

Victorian era it took the form of a pallid leprosy. Nowadays it has become a scarlet fever of red brick, and has achieved a development of spurious art expressed in attempts to achieve the picturesque, which in its smirking self-consciousness has made the earlier candid ugliness appear an almost welcome alternative. There is no town or village but is being gradually disfigured by this plague of modern building, and one has almost forgotten that houses have been and may yet be an added beauty rather than a disfigurement to the land. And in matters of furniture and decoration one finds the same spurious art on all sides, so that the modern house of the average citizen has reached a stage of degradation which might be a subject for ironic laughter if it were not for the pity of it. The serene and earnest beauty of the old house is everywhere being replaced by a superficial smartness posing as art. It is difficult to know where to turn to escape from this oppressive nightmare of hideous building. Here and there one may find houses built and furnished with sincerity, but these are comparatively so few that they appear but as drops in the ocean. It is doubtful whether education will provide relief, for it is mainly the modern Board school which provides the most convincing object-lesson of the degree of depravity of which building is capable. Nor is it possible to hope for much from the Church, where building activities have recently been mainly concerned with the disfigurement of the ancient glories of its buildings and in the construction of elaborate and unconvincing forgeries of an obsolete art.

We do not find in books relating to business or professional matters of other kinds a like assumption of superiority on the part of a writer and a similar condemnation of the works of contemporaries. Even shopkeepers do not criticise their rivals' wares in such a style. It is the unenviable peculiarity of architects to endeavour to make out that each of them is the only one in whom trust can be placed. And yet when we think of the kind of buildings represented in Mr. BAILLIE SCOTT's pages we must regard his assumption of superiority more in sorrow than in anger. He is an advocate of houses supposed to be adapted for those who would lead a Simple Life. They almost recall the descriptions of the dwellings of the Vikings and other primitive amateurs, which were erected in times when forests abounded and men could lavishly use timber. Those builders at least were simple in their arrangements because their knowledge was confined, and they had only one way of building. Nevertheless, in setting up houses of that kind in our time, we are only affecting to be unaffected. The would-be simplicity, no doubt, has responded to a fad of the time. However, there are signs enough around us that sensible people are becoming ashamed of being deluded into counterfeiting a condition of life which possibly was good enough in its day, but which in our time is only one more addition to the numerous illusions which few have the strength or the good luck to escape. A more elegant, refined and modern form of house is required for the twentieth century. Ten or a dozen years from hence such a book as Mr. BAILLIE SCOTT's may excite wonder, and all his hectoring has therefore a melancholy sound. In once place, he says:—"The man who lives at 'St. Mildred's' or 'The Pines' might, after rechristening his house more appropriately as 'The Crime,' seek to reduce its pernicious influences by some such means as I have endeavoured to describe." If the individual in question obeyed our author, has he any guarantee that in a very short time the transformation of his house would not make him the laughing-stock of his neighbours?

While saying this, we must admit the cleverness of the writing and of the designing. The interior of an ordinary room is not always agreeable to the sight. If there is variety in the planning it loses its effect by commonplace wall-paper and by furniture of familiar forms. In ordinary life it is not pleasant to be entertained by a neighbour who has the same grocer or wine merchant as oneself. In the decoration and furniture of rooms there is a like defect, for they all somehow appear to be the products of the same trades-

men. Now the coloured interiors which Mr. BAILLIE SCOTT presents may sometimes suggest Mr. PEGGOTTY's house at Yarmouth, but it must be allowed that no two of them are alike and they are not suggestive of collections of woodwork turned out with several hundred more by means of ingenious machinery. It would, however, be interesting to discover how long an ordinary individual after his first surprise was over could dwell in such a house without wishing to have a season in a modern hotel near some big railway terminus. In describing a house called "Findon" Mr. BAILLIE SCOTT says:—"This house was designed for a client who had no delusions about picturesque roof lines and quaint arrangements of gables, but who recognised the merits of simplicity both from an artistic as well as an economic point of view." We should like to gain some information about that client's experience of the solid timber, the whitewashed plaster and the whitewashed woodwork of the ceiling—for whitewash is the principal decoration of the house.

The book may be considered as a treatise on the production of houses of the "Findon" type. There are several English examples given, and Mr. BAILLIE SCOTT has been fortunate in designing houses in America, Switzerland, Poland, &c. "A House for an Art Lover" obtained the first prize from a jury of German architects in a competition organised in Germany. The plan is peculiar. The principal bath-room and the children's breakfast-room are octagonal, and the composition may be described as scenic. The architect would not admit that in designs which seem to be all allied, but which can be used in places far apart, that their acceptance depends on eccentricity. There is one passage which we suppose may be taken as a defence of his manner of treatment, and which on that account we give at length:—

To consciously aim at achieving "style" in design, either old or new, is to follow a will of the wisp. For the pursuit of style, like the pursuit of happiness, must necessarily lead to disappointment and failure. Both alike are essentially by-products, and the quality of the by-products is in direct ratio to the worthiness of the ideal pursued. One may liken style to a jewel in the hilt of a sword, which flashes brightly when the blade is drawn in a worthy cause, and to which the warrior absorbed with the matter in hand will give but slight attention. It is a quality of the "flower of things," only to be gained by root culture, and he who aims at style is he who would paint the lily instead of watering it. To produce a stately modern apartment it is not necessary to disinter the Corinthian column, or to set the modern workman once more to carve that oft-repeated formula of acanthus leaves at the bidding of some blind pedant who has no eyes for the beauty of the flowers and trees which surround him. Such vain repetitions do but destroy our sense of the beauty of their originals. It is well that the apartments of the mansion should be of stately and dignified aspect, but let it be a stateliness and dignity which is vital, local and modern, the new thought of a new age wrought with eagerness and care, instead of the trite and stale copyism of the forms of the past. It is not necessarily true, as many seem to imagine, that the only alternative of this copyism is a bizarre striving after originality and eccentricity of design, and which, posing as the "new art," is justly condemned by the judicious. New work which is based on the study of the past, which is sane, reasonable and vital, will only be considered eccentric from the point of view of those whose thoughts revolve round obsolescent centres. Apparent eccentricity is the necessary concomitant to every advance in thought, and new ideas revolve round a centre which is constantly moving forward. The impressions of the surrounding country reported by the vanguard must necessarily seem untrue to those in their rear, but gradually as these are pushed and hustled forward they reach the same standpoint and recognise the truth of the picture. Architecture as expressed in house building and adornment is like all human affairs, necessarily in a state of flux—to live is to advance; and so, while holding fast that which is good, let us still hope for that which is better, and not let our admiration for past glories blind us to the undreamed possibilities of the future.

Mr. BAILLIE SCOTT has some very useful remarks concerning gardens in connection with small houses. Few men engaged during the day in business have the energy which will enable them to work at digging, planting or mowing before and after office hours. The majority of gardeners imitate other workmen in doing as little work as possible, and consequently they are expensive. The author recommends that nature should be allowed some liberty, and in the wild garden he would plant fruit trees. The Japanese, who understand gardens, appear to find most delight in fruit trees when in blossom, and their example should be followed. The introduction of the pergola is also recommended, and it is a feature which increases the effect without much outlay. It must be allowed that the influence of the garden can be traced both in Mr. BAILLIE SCOTT'S designs for houses and in his description of what is desirable in their ornamentation, and adds to the interest of the book. The volume, indeed, must be considered as attractive, although it may be difficult for an architect to submit to the exalted claims arrogated by the author, as if he alone possessed the secret of designing a modern house.

SCULPTURE IN RELATION TO ARCHITECTURE.*

IT is no light task for a layman like myself to address an assembly of experts upon any aspect of architecture. But, emboldened by the honour which has been done me by your Council in inviting me to speak to you to-night, I venture to place before you the views of a theorist upon the relations between the sculptor and the architect, which you will be able to appraise in the light of practical experience. After all, counsels of perfection are means to an end, the end in this case being the achievement of practical and lasting beauty in the harmony of sculpture and architecture.

Perhaps it may be as well to assign a broad but definite meaning to the term "sculpture." By that term I shall everywhere imply the sculptured representation of natural objects in their natural form, while by "carving" I should understand the representation by the same means of conventionalised forms of ornament. More especially I propose to deal this evening with the use of animate forms in architectural sculpture.

If I may be allowed to give expression to a few elementary truisms, it may serve to make clearer the point of view from which I propose to regard architectural sculpture.

Firstly, then, the object of architectural sculpture is to beautify, not merely to be beautiful. It is not sufficient that a building should be beautiful in proportions, and its sculpture beautiful in form. This might be the case without the slightest sympathy between the two, and in such circumstances the two arts would defeat one another, instead of being mutually contributive to a harmonious whole. A clumsy, ill-built and ill-proportioned building, encrusted with the most exquisite sculpture, is not beautiful, nor is a fine architectural achievement enhanced by ill-conceived and ill-executed sculpture.

Secondly, it is of the greatest importance that the sculpture, being perfectly sympathetic in style with the building, should also be sympathetically disposed about the edifice. On no pretext must its presence be allowed to disguise or weaken or falsify the structural lines of the building. For it is as obvious as anything can well be that the first beauty of a building is its strength. If that strength be disguised in the smallest degree all ornament is nothing but an additional burden upon the apparent weakness of the building. The blank wall of a reservoir-dam is beautiful in its impassive strength, and that strength is of such paramount importance that the least ornament would be trivial and weakening in effect, unless placed at the very crest of the wall above the known water-line. But sculptured figures standing on the coping would be perfectly permissible, even desirable, if not on too large a scale, for by their very lightness they would serve to accentuate the massive power of the dam.

Another example may be drawn from the borderland of architecture and engineering, viz. the decoration of a bridge.

Here it is plain that while massive sculptures may be piled upon the spring of the arch on either bank, no free sculpture must appear over the keystones, except perhaps in the form of a small figure on the keystone itself (as, for example, in the Arch of Titus, at Rome); while over each pier the groups of sculpture which may be introduced must be pyramidal in the general scheme of their composition. The Charles Bridge, between the Mula-strana and Nove-strana, at Prague, is a good case in point.

The sculptures which may appropriately flank the approach to a bridge are free and lively compositions of broad base. The Boadicea group on the Embankment is worthy of note as a fine bridge-sculpture wisely placed. It should face away from, not across the bridge, and a corresponding group should appear on the opposite side, to say nothing of a pair at the Lambeth end of the bridge. The Pont Alexander III., at Paris, exhibits well-placed groups of sculpture.

These, however, are instances of the axiomatic necessity which is incumbent upon the sculptor of paying due respect to the structure which he is to adorn. But, as a matter of fact, his mission is a far higher one than this.

The great difficulty which retards the progress of sculpture as a means of architectural adornment lies not so much in the arts as in the artists, for I must include both architect and sculptor in my mild indictment.

The mutual respect which undoubtedly does exist between the artists of both branches of beauty—the structural and the plastic—is, I fear, largely coloured by mutual distrust—a circumstance of which the immediate outcome is a lack of perfect co-operation. This lack of co-operation has for its fruit a corresponding lack of harmony between the respective provinces. I have pointed out elsewhere that the general impression conveyed by the sculptured figures on London buildings of recent date is that they have climbed out on to the tops of the windows or on to the parapets, and continue to recline upon their giddy couches because they are unable to retrace their perilous steps. In other words, they form no integral part of the buildings which, by their mere presence, they certainly do much to adorn. This impression can only be due to the fact that these buildings could perfectly well dispense with their presence—that sculpture is not an inherent part of the design, but may be included or omitted according to the margin of "extras" that the funds are likely to bear. The architect feels—and often rightly feels—that his powers of design are in no way dependent upon extraneous adornment, and thus is rather inclined to regard the sculptor in the light of a rival than a coadjutor—a feeling which is bound to react upon the sculptor and to have a detrimental effect upon his work.

It is perfectly true that a building would stand as firmly upon its foundations, that its proportions may be as true, its spirit as noble and its utility as complete without the aid of sculpture as with it. But in one respect a building upon which no sculptured figures find a place falls short of the highest glory. It has no voice, it is silent, uneloquent of its purpose. Even a prison, whose grim soul is the very spirit of silence, may render its grimness more telling if it be sombrely enriched with appropriate sculpture.

It may be granted, then, that the use of sculpture is, at times, of actual value to the architect, and this being so, all that remains to be insured is that such sculpture be, firstly, of the right kind and, secondly, rightly used.

It is at this point that I would beg your leave to illustrate my remarks by the description of the most complete and perfect scheme of decorative figure-sculpture in the world, viz. the Parthenon. And in my account of its sculpture I shall regard that monument of Athenian greatness not so much from the purely architectural as from the national and spiritual point of view, paying as much regard to the circumstances of its conception and the purpose which it served as to its actual form.

The decoration of the Parthenon consisted, as I need hardly remind you, of the pedimental sculptures, the Doric frieze of metopes and the Ionic frieze which ran along the top of the outside wall of the cella. The natural approach to the temple was towards the western front, and from this point it was open to the visitor to proceed to the eastern end and main entrance either along the southern or northern side of the temple. The most natural route would be along the northern side, straight down the central vista of the Acropolis.

Naturally, the first sculpture to strike the eye was the great pedimental group representing the contest between Athena and Poseidon for the land of Attica—a story of

* A paper read before the Society of Architects, December 13, by S. Charles Kaines Smith, B.A.

intensely local interest, the choice of which marked down the Parthenon as a deliberate claim upon the goddess as the patron saint of the city to which she had given her name in the far-off days. Thus the story chosen for representation brings home at once and forcibly the intensely national aspect of the goddess and her shrine, and prepares us for the general scheme of decoration and its ultimate *dénouement*, dramatic in its simple force.

Strong and telling in the clear Attic sunlight the vigorous relief of the metope sculptures next claims the eye. The nature of the Doric frieze demands the representation of detached groups in a severely square frame. Thus all depend upon vigour of action and power of line and shadow, if the monotony of the obviously structural frieze is to be relieved without falsification. And on this principle we have a series of pictures representing vigorous action—Greek and Amazon in deadly conflict, recalling the deeds of Theseus, the greatest hero of old Athens, in the days when the gods walked the earth—and thus the local appeal of the building is further emphasised.

Lastly, the Ionic frieze, glowing with colour and gold in the subdued light reflected from the pavement within the peristyle, starts with its innovation, and carries the spectator insensibly along with it. Running from south to north, it turns the northern corner and continues along the northern side, the movement of its figures ever increasing in speed and vigour, so that the eye scarcely heeds the detached figures of the outer frieze in the irresistible charm of the onward-sweeping orderly tumult, and detail after detail, sought and recognised, goes to complete the graphic picture of the great national act of imperial worship, the Panathenaic procession, with its knights, its elders, young men and maidens, old men and children, all pressing forward and carrying the spectator with them, till, almost as one of themselves, he turns the north-eastern corner and stops before the very door of the holy place. And here again the majestic size of the pedimental group calls back the enchanted eye to gaze upon the divine origin, the Olympian miracle of the birth of Athena from the very head of Zeus; the universal arrests and surpasses the local aspect of the goddess, and the horses of the rising day and sinking night alone can encompass the marvel. The impression deepens in the mind that the tutelary goddess of Athens is great indeed—a goddess of might in all the world, and the eyes, dropping from their reverent contemplation, rest upon the metopes—vigorous sketches in marble of the triumph of the Olympians over the powers of the earth, the giants. The gods indeed are great, and Athena is chief among them.

Once more to the frieze. No longer a stream of living movement, but a peaceful circle of the gods themselves, seated and watching the approach of the great national Attic procession in the honour of her, the noblest and most spiritual of them all. And in their midst a priest, who hands to a little acolyte the folded robe, now to be replaced by that new garment offered to the deity by her loving and grateful people, and once more the intensely loyal aspect of Athena is brought home to him who reads the sculpture aright.

Lastly, the great dim portal greets the eye, and invites entrance to the sanctuary.

Enter. Leave behind you the bright, hard glare of the mid-day sun, trembling on the blue-grey limestones and glittering Pentelic marble. At once you are plunged in the cool golden twilight that filters through the thin marble tiles, and your shadow slides before you on the pavement to melt in the soft haze of diffused light that is almost darkness to your yet unaccustomed eyes.

Look straight before you, and out of the amber gloom there grows slowly the towering form, clad in gold and jewels, partcolor of enamel and cunningly wrought metal, of the very goddess herself—Athena—Athens imperial and incarnate, the spirit of the past, the pride of the present, the hope of the future, whose calm, ivory-white features glimmer ever more clear as her blue eyes gaze steadily out and beyond over her beloved Attica, toward the hill whence the stones of the temple wherein she stands were hewn by her devoted people. It is a climax, superb and supreme, to which the sculptor has led you, insensibly, irresistibly, because the source of his inspiration, and of that of the architect, was one and the same source, because the Parthenon without its sculptures had been a mere shell, dead and meaningless, and because those sculptures, divorced from their surroundings, could lead nowhere, could serve no purpose and tell no story of a nation's passionate devotion.

Like Æsop of old, I must find for my parable a moral. The moral is this—that the purpose of the building must be the inspiration of both architect and sculptor, and that the two must work together to such an extent that the architect shall so design his building as to be incomplete without sculpture, even to the point of sacrificing something of purely architectural effect, while the sculptor for his part shall acknowledge that the mission of his work is to accentuate and enhance the broad strength of the architectural forms, to lead the mind to the contemplation rather of motives than of forms, rather to the spirit of the whole than to the perfection of the part with which he himself is immediately concerned. Mutual forbearance, mutual self-sacrifice and a common interest will, I think, soon relieve our public buildings of the spectacle presented by fair forms of stone clambering along perilous parapets and reclining cumbrously upon giddy gables, of rows of columns obscuring ill-shaped friezes, or officious statues blocking out the daylight from all-too-modest windows. Sculptor and architect must be not rivals but allies, firm knit in loyal service to stern utility, whom they exist but to ennoble and adorn.

WELLS CATHEDRAL.

"WELLS Cathedral: an Idyllic Minster of the West Country," was the subject of a lecture delivered before the St. Paul's Ecclesiological Society at the chapter-house, St. Paul's, on Wednesday, December 12, by Mr. E. W. Harvey Piper, the Rev. Lewis Gilbertson, F.S.A., in the chair.

A young photographer and student, the lecturer suggested, consulted an older friend, asking where he could find a typical English minster charming in grouping, harmonious in proportions and enriched by quaint carving within and without; it should be complete in all its adjuncts of chapter-house and cloister, and enshrined in a setting of inner buildings, gates and towers, with hill-sides, abundant trees and verdant meadows for an outer framework. Such an ideal, idyllic minster, feminine rather than masculine in its characteristics, was to be found at Wells. To the objection that its story was hackneyed the reply was made that only within the last twenty years, thanks to the investigations of Canon Church and the late Rev. J. A. Bennett, had the chronology and evolution of the cathedral been determined and the building of the central mass been correctly assigned to the days of Bishop Reginald de Bohun, 1174-91.

The friends agreed to visit Wells together, and the result of their inspection was thrown on the screen in the form of over one hundred lantern slides. A number of exterior views from various standpoints was followed by an analysis of the distinctive features of the ground plan, the development of the existing buildings being treated in detail. The west front, the widest cathedral façade in England, was eulogised and criticised. It was shown that the feature of the extension of the western towers beyond the outer walls of the north and south nave aisles gave to it its unique breadth, and the front as a framework for statuary was compared with Salisbury, and contrasted with those of Lincoln and Peterborough.

The "forms of saints and kings standing above the cathedral porch" were dealt with in detail, attention being called to the grace, self-restraint and simplicity of treatment which distinguish these, the finest works of English sculptors of the thirteenth century. The carving was contrasted with the figurework of Northern France and that of Winchester, Gloucester and Westminster, typical kings, queens, statesmen, bishops, priests, deacons and knights in chain armour were shown on the screen, and the lecturer suggested the value of those matchless sculptures, fair untouched blossoms still on the branches for which they were conceived, to the student of regal and ecclesiastical costume. A quatrefoil carved six and a half centuries since proved to be Noah labouring as a shipwright. The solemnity and dignity of the nude figures in the Resurrection groups were dilated upon, and the high technique of the anatomy and drapery of the whole series was emphasised. In a rapid survey the lecturer passed round the exterior of the cathedral, visiting the vicars' close, the chapter-house and its undercroft, the cloisters and library. Finally the palace, and following views of the quadrangle and ruined hall a portrait of Thomas Ken was projected on the screen as a reminder of the five years bishopric of that sturdy nonjuror and saintly hymn-writer. In sum-

marising the external treatment, Mr. Harvey Piper contended that nowhere was the ornament overdone; nothing at Wells was too rich or florid, but everything harmonised in a beauty that never became ostentatious or gaudy.

Entering the nave the peculiarities of its construction were referred to. The huge relieving arches at the east end and across the transepts were designed as a structural work of reinforcement, carried out with the consummate skill of a great engineer and the precision of fit of a dentist's set of teeth. The stopping of the vaulting shafts at the string-course over the continuous triforium was shown to contribute greatly to the horizontality of effect, whereby the low pitch of the vault was more than compensated for. The chantries, the eleventh-century font, Peter Lightfoot's clock, and the transepts, their chapels and monuments were described in turn, and a series of illustrations of the quaint and often humorous carvings of the pier capitals was thrown on the screen, including the martyrs to the toothache, the old woman removing a thorn from her foot, the pedlar and his pack, the farmer chasing the fox, the cobbler, and the fate of the fruit stealers told in four acts. A visit to the lady chapel, choir and aisles completed the survey, the author concluding with a description of the desecration of the choir and the defence of the altar by Lord Grey of Wark and Sir Gervase Jerome during the Monmouth rising of July 1685.

HOLYROOD CHAPEL.

WHEN the late Earl of Leven and Melville left 40,000*l.* for putting into repair and restoring the chapel at Holyrood so that it might be used as a chapel for the Order of the Thistle, according to plans prepared by Mr. Thomas Ross, architect, Edinburgh, his Lordship nominated Lord Balcarras and Sir John Stirling-Maxwell, Bart., as his trustees. They now announce that having had a report specially prepared by Professor Lethaby, F.S.A., and after careful consideration, "they find themselves with great regret unable to carry out Lord Leven's generous wishes, and they have intimated to H.M. Office of Works and to Lord Leven's executors their decision not to proceed with the proposed restoration."

The following is a copy of the report:—

Report to Sir John Stirling-Maxwell, Bart., and Lord Balcarras, M.P., by Professor Lethaby, F.S.A.

The Abbey of Holyrood.

In accordance with your instructions, I visited the ruins on October 6, when I met Mr. Oldrieve, His Majesty's principal architect for Scotland, who gave me much assistance and furnished me with exact particulars of the inclination of walls, &c.

The ruin is the nave of the original church, the transepts and all east of them having disappeared. Of this nave with its aisles only the south aisle has retained its vault. This vault rests on the arcade which formed the south side of the nave proper, and on its own south wall. Besides this the outer wall of the north aisle remains, together with a large part of the west front and one of the west towers. To the east, where the nave opened into the transepts, it is now closed by a late wall and east window.

The remaining south arcade of the nave, with the triforium above, is eight bays long; the openings of the triforium have been blocked up with rough masonry. The clerestory has entirely disappeared, so also has the west gable; the upper part of the windows of the latter is work of the time of Charles II.—curious, but interesting.

Most of the existing work is of a very beautiful type of early thirteenth-century architecture; one part of the south aisle wall is Norman, and the wall arcade of the north aisle is of late Transitional character. The west front is an elaborate piece of thirteenth-century work, the west door being especially remarkable. After the splendid south doorway at Lincoln Cathedral, it must be the noblest thirteenth-century doorway in Great Britain.

The present level of the area of the nave is about 1 foot 6 inches above that of the original floor. This is shown by the bench under the wall-arcade of the aisles, which is now nearly level with the ground. The external ground is nearly level with the heightened area. This area is now largely occupied by graves; the two eastern bays of the vaulted aisle are filled by the royal vault and the Roxburgh aisle.

The walls and arches which remain are much decayed by the weather and disintegrated by the action of smoke deposits. Corrosion from the latter cause has been very great, and the surface is everywhere attacked and blackened.

The carved capitals of the south arcade are mostly shapeless masses so far as the detail of the carving is concerned. At some time the pillars of the south arcade have been very largely patched with cement, across which joints have been neatly struck. The pillars consequently seem to be in a far better state than they are in fact—see especially the second and third pillars from the east where some of the cement has fallen away. The triforium stage is in still worse condition, although, like the whole ruin, very carefully kept so far as its state allows. The last three bays to the east are formless in respect of mouldings and details, most of the shafts being just kept in place by metal bands.

Throughout the string mouldings and bases are to a large extent broken, and the shafts of the arcade and windows lost.

Most of the existing work is in various degrees out of the vertical, and some parts seriously so; thus the south wall of the nave, containing the triforium, leans inward from the third pillar to the fifth (counting from the east) from 14 inches over the former to 11 inches over the latter. The west wall with the tower leans to the west $4\frac{1}{2}$ inches, and the tower also inclines to the north 7 inches. The external wall of the north aisle leans out 4 inches at the middle, the south aisle wall also leans outwards, and the east gable leans out 5 inches.

I am of opinion that it would be impossible to restore the ruin for use as a modern chapel without the ancient architecture almost completely disappearing in the process. The present decayed and leaning wall of the nave should not be loaded with a new clerestory and roof, to say nothing of a stone vault. To take it down and rebuild it would be impossible—so much would break up into powder in handling, so large a proportion of decayed stone, especially about the joints, would have to be cut away, so much would have to be discarded when once out of place as too shapeless and unsound.

I am of opinion that an attempt either to add to the ruin without rebuilding it or to rebuild it would be disastrous to it as a great historical monument, and I cannot but earnestly recommend that no such scheme be entered on.

The parts now remaining are but a small portion of the complete nave; the form of the clerestory and the west gable are unknown. The north door has decayed out of all definite form, the west front is greatly perished and has been largely patched up with cement. In the exquisite west door only about one-quarter of the fine carving of the mouldings remains, and the carving of one of the four arch-orders has entirely disappeared.

The problem of making a modern building out of an ancient ruin is so large and serious that other aspects than that of preserving the ancient fragments should be mentioned. There is the problem of making anew lost parts for which there is no sufficient evidence, such as the clerestory, the west gable, &c. There, furthermore, is the question as to what is to be done with work which might be called late and debased, such as the present east end, the Caroline repairs to the west front, and the late wall monuments of the interior.

Then we must consider the magnitude and various forms of necessary modern work—the new stonework, copied and conjectured, the wholly new ceilings or vaults, paving, glazing, woodwork, artificial lighting, &c. What is old would largely disappear in handling it, and that in turn would be swamped by entirely modern work.

The question of cost is one which I had not the opportunity of considering with precise information before me; but bearing in mind that much of the existing stonework would have to be taken down, and that it would be impossible to use most of it over again, the adequacy of the sum of 40,000*l.* for the purpose of rebuilding is a subject to which I must draw your careful attention, if you were to consider such rebuilding possible. The ruined nave is about 140 feet long, including the west front, 70 feet wide over the walls, the crown of the ancient vaulting must have been about 62 feet above the pavement, and the apex of the roof and end gables some 24 feet more.—I have the honour to remain, yours faithfully,

(Signed) W. R. LETHABY.

111 Inverness Terrace, London, W. :

October 11, 1906.

The Edinburgh Corporation have unanimously agreed to take no action in connection with the motion as to the desirability of forming a promenade on the south side of Princes Street.

NOTES AND COMMENTS.

THERE are some people who unconsciously are seeking after the ideal, and in order to attain it would gladly see the world and all its business topsy-turvy. For such aspirants the metric system is a subject which affords abundant occupation. It may as well be admitted that ten is an easier multiplier or divisor than sixteen or twelve, and in a great many cases the metric system is employed in this country without causing inconvenience to anybody. For railway and other large surveys the 100-foot chain has been substituted for the standard 66-foot chain, and operations have been facilitated by the change. The Ordnance Survey has likewise adopted plans for towns on a scale of 1 in 500. But that is different to applying the metric system for general business purposes in this country. A paper was read last week before the Society of Arts by Colonel Sir C. M. WATSON, a Royal Engineer, in which the disadvantages of the metric system were explained. The yard is the standard in Great Britain and the United States, with their dependencies, and is therefore used by 489 millions of people. The population of the countries in which the metre is used may be taken as 327 millions. It may therefore be said that 50 per cent. more people favour the English system. Sir DAVID GILL, who was present, said the metric system was originally set up in a hurried and imperfect manner by people who were only anxious to revolutionise everything. The original metric system is not the metric system of the scientific world of the present day. It is remarkable that Lord BELHAVEN and STENTON, who introduced a Bill in 1904 for the compulsory adoption of the metric system, said that the advocates of the measure were promised the support of 400 members of the House of Commons in the present Parliament whenever a Bill was introduced.

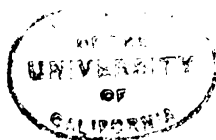
WHEN we consider the numerous interests it serves, the French budget relating to the fine arts and amounting to about 17,500,000 francs, or say 700,000*l.*, is not excessive. Operas and theatres require the greater part. There are also the public factories at Sèvres and of the Gobelins to be kept up as well as the Academy at Rome. But building has not received much encouragement. A school of decorative art has been neglected and can no longer be delayed. The Conservatoire is no longer adapted for 700 students in all branches of music, singing and declamation. And a school for furniture in the border city of Nancy is to be undertaken without delay. The vast number of officials of low ranks connected with the fine arts are also clamouring for increased allowances; and indeed it has been suggested that the recent robberies in the Louvre were merely hints of what could be done if justice were delayed. The whole of the report is suggestive of the fact that, for anyone who can see behind the scenes in all the departments connected with the fine arts, there is disaffection which does not augur well for the future.

THE organisation of the Panama Canal has been arranged in a manner which is calculated to promote efficiency. There is to be a Commission, and it will come under the supervision of the Secretary for War—although why a work of that kind should be considered as warlike is not evident. Then there is to be an executive committee, consisting of a chairman, and the chief engineer, general counsel, chief sanitary officer, general purchasing officer, general auditor, disbursing officer, and manager of labour and quarters. The chairmanship is to be no honorary office, for the holder will have charge of all departments, and in the absence of other great officers shall take their place. The chief engineer is to have charge of all work relating to the canal or on the isthmus, as well as the Panama Railway; he is to have the custody of the supplies and

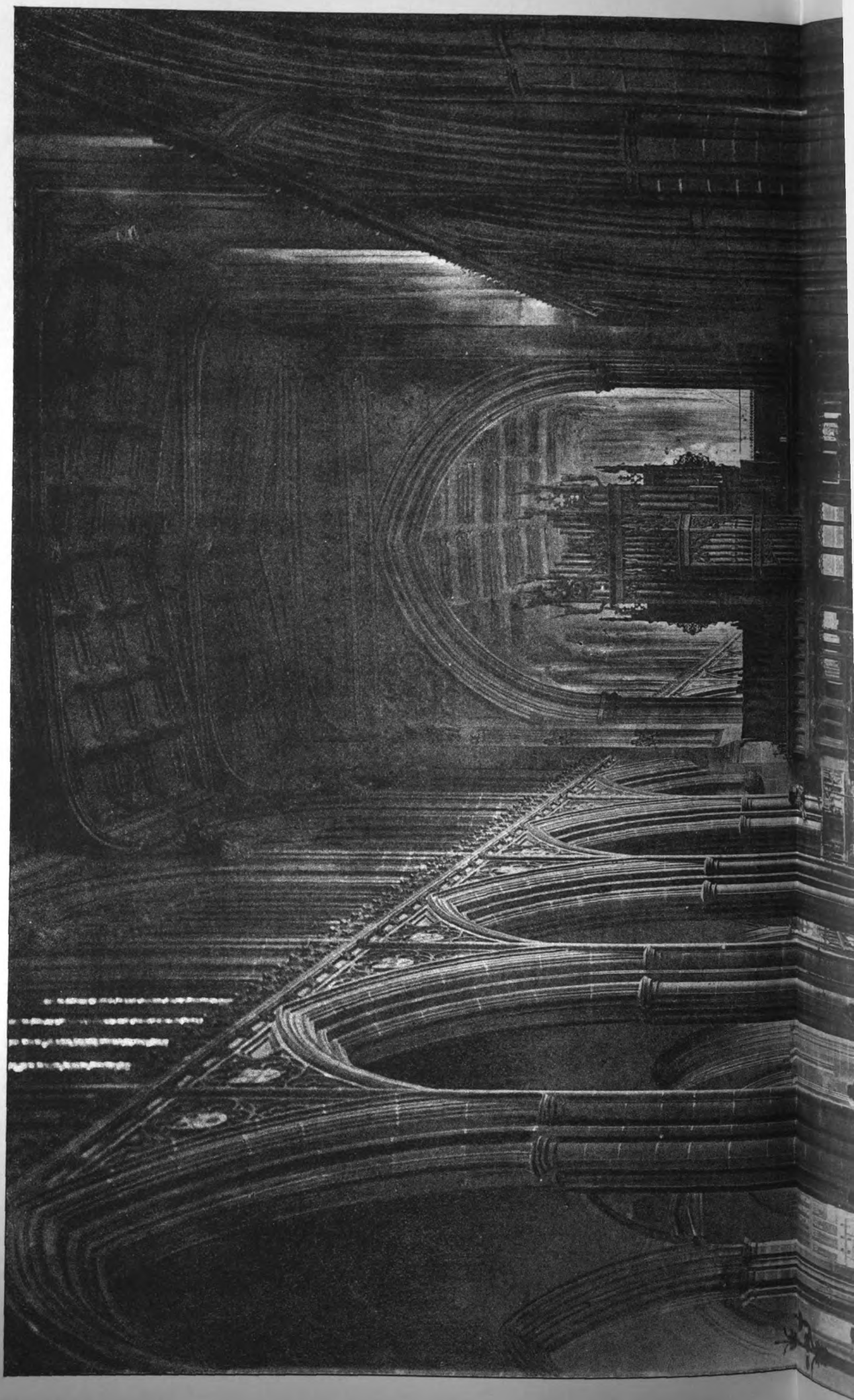
plant. All legal matters belong to the general counsel as well as the administration of civil government. The sanitary officer will deal with all sanitary matters within the zone of the canal, the cities of Panama and Colon, harbours, &c. He will have also the custody of all medical supplies. The purchasing officer will acquire and deliver supplies, machinery and plant. The auditor will have charge of the book-keeping, the accounts relating to property, statistics, auditing, &c. The preparation of pay-rolls and the distribution of wages and salaries will be the duty of the disbursing officer. The manager of labour and quarters is to have charge of arrangements concerning labour from the West India Islands or Central and South American countries, the general personal records of all employes, and shall assign quarters to all employes of the Commission or its contractors, and will be responsible for the operation of all Commission hotels and mess-houses. By the arrangement each high official will have his own special duties, and there can be few doubts concerning the department which should undertake any kind of work which had not been anticipated.

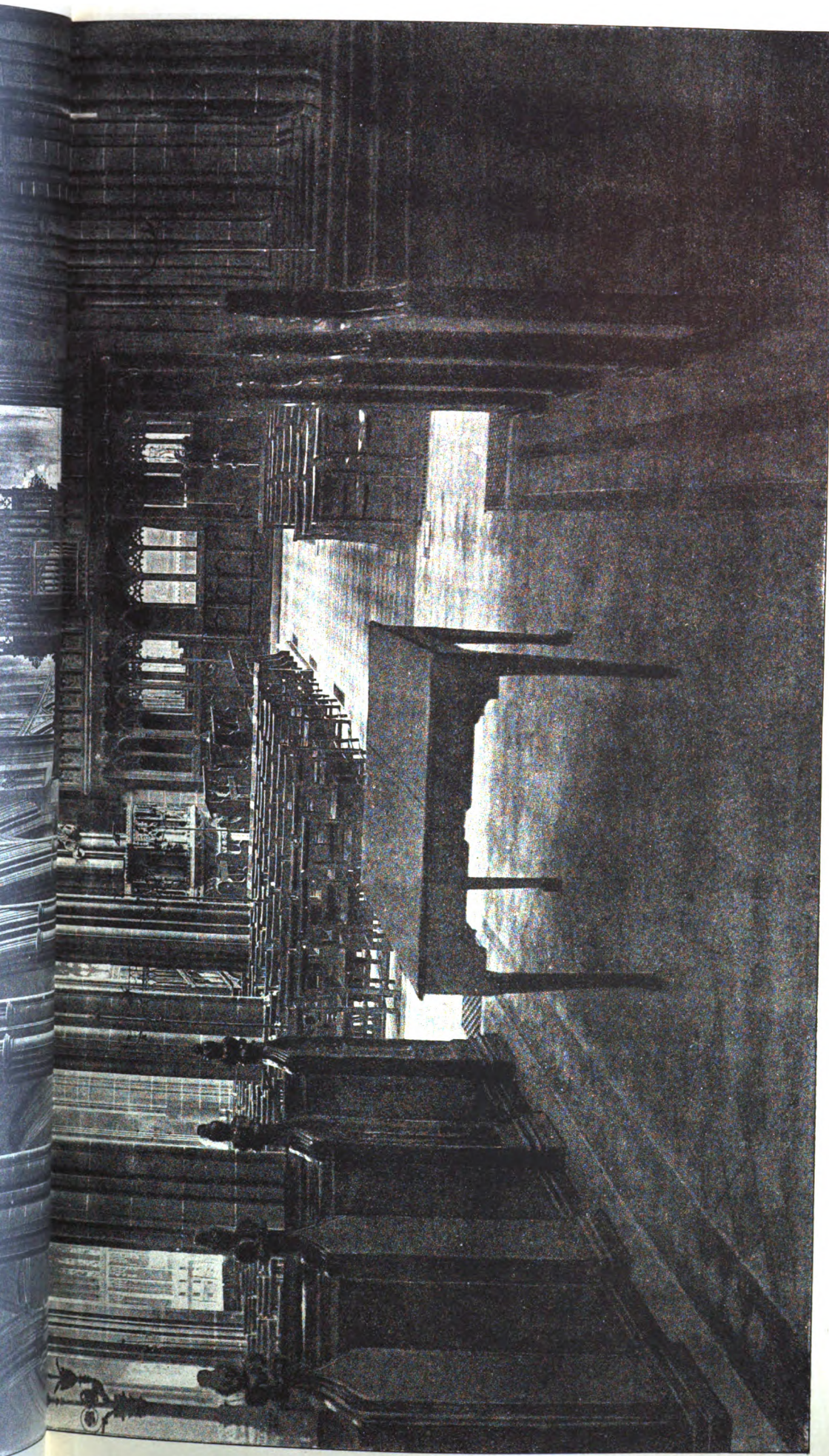
WHEN schools of art and university colleges were established in provincial towns it was generally assumed by the promoters that local industries were to have the benefit of the acquired knowledge and skill of the students. Experience has shown that the expectation was an illusion, for the students sought other fields for the exercise of their ability. The latest instance is presented by Nottingham. The Chamber of Commerce appointed a special committee to investigate the causes which prevented the School of Art from aiding the local lace curtain and embroidery trades. It may be supposed that the staple industry of Nottingham should have the first consideration. And, indeed, the claim was originally recognised. It is true that designs for lace are produced in the school, but somehow the manufacturers ignore them, and the excuse given in some cases has been that the designs were not adapted to the machines employed in the factories. The committee seem to be of opinion that there cannot be an improvement until an expert instructor is engaged. The theory on which both art schools and technical colleges are inspired is that the student must in the first place go through a wide range before he takes up any branch of art, and especially industrial art. But in the majority of cases the effect of the studies is to make students consider themselves as made superior by their talents and training to the humble work of producing trade designs. They are not to be blamed in all cases, for many manufacturers appear to think that a design of the kind is only worth a very small price. If local manufacturers would realise modern conditions and offer adequate rewards to young artists, then we might expect to see specialists created who will be at least equal to the designers of France and Germany.

THE report of the Commissioners of Public Works in Ireland shows the extent of the efforts to improve the dwellings of the labouring classes in the country and towns. Between 1866 and 1885 the amount expended was 281,334*l.*, and 3,416 dwellings were erected. During the past year six applications were received, amounting to 46,714*l.* It is remarkable that two were from public companies or private individuals, and the amount sanctioned was 40,675*l.* This fact is evidence that others besides district councils are taking interest in the improvement of dwellings. In the forty years between 1866 and 1906 the amount of the loans sanctioned was 1,120,867*l.*, and it enabled accommodation to be provided for 10,971 families. In addition, the large sum of 3,468,201*l.* was advanced since 1884 under the Labourers Act. A sum of 243,358*l.* was expended on residences for teachers in National schools.



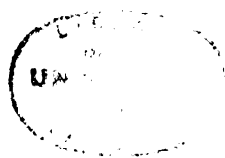
The Architect, Dec'r 14th 1906.

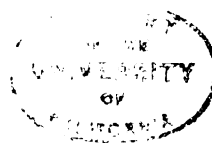


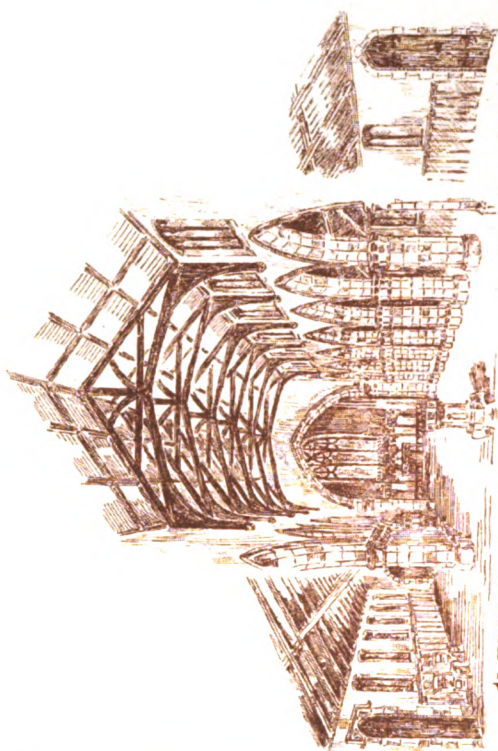


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CATHEDRAL SERIES, No. 588.—MANCHESTER: THE NAVE, EASTWARDS.

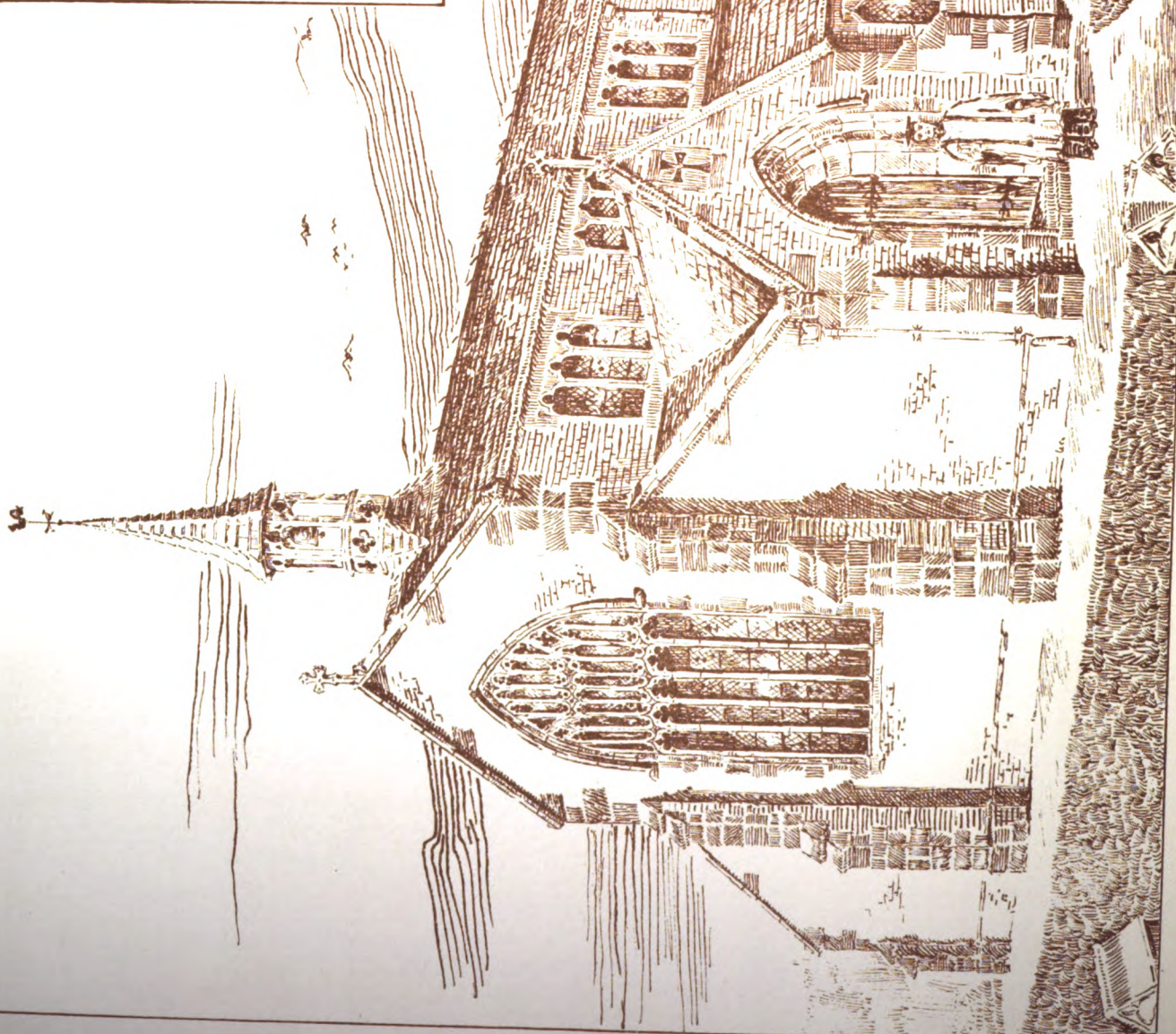






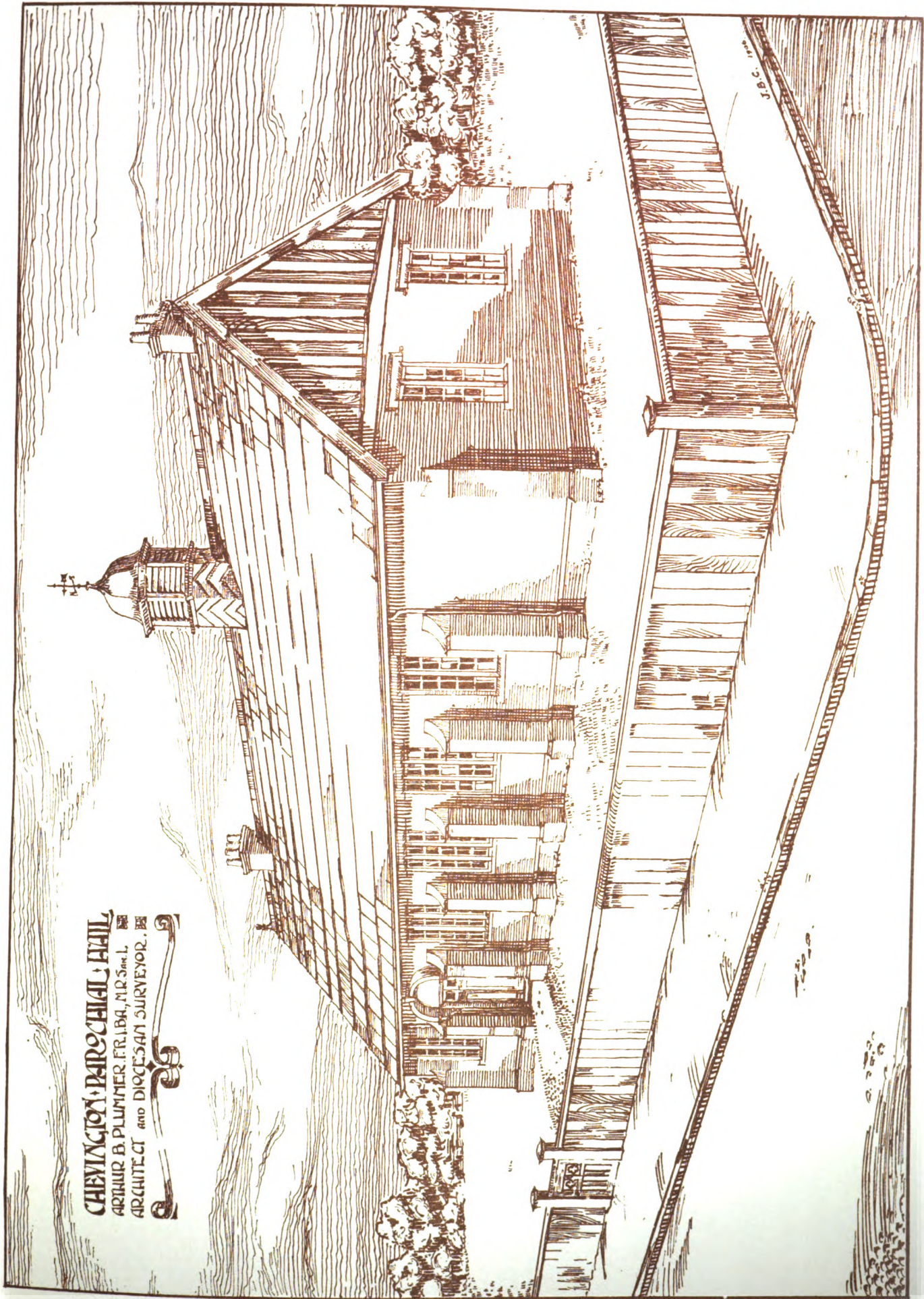
Interior of Sleekburn Church.
Sketch by Arthur B. Plummer, F.R.I.B.A.

SLEEKBURN CHURCH.

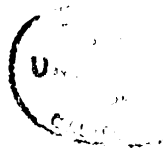


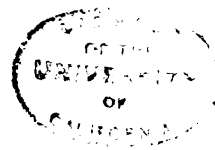
SLEEKBURN CHURCH.
ARTHUR B. PLUMMER, F.R.I.B.A., Architect.

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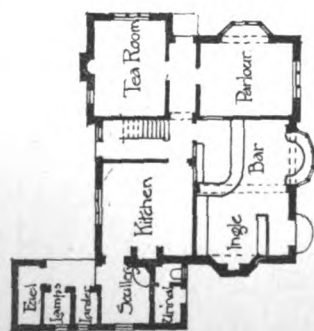


CHEVINGTON PAROCHIAL HALL
ARTHUR B. PLUMMER F.R.I.B.A., MR. S.W.L.
ARCHITECT AND DIOCESAN SURVEYOR.





THE "KINGS ARMS" INN, THORNFORD,
for the Dorset Public House Trust Co. Ltd.
J. Douglas Scott, A.R.B.A., Architect.



Ground Plan



First Floor Plan

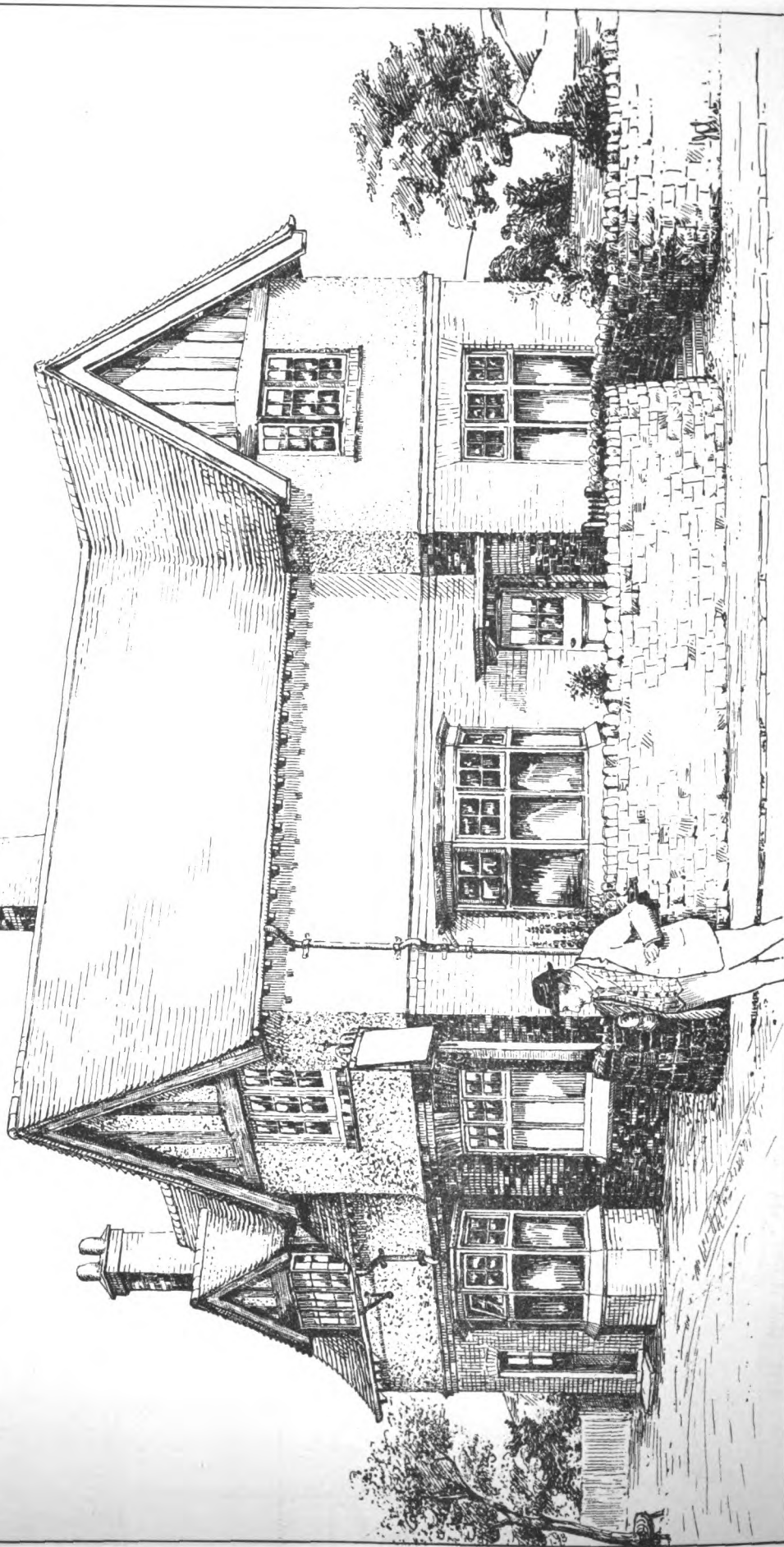
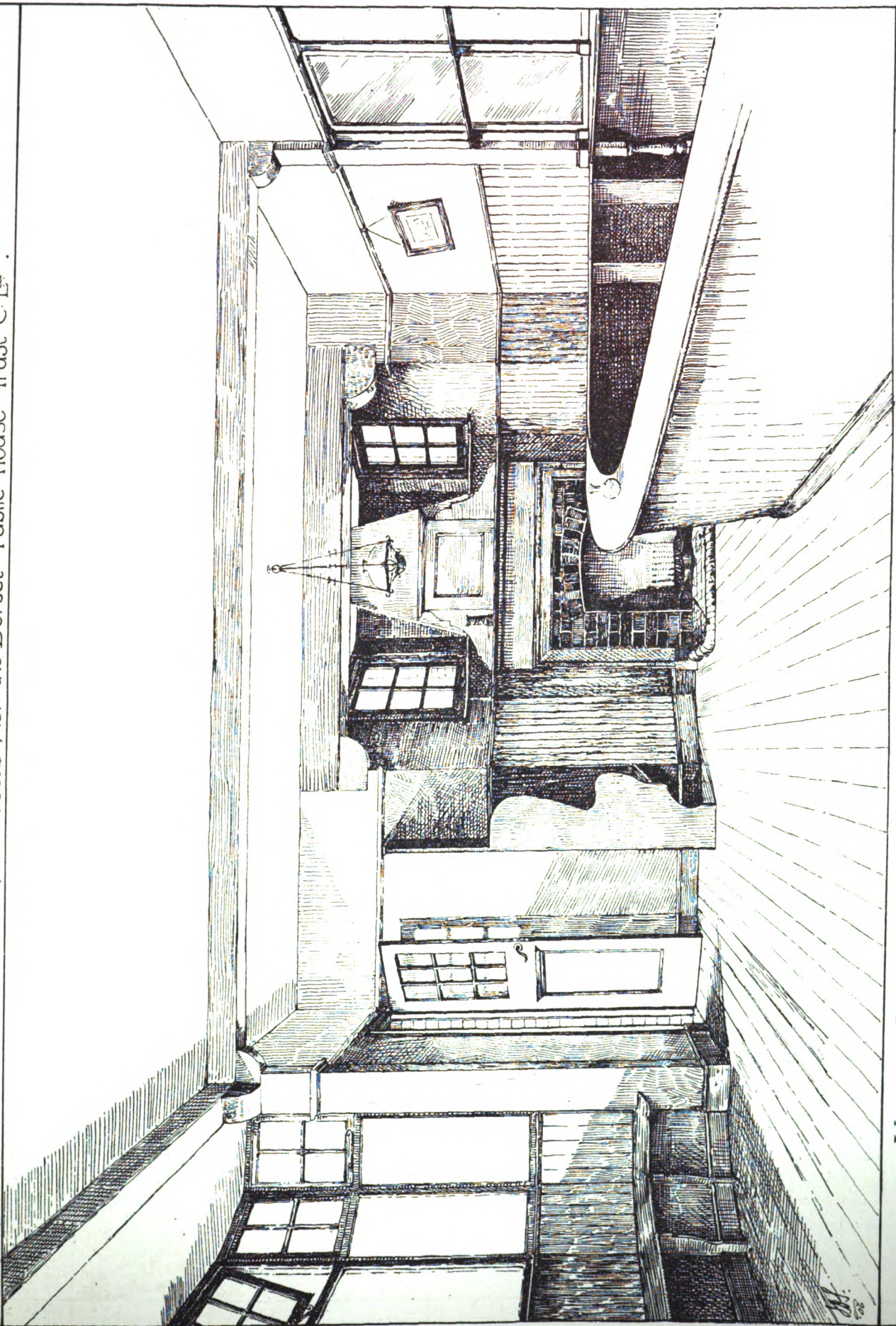


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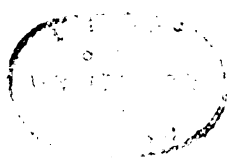
THE "KINGS ARMS" INN, THORNFORD, for the Dorset Public House Trust Co Ltd.

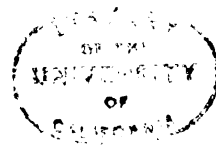


VIEW IN BAR TOWARDS INGLE.

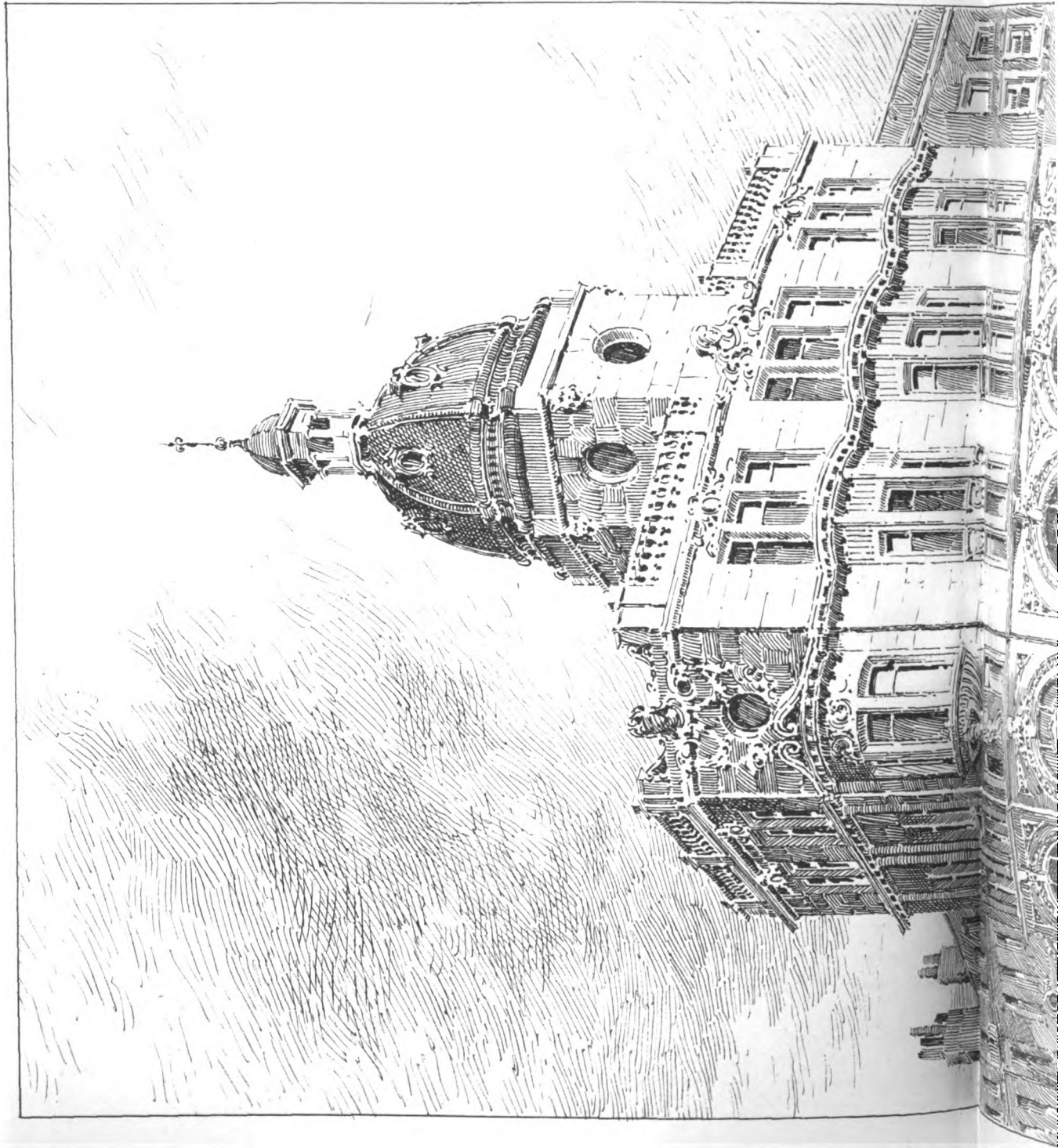
J. Douglas Scott, ARIBA, Architect.

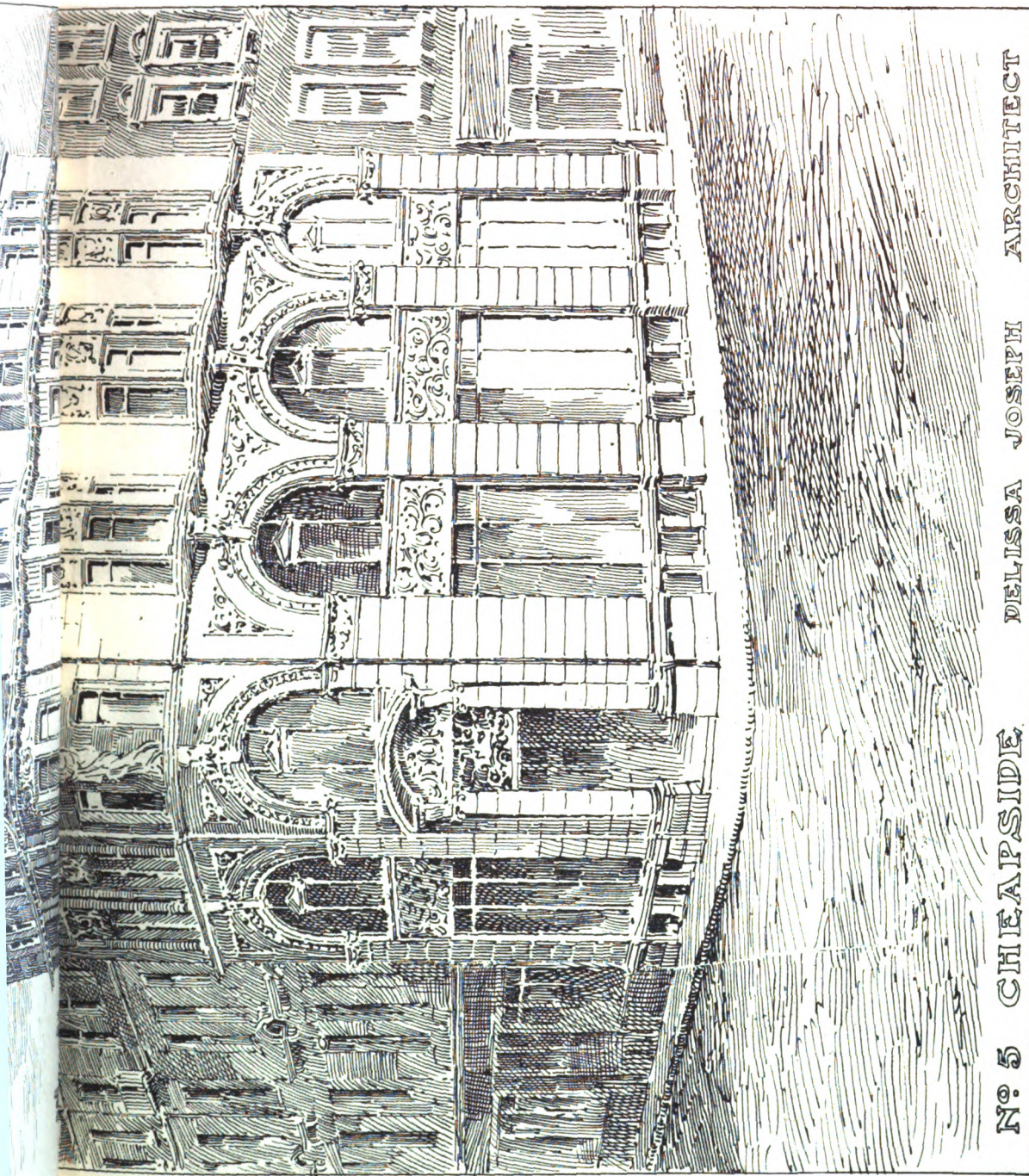
PHOTO LITHO SPRAGUE & CO. 4-5 EAST HARDING STREET FETTER LANE, E.C.





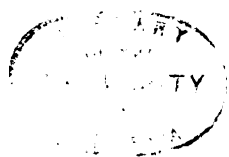
The Architect, Dec'r 14th 1906.





Nº 5 CHEAPSIDE. DELISSA JOSEPH ARCHITECT

PHOTOGRAPH BY J. H. EAST, HIRING, 11, FETTER LANE, E.C.



ILLUSTRATIONS.

NO. 5 CHEAPSIDE.

THE block of buildings erected at corner of Cheapside and Paternoster Row constitute the head offices for Great Britain and Ireland of the National Mutual Life Association of Australasia, Ltd. The material employed in the construction of the lower storeys is axed grey granite from Cornwall, the rest of the superstructure being executed in Portland stone and the whole being enriched with carving. The window sashes, frames and doors of the lower storeys have been executed in Austrian fumed oak, the frames of the upper windows being steel casements. The basement windows are protected by wrought-iron grilles, and the entrance doorway is marked by a wrought-iron fanlight bearing the Association's name in gold letters. The interior of the ground floor contains the public offices of the Association, the whole of the counters, framing and fittings therein having been carried out in selected Austrian fumed oak. The public lobby is floored with marble mosaic, founded upon a design brought from Egypt by the manager of the Association, Mr. J. B. GILLISON. The whole of the walls of the public offices are lined with marbles, the plinths being in hamachelle, the dado panels in jaune jaspe, the strings and rails in rose du var, while the main filling of the walls is in white Sicilian, relieved by vert des alp columns, the frieze being treated in carton-pierré. The ceiling is panelled, and from the centres of the panels descend electroliers of Florentine bronze, supporting large cut-glass cups in which lamps are grouped. The ground floor comprises, besides the public offices and vestibule, the accountant's room, general clerks' office, cashier's office and inquiry office, together with telephone box, strong-room and motor-room for lift. The basement contains the chief inspector's office, the sub-inspector's office, a typists' room, copying-room, extensive strong-room, lavatory accommodation, boiler-room and heating apparatus. The first floor comprises board-room and manager's room, medical officer's room, auditors' room, typists' room, strong-room and waiting-room. This floor is approached by a teak staircase enclosed by a wrought-iron balustrade. The whole of the partitions and appointments to this floor are carried out in Austrian fumed oak of selected material and special design, and the dados of the walls are richly panelled in similar material, the upper portions of the walls being hung with gold canvas. The second, third, fourth and fifth floors are arranged for general office purposes, with their own group of lavatories, each floor having the additional advantage of a strong-room. The upper floors are approached by a separate staircase and an electric lift. The electric lift is automatic, and enables any person having business with the upper storeys to carry himself to any of those storeys by the mere pressing of a button. The lift is enclosed in a wrought-iron grille, the cage being executed in oak. The whole building is heated by radiators, and there is a complete system for the introduction of fresh warmed air and the mechanical extraction of foul air. The building is lighted throughout by electricity, and it is fitted with electric domestic telephones, enabling complete intercommunication to the different departments. The whole of the internal metalwork has been executed in Florentine bronze. The general contractors for the main building were Messrs. J. WHITEHEAD & CO., LTD. The general contractors for the completion of the building were Messrs. SIMPSON & SONS. The granite, marble lining and mosaicwork were executed by Messrs. FENNING & CO. The heating and ventilating were carried out by Messrs. W. G. BURROUGHS & SONS. The electric lift was carried out by Messrs. WAYGOOD & CO., LTD. The electric light was installed by Mr. J. E. AUSTIN. The whole of the works have been carried out from the drawings and under the superintendence of the architect, Mr. DELISSA JOSEPH, F.R.I.B.A.

THE KING'S ARMS INN, THORNFORD—VIEW IN BAR TOWARDS INGLE.

THIS building has been erected for the Dorset Public-House Trust Company at Thornford, a large village about $3\frac{1}{2}$ miles from Sherborne, and is one of the 210 houses in the United Kingdom in which Earl GREY's scheme of public-house reform is being carried on by the thirty-eight county trust companies that have been formed for that purpose. Simplicity of design and homely comfort, with such a disposition of the rooms and the entrances as will enable the manager to exercise complete control and supervision over all parts, are essential features of all Trust houses. The accommodation provided on the ground-floor consists of a large general room, 16 feet by 25 feet, with bar and inglenook; parlour, 12 feet 6 inches by 15 feet, for the better class of customer; and a tea-room of the same size, with kitchen and usual offices conveniently arranged. On the first floor there are five bedrooms, of which two are set apart for visitors. There is a large cellar under the ground-floor. The walls have been built hollow, the lower part faced with red Somerset bricks, the upper part finished with rough-cast with half-timber gables, the roofs being covered with Bridgewater tiles. The contractor was Mr. W. W. HAYWARD, of Longburton, near Sherborne, and the architect, Mr. J. DOUGLAS SCOTT, A.R.I.B.A., of 23 Bedford Row, London, W.C.

SLEEKBURN CHURCH.

THIS church has been recently built and opened in the colliery village close to Bedlington station, in Northumberland. The church has been built at the small cost of 3,761*l.*, including boundaries, vestries, heating and font. It is faced with Bedlington Colliery Company's bricks, with stone dressings. A further sum was given by a private donor for painted east window, chancel fittings, reredos, pulpit, organ case, lectern, and mosaic pavement and marble steps for the chancel. The whole work was carried out from the designs of the diocesan architect, Mr. ARTHUR B. PLUMMER, F.R.I.B.A., of Newcastle.

CHEVINGTON PAROCHIAL HALL.

THIS parish hall is being built in Chevington parish, in the colliery village of Broomhill. It is being faced with bricks manufactured by Messrs. LOWRY, of Newcastle, being their best red-pressed facing bricks. The roof is being covered with green slates. The contract for building was let in the earlier part of this year to Mr. BROWN, builder, of Amble, Northumberland. The building is designed by the diocesan architect, Mr. ARTHUR B. PLUMMER, F.R.I.B.A., of Newcastle-on-Tyne.

CATHEDRAL SERIES.—MANCHESTER: THE NAVE, EASTWARDS.

ROCHESTER CATHEDRAL.

THE cathedral, it is announced, is insured in two offices in equal moieties for 39,700*l.*, apportioned between the fabric and the fittings. In March 1905 the Chapter took the amount insured into their consideration, raising the insurance on the fabric and that on the organ. In the same year they dealt with the question of fire appliances, purchasing new fire hose and fittings under the advice of the captain of the local fire brigade, and placing these appliances under the care of the brigade's superintendent of apparatus, who is to inspect them periodically and to be responsible for their efficient condition. Fire extinguishers have been placed near the chapter-house door, near one entrance to the roof and in the ringing chamber. It is not considered that any risk attaches to the part of the crypt used for the hydraulic organ engines, and there is a strict injunction that no naked light be taken into the interior of the organ. The vergers understand the mechanism of the appliances, and are instructed as to the steps to be taken in case of an alarm.

ROYAL HIBERNIAN ACADEMY.

THE following is an extract from the evidence of Sir Thomas Drew, LL.D., F.R.I.B.A., president of the Royal Hibernian Academy, before the committee of inquiry into the work carried on by the Royal Hibernian Academy and the Metropolitan School of Art, Dublin:—

The Chairman (Lord Windsor): You are President of the Royal Hibernian Academy of Arts?—Yes.

It is a fact, is it not, that you were an Associate in 1867?—Yes.

And an Academician in 1872?—Yes.

And President since what year?—Since 1900.

Perhaps it would be more convenient now to ask you to make any statement that you wish to submit with regard to the Royal Hibernian Academy and its position at the present moment?—I suppose that includes its history?

The Royal Hibernian Academy of Painters, Sculptors, Architects and Engravers was founded in 1823 under a Royal charter of George III.

The Academy received a supplementary charter in 1861. It has withdrawn now from seeking for any other charter as stated in earlier communications to His Majesty's Government. The origin of the Academy was in the desire to imitate the association of Independent British Artists in London, in a Royal Academy founded about 1760 with certain functions of usefulness to contemporary art, and which was favoured and endowed with gifts from the privy purse of King George IV. The functions of the Royal Hibernian Academy were similar to those of the Royal Academy, and they were exactly analogous to those of the Royal Scottish Academy, which was founded later, and they may be defined in terms borrowed from the definition of functions and status of the latter institution given by a Treasury minute of February 25, 1858, adapted to the Irish case, namely, "(1) The giving to the Royal Hibernian Academy, which must be considered as the representative of the artists of Ireland, its due position in reference to the promotion and teaching of the fine arts. (2) The securing to the inhabitants of Dublin, by the annual exhibitions of modern art, opportunities, which cannot be over-estimated, of rational amusement, mental cultivation and refinement of taste."

With regard to endowment, the Royal Hibernian Academy derived its first establishment and buildings from a private citizen of Dublin, Francis Johnston, architect, in 1826, and from his wife Anne in 1830. The value of the premises is about 7,000*l*. Her Majesty's Government, through the Irish Board of Works, defrayed the cost of a new roof for the greater gallery about 1872. The cost, I believe, was 403*l*. Sir Thomas Jones, a former president of the Academy, added a schoolroom for study of the life model at his own cost, with other improvements to the value of 1,000*l*. A Prince Consort Memorial (Albert) Fund, amounting to about 1,200*l*, was, by gracious will of Her late Majesty, apportioned to the Academy. Its interest is applied at present in medals and prizes for students.

The Academy possesses a small library and collection of prints, some diploma and other pictures acquired by gifts, or bequests, or purchase, among which are some fine works by Giordano and Bassano, little known. The Academy has had since 1832 public recognition in an annual grant of 300*l*. voted by Parliament as its sole financial support outside the endowments above mentioned. It has during eighty years devoted most of that small aid to the maintenance of a life school for young artists, which the members of the Academy voluntarily established by resolution in 1826. It is not under the terms of the Charter. It is but an adjunct to the primary purpose of the incorporation, and is dependent on the voluntary services of the members as visitors and teachers.

The Academy has strenuously fulfilled its duty under its Charter with the quite inadequate grant of 300*l*. a year for eighty years, and with increasing excellence, while there has been a good deal of public spirit on the part of the members in keeping up such exhibitions when its financial resources were gradually decreasing. During the last few years both the annual and the winter exhibitions have been very creditably maintained. They have aroused great interest in Dublin, and have in great measure stimulated the movement which led to this commission. The Academy has suffered vicissitudes and interruptions in its work during its existence, notably such as the state of Ireland following the great famine of 1847-8, when, for a number of years, interest in art was set aside, and patronage of it was slowly recovered. About 1875 the Academy was still fairly prosperous, but

the change had already begun of the whole district north of the Liffey, of which Sackville Street is the principal centre, through the desertion of it by the entire residential well-to-do class year by year, until street after street became occupied by second or third-rate business and tenement houses, which are even now invading the once fashionable squares. The entire population of a new Dublin which is of importance to the Academy, to a number perhaps of 250,000, is grouped in streets and suburbs around South Dublin, and the people are for the most part not interested in, and resort but little to, the north side of the river. The Academy situated as it now is, in what is an obscure byway and in decaying buildings, could no more hope to carry on its functions prosperously and usefully for Dublin than if it were in some other city. It is especially injurious to it that it is excluded from those centres of art and science which, with the most fortunate results, have been comprehensively grouped around Leinster House. It is still a puzzle why, and under what influence, modern and contemporary art, so essential to the round of art culture, was, without any explanation, dropped from the otherwise splendid scheme under which the establishment of art and science around Leinster House was conceived between 1860 and 1870. It is in the opinion of most Dublin people a grave imperfection in this intended circle of intellectual culture that modern contemporary art has not yet its place. A site and exhibition buildings in this essential centre is, after all, the primary necessity of the Academy, and to this, considering the public benefactions to the other Royal Academies of London and Edinburgh, the Academy and the Irish public consider that the Hibernian Academy has claims. The provision of buildings, for which it has claims on public subsidy, is but after all a secondary difficulty. It looks but for galleries in an inexpensive sort of building, and of no more extent than its present modest buildings, standing on a site inclusive of its offices of from 7,500 to 8,000 superficial feet, and in its galleries giving 750 fee lineal of wall for hanging pictures on.

The Academy allows me to say that it is as willing as ever to continue a school free to young artists as supplementary to the work of the Department of Agriculture as that Department, I believe, desires. The Academy has perfect confidence that with moderate improvements in its locality and financial resources it can make its business self-supporting and a useful influence. It is not the idea of practical-minded members of the Academy that it should be housed in costly buildings, which would stand in useless dignity during months in each year when no exhibition is on. The Academy, having primarily provided for its own wants without embarrassments, would desire to exercise its discretion in letting its galleries for other purposes cognate to the arts, for which accommodation there is an existing want.

The necessity for a new Charter asked for by the Academy through the late Lord Lieutenant, Earl Cadogan, need not now be pressed. Through the personal intervention of his successor, Earl Dudley, the power of framing by-laws under the Charter, with the approval of His Excellency the Lord Lieutenant, has been put in force so as to materially modify some previous disabilities. Its modest claims now are, first, a site and new galleries for its exhibition of modern and contemporary art in the vicinity of Leinster House; second, that the small fund realisable out of the past private endowments of the Academy should remain vested in it; and, lastly, that it should retain its autonomy and reasonable independence under which alone, with many difficulties, its members disinterestedly have been able to discharge the Academy's duty to the Irish public for eighty years, and which constitutes the essence of vitality of every academy of fine arts.

The figures will show that through a series of years, even with the most diligent and prudent management, and even when it has been able to devote only a limited sum each year to the upkeep of its decaying buildings, the Academy has a small deficit of income against expenditure. This could but result, under present conditions, in a lingering dissolution, under which the advantages of study of modern contemporary art would be literally lost to Ireland, a culture which is not absent, under State encouragement, in any country, state or province of civilised Europe known to members of the Hibernian Academy.

The Chairman: Could you tell us what is the number of Academicians and Associates?—The number is thirty Academicians and ten Associates. That has been one of our difficulties. I should explain to you that the Charter of 1861—I know from personal recollection, having had some-

thing to say to it—enlarged the membership from fourteen to thirty. The intention was that there should be room to include artists of Irish birth or connection, not necessarily resident in Dublin, and Daniel Maclise, R.A., John Foley, R.A., and Francis Danby were nominated in the Charter of 1861 as constituent members, representative of this class. At the foundation of the Academy, some such good men as Westmacott (sculptor), R.A., Rossi, R.A., and Sir Martin Shee, P.R.A., as honorary members, represented a like class. However, the working of the by-laws attached to the Charter made the continuance of this impracticable, imposing, as it did, conditions which made it practically impossible to elect such members in London. We have now somewhat improved that, but our by-laws still represent an awkward process. Yet it is possible for us now occasionally to elect an artist resident in London, leaving the resident artists at a number sufficient to carry on the work of the Academy here.

So you are relieved to a certain extent?—Yes. We would very much prefer that we had the Scottish arrangement of an unlimited Associate list which our Charter will not allow. We have a congested list of ten Associates, from which we must elect, and that list must be filled up before we proceed to elect a member.

Mr. Justice Madden: Then there would be some need of a supplemental Charter?—On that point there is a decided need.

Mr. Boland: You have at present no power under the by-laws to remedy this disadvantage of which you speak?—No. The Charter prevents us from altering our fundamental constitution. I should add that the number of members fixed at thirty is quite too large for all the artists to be drawn from Ireland.

You desire an alteration of the Charter in that particular?—I think the old number of fourteen Irish resident members was quite commensurate with Irish wants.

The Chairman: Are you obliged to fill up the number of thirty?—Practically we are. Under our old by-laws we should do so within three months. It causes great awkwardness. Now we have some delay allowed us.

Would you tell us how many of them are painters, sculptors and architects?—Out of the number of Academicians five are architects at the present time, two are sculptors and the balance are painters.

You stated in your evidence that the Academy has withdrawn from seeking for a new Charter because, as I understand, they have power given to them to make by-laws?—Yes.

But you modify this now?—Yes, in respect to elections.

Mr. Justice Madden: That is only a makeshift?—Yes.

Why not have a new Charter regularising the whole position?—It would certainly be more satisfactory, and a new Charter might be more practical.

Mr. Boland: But your principal desire is to show the necessity for the new site, and though the Charter would be a very great advantage, you do not lay very great emphasis on it?—No, I do not make it fundamental. A new site, and to have some more income available, is what the Academy wants.

The Chairman: As to this new site, I should like to ask a little more in detail; in your opinion the present site is not a suitable one?—I think it is utterly untenable any longer. As well as the decay of the building year after year, it is becoming more obscured.

Is it not the fact that the Royal Hibernian Academy must maintain the building?—It has no option but to maintain it. I suppose it would be open to us to let the building go to ruin if we liked, but as the owners of the premises we are obliged to maintain them.

Have you found it impossible to spend the necessary money on maintenance?—Yes; we can do only quite trifling repairs of the most absolutely necessary kind.

Mr. Justice Madden: You have only got 50*l.* a year towards that?—Yes, and a good many of the repairs have been done gratuitously for years. For instance, we lent the Academy to the Society of Decorators, and as a little compliment, they repaired the place for us.

The Chairman: Do you attribute this mainly to the fact that the present building is situated on so unsuitable a site?—I do; and I have reason to speak, for I am very intimately acquainted with that side of Dublin for fifty years, and the change, especially on that side of Dublin, has perhaps nothing to equal it in any other city. It has turned Dublin into two separate cities.

Mr. Holmes: Regard being had to the fact that the population has deserted even this part of Dublin (the

neighbourhood of Leinster House), do you think the transference of the site over here would bring any material increase in the number of visitors?—I feel very confident about it. From my observation I think the establishment of the National Gallery here has been a decided success. As a centre it is resorted to. The people come there.

Mr. Justice Madden: There is a unique collection of Celtic gold ornaments and other things in the museum which people go to see, and when going to or coming from the museum they might look in at the Academy exhibition if it were adjoining?—Yes.

I believe the position of the Tate Gallery in London has told unfavourably on the attendance there?—I believe it has. The Tate Gallery attendance is largely made up of Americans and tourists who would make a point of seeing it wherever it is.

The Chairman: You have to look mainly to the support of the public in visiting your exhibition?—Absolutely. What I may call our gate money is our only income apart from the grant, and our expenses in bringing pictures from London to keep up a creditable exhibition, and sending them back again, is exceedingly heavy. We are at a great disadvantage in that.

Mr. Holmes: Have you ever attempted to increase the attendance by opening the gallery in the evenings at reduced prices?—We always do. We open at 2*d.* in the evening, and the place is well filled with working people, and we open on Sundays.

What do you charge for admission?—We charge 2*d.* or 3*d.* on a Sunday and 2*d.* in the evening, and both openings are well attended, and great interest is taken in the pictures, and there is quite a profit on the sale of catalogues to the working classes.

The Chairman: I should like to ask you as regards the other branch of your work, is it, in your opinion, detrimental to the teaching of the Academy students that they should have to come to this particular site?—I would not say that, because the students who mean to be artists are very limited in number, and they will go anywhere to get teaching. What they want is to be in touch with practical artists, and, like the French system, to learn their technique from good artists. They will go for that wherever it is.

So what is important in that respect is to get a suitable building and suitable rooms for teaching?—That is the sole requirement. We are at a disadvantage. We feel it a duty to make probationers coming into the school show that they are able to draw from the antique, and we are at a great disadvantage in not having sufficient room for school purposes, and when they say, "Where can we draw from the antique?" we cannot supply them. Before the rebuilding of the National Gallery the sculpture hall there was a good hall for study, but owing to the exigencies of the new building, the lighting has been changed, and it is not so good for study now. There is always a difficulty about teaching drawing from the antique for want of room.

How do you test those who apply?—Lately they send in drawings and sometimes they do work in a special class, and we see ourselves that they do work from the antique. When we get drawings sent in we find it necessary to look closely into them to see if they are genuine and done by the student himself, and sometimes he is put to work so that we may satisfy ourselves that it has not been brought from some other school. We take great pains to insure that there should not be any imposition of that kind.

Mr. Holmes: Are the teachers of the school themselves, or some of them, Academicians?—Yes. There are four visitors appointed annually. They get a very small fee for it.

They are practically unremunerated?—It is a very small thing. A mere honorarium of 10*s.* a visit.

I suppose that funds don't permit of paid teachers?—It would not be desirable to have paid teachers. Students would rather be taught by artists whose names they know.

Do you consider the teaching capable as it is now?—I think it is very good, and we could extend it. We could have a better school of painting, and we would have members taking a great interest in it.

Do you find the capacity of the visitors who teach varies very much: are some of them better endowed as teachers than others?—Some are more popular, especially with ladies; others are less popular, who may be more exacting.

On what principle are they selected?—Generally at our annual election we vote for the men that we consider make the best visitors, and it is regulated by the majority.

Do they take so much of the year each?—They get 10*s.*

fee for each attendance. If a man attends five times in a week it would be 2*l.* 10*s.*, and if he attended four times it would be 2*l.* for three or four months.

How long would he attend?—I should think about two or three hours—the ordinary time of a student.

The Chairman: Does he teach continuously?—He criticises more.

Does he leave it to another visitor or does he drop in when he can?—Whichever visitor comes on, if it is the same model that they have been drawing from; he acts more as a critic. He finds fault with careless drawing or anything of that kind. You cannot exactly drill or discipline students of the Academy as you would in a school. It is by influence more.

The object of my question was rather to find out whether there was continuity. It seems to me that a student would gain more by having continuous criticism from one artist for a certain time than he would by having various artists coming in to criticise, but is it your practice to have the visitors come in and out in such a manner as to make it continuous?—Yes. There never has been any disadvantage through want of continuity.

Mr. Holmes: Do you exact any preliminary test from the students before they come, such as having to pass certain examinations?—Yes. The tests will be found in the rules here. (*Rules produced.*) They are pretty wide. In fact, they are identical with those of the Scottish Academy. It amounts to this—the students must send in a drawing from the antique done by themselves, or they must send in a series of works which show sufficient knowledge of drawing, and a little committee always sits upon what is sent in and investigates the drawings, and when the case is at all doubtful the candidate is taken into probation for a week or two, and that is the real test. The visitors watch him.

Do you ever find it necessary to reject candidates?—Yes, many very young persons, and people without the necessary previous training.

Where would they get that preliminary training?—Most of them from the Metropolitan School of Art here, some from private study, and there are some who present themselves without any qualifications or knowledge whatever, and are, of course, rejected.

I believe some two or three years ago Sir William Abney reported in favour of amalgamating the Metropolitan School with your school; do you think that is a desirable or an objectionable course?—We do not attach a great deal of weight to that, it seemed to involve so little in the matter of money. But the feeling of artists here is that students, when they come to the artist stage, require a kind of life school which is different from the kind of life school which suits a preliminary school such as the Metropolitan School of Art.

ART IN IRELAND.

ONE of the witnesses before the committee of inquiry into the work of the Royal Hibernian Academy and the Metropolitan School of Art, Dublin, was Mr. George Moore, the novelist. He has made a study of art and published a book on modern paintings. His evidence was in keeping with his articles and criticisms which have appeared from time to time:—

The Chairman (Lord Windsor): I believe I am right in saying that you have given a good deal of attention to art matters for some years past, and that you have been good enough to come here to answer any question in reference to them, and to give us your views?—Yes.

I believe you have made yourself acquainted with the working of the Metropolitan School of Art in Dublin?—Yes.

I would like to ask you your views upon the teaching, as compared with your experience, of the Academy schools?—If I might offer a suggestion, perhaps—

Yes?—Well, I would suggest, before going into details, I might give my views on the subject of your inquiry generally.

The Chairman: Yes—exactly as you please.

Witness: It seems to me that the first thing you have to do is to find out whether art can be encouraged or repressed; whether it is a thing of spontaneous growth or a thing that is produced like an orchid in a hothouse. Of course you can build art schools and picture galleries, and the newspapers will admire you for it, but will you help struggling talent? I should like you to inquire into the origin of art, and, facing the question boldly, I should like

you to ask yourselves if you really believe that the cause of art can be advanced by collecting pictures and presenting them to the nation; by collecting old furniture, &c.? Everything nowadays—shoes, medals, walking-sticks—every rubbish is collected, and the proud possessor generally insists that the nation shall build a gallery to house his treasures. It is generally assumed that art is being neglected if the industrious collector is not provided with an immortality in the shape of 30 or 40 feet of gallery. We find that art comes suddenly and swiftly, and that nobody has any clue as to how it comes. Take, for instance, what happened in Italy in the fifteenth century. Did not art appear spontaneously, like the spring? The social conditions were not more orderly than they had been before. There were no art schools nor museums; but art began again. Italy to-day has an excellent system of government; Italy is united; it has a perfect system of finance; but there is nobody in Italy to-day who can model a nose with even tolerable decorum. If you turn to Italy of the fifteenth or sixteenth century you find that Italy was at war; that every town was against its neighbour; that anarchy prevailed everywhere. There were assassinations and immorality that have hardly been equalled. Take Holland in the seventeenth century. Holland was then engaged in driving the Spaniards out, and to do so they did not hesitate to break down the sea-banks. The Catholics escaped as best they could, and the Dutchmen began to paint pictures—why, none can say—inventing an art all their own, unlike Greek or Roman art, choosing domestic scenes by preference. Why? No answer. . . . There were no art schools, no museums. The State did not encourage art; nevertheless there was art.

The Chairman: Do you suggest that art schools are of no use whatever?—I doubt their utility. If you look into the history of art you will find that all the art the world values was produced when there were no State-endowed schools.

Mr. Justice Madden: Your remarks are true of literature also, still we teach people to read and write?—You can assume that art schools are necessary, that museums are necessary, but there is no proof that they are.

At the time you mentioned the system of apprenticeship existed to a great extent, and that was what a school is—it was a kind of schooling?—Yes, a kind of schooling, whatever that may mean, no doubt; but the question before the committee is whether art can be encouraged or repressed. I believe that neither the one nor the other is possible. Mr. Whistler has some excellent remarks on this subject in his book, "The Gentle Art of Making Enemies." I wish I could quote the text. He calls attention to the fact that the admirable moral qualities of the Swiss have not helped them to realise any artistic aspirations. Every gap in their mountains yawns with noble legend, but the Swiss are left, he says, with the cuckoo clock, and the cuckoo with difficulty restrained in his box. Was it for this that Tell was a hero? Was it for this that Gessler died? But the jade hies to Nankin, and, sitting by an opium-eating Chinaman, inspires him to decorate a plate with little ladies, that the world loves. My memory fails me, but you will find the passage I mean in the "Ten o'Clock." Mr. Whistler was of opinion that art cannot be encouraged or repressed. If there is any country in the world that does not need art schools, I should say that that country is Ireland. It is dangerous to prophesy; the future is always hidden; but if anything seems sure, it is that the immediate future of Ireland is not art. Whatever education and culture there is in the country is leaving it. Ireland will soon be given up wholly to small farmers. Out of these, no doubt, an aristocracy will emerge eventually—hundreds of years hence. Meanwhile Ireland will have little need of art schools. The National Gallery is proof of the little interest Ireland takes in art. The National Gallery is the most perfect image of the Sahara I know. Now and then one sees a human being hurry by like a Bedouin on the horizon. True that the pictures that are bought for the gallery are generally worthless. Sometimes the pictures are ridiculous forgeries; sometimes the pictures are merely furniture pictures. They are nearly always without artistic interest. I speak of the pictures bought within the last ten years; 1,000*l.* a year is wasted, and nobody cares. That is what depresses me—nobody cares. And I sometimes ask myself if the genuineness of the pictures matters. There are not three men in Dublin of independent income who live in Dublin by choice. How can I expect Sir Walter Armstrong to give much attention to his gallery? No one goes there, except when it rains.

Ireland is given over to officials, graziers and priests. A few years ago 250*l.* was paid for a picture said to be by Lorenzo di Credi. Well, it isn't; it is an indifferent copy, but what does it matter?

Mr. Holmes: What do you suggest that we should do?—I think a certain sum of money should be granted to the Academy. The Irish Academicians may not be good artists, but artists they are, and when Ireland loses its Academicians it will have sunk deeper in the morass. They are miserably poor, but they are artists. Bring on better artists to Dublin if you can. Try to get artists to paint in Ireland. Example is better than teaching. No one learns anything he did not know before.

The Chairman: This committee has nothing to do with any inquiry into the National Gallery. Witness: I know that. I would, however, throw a little light on the general artistic outlook. However bad these artists are, they are better than none.

Mr. Holmes: You mean that it would be better to spend money on the Academy School than on pictures?—I think so.

Mr. Justice Madden: The important part of your argument is that, if you are to have a school, it should be under artists?—Yes, I think so.

And not under a department instituted for agriculture and technical education—a department of an industrial character—that's your point?—That is so. I once visited this Metropolitan School of Art, which costs 4,000*l.* a year. Mr. Orpen was there, and he came forward laughing. There were a number of people there, fifty or sixty, and I said, "Mr. Orpen, what are these people doing here—they are not admitted free, are they?" He said, "No, they are paid 1*l.* a week to come here." I discovered then that all these people had come up from the country for a month, and that they had been sent to Dublin to acquire as much art as would enable them to teach. What they wanted was to get diplomas. There is no human being that you could not teach to take a piece of clay and fashion it into such a shape that most people would recognise it as an apple. I saw a Christian Brother laboriously trying to turn a piece of clay into the shape of an apple, not because he wanted to do it, or because he had any interest in the matter, but because he wanted to be paid for teaching other people to take other lumps of clay and make them more or less like apples.

Mr. Justice Madden: But it has its serious side. I understand that these people were sent up to aid in the movement that is going on through the country in the primary schools—to aid in the training of hand and eye: they were educated in the School of Art in order to start that system through Ireland—that is the idea, right or wrong?—In Ireland most people will admit that they are not educated; many will admit, if pressed, that they could not be educated; but I never met anyone who would admit that he could not educate somebody else. In this country most people are not satisfied unless they are teaching someone else—generally something that they do not know themselves. People come to this school to learn to slop paint about and make messes with wet clay, and that is said to be developing art in the country. Some people may believe in it, but I don't.

You began by saying that you saw them making something into the shape of an apple?—Others were doing little bits of still life—a bit of curtain, a vase, &c. Of course, there is no better way of learning to paint freely, he must make his own composition; he must try to give a personal impression of what he sees. Whosoever was painting, the picture I saw was not concerned at all with what he or she saw, much more with trying to imitate a similar arrangement hanging on the wall, which had won a gold medal.

The Chairman: But we have to deal with possibilities?—Witness: People will always go to see a new building, police barrack, or museum.

The Royal Academy obtains great wealth from the people that visit it?—From people who come up from the country, but not from artists. Sir John Millais foresaw the danger of appealing to the country, and he said to me one day:—"The enfranchisement will be enlarged when Leighton and I are gone, and the Academy will become as popular as Madame Tussaud's." Give money to the Royal Hibernian Academy—the lighting is excellent, the rooms are not bad—by giving them money to clean 'em up and to provide more models, something quite sufficient can be done for Dublin.

Mr. Holmes: How about the teaching; what can be done

about that?—Oh, Mr. Orpen, who is going to give evidence here, is a very competent artist. He is a very good draughtsman, and, of course, men like Mr. Orpen would be a great advantage.

Mr. Justice Madden: The practical part of your evidence is that we should try to do what we can for art through the Academy?—Yes.

Why leave it in the place where it is; is it not an unfortunate position? You have said that we should assist the Academy where it is, but a great many, if not all, of the witnesses say that it would have a better chance of prosperity if it were in a more artistic centre, and where people would be more likely to find it out?—I think not. Anybody who wants to see a picture will go anywhere to see it. I don't believe that any person who would go to see a picture in Stephen's Green would not go elsewhere to see it. For a time you would get thousands to look at the new building, and then the state of things would be the same as in the old Academy. There won't be any difference. If people want to see pictures they will go anywhere to see them.

What would you do with the Metropolitan School of Art—would you shut it up or have a new system?—It is an enormous expense, and it is perfectly useless. I am sure of that. I think the money could not be employed worse. I don't say that I would give the whole 4,000*l.* a year to the Academy; that would probably be too large a grant; but I don't think anything can be gained by the Metropolitan School of Art. You might have a school for teaching lace and designs. I don't know anything about that.

The Earl of Westmeath: We hear a great deal about stained glass, and that there is a class for the encouragement of it in the Metropolitan School of Art. What is your opinion with regard to the teaching of stained glass?—It was made very beautifully in the fourteenth century, but if people can't say their prayers without stained glass I think their prayers are not worth much.

Do you think it can be encouraged in Ireland?—Modern stained glass is a very ugly thing, and it would be much better not to have it. To encourage it is only spending more money on religion—or religiosity, I should say.

The Chairman: We have heard something about the Glasgow School and the position it has got into. I suppose we cannot deny that that has done a considerable work in art education?—Oh, some of the painters of the Glasgow School have done very pretty things. Sir James Guthrie used to do some very nice things. You must have some sort of school, and I think a certain sum of money should be given to students to travel on.

Travelling scholarships?—Yes; Hughes got two scholarships and went to Paris. That was an excellent thing for Hughes; but what benefit it is to the nation that Hughes should reside in Paris I am a little at a loss to see. Hughes is a great friend of mine, and I think he merited his scholarships. The scholarships will enable people to go away to where they can learn art.

The Chairman: We hope they will come back.—Witness: Hughes is going to live there. If you go to the Beaux-Arts you see people there doing work because they want to do it, and when people want to paint they go to where painting is. France has been the source of all artistic inspiration for hundreds of years. People who want to paint pictures go to Paris. People who want to become priests come to Ireland. Why people should come to Ireland to paint pictures I can't understand.

You suggest that if anything is done it clearly should be done by some increase of grant to the Royal Hibernian Academy?—I think that is so.

Mr. Holmes: And should that grant be given in travelling scholarships to enable people to go to Paris?—Yes; I think it should. It is doubtful whether they would come back, but it would enable them to become artists.

You don't think they have much chance of becoming artists here?—I think there is very little natural impulse here. When art comes it comes suddenly and swiftly.

Professor Gerald Moira has been elected a member of the Society of Twenty-five English Painters. This completes the full membership.

The Exhibition of Pictures promoted by the Aberdeen Artists' Society was formally closed on Saturday evening. During the three months that it has been on view the collection, an exceptionally fine one, has been visited by in all 40,000 persons.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

AT the rooms of the above Society, on the 6th inst., Mr. C. B. Howdill read a paper on stained glass. The president, Mr. H. S. Chorley, occupied the chair. The lecturer first dealt with the discovery and early history of glass, and afterwards described in detail the method of making glass—both stained and enamelled. He also explained the process of making ecclesiastical figure windows, from the first cartoon and cutting of the glass onwards through the painting to the leading and fixing. The different periods of Mediæval glass were described and illustrated in unique manner by many fine natural-colour slides of famous historic windows at York, Ripon and Oxford, the slides having been made by the lecturer himself. It was John Thornton, of Coventry, the glass-painter of the fifteenth century, who glazed the great east window of York Minster, and was paid about 900*l.* of our money for a window which, according to modern values, would cost about 2,000*l.* The old craftsmen of the fourteenth century, however, drove a harder bargain and secured better pay for their work. In the fourteenth century the rate of pay was 9*s.* (modern money) per foot for plain glass and 18*s.* per foot for coloured glass. That this was exceedingly good pay is shown by the fact that the cost of such work to-day would be roughly estimated at from 25*s.* to 30*s.* per foot. Some examples of the famous Fairford windows were also exhibited, and some of the windows were shown in detail and their meaning elucidated. Various phases of modern glass were illustrated, including some of the earlier and also late work of Burne-Jones at Christ Church, Oxford. The influence of Botticelli on glass painting was pointed out.

A vote of thanks to the lecturer was proposed by Mr. W. G. Smithson and seconded by Mr. G. F. Bowman, and a discussion afterwards followed.

ROYAL ACADEMY SCHOOLS.

MONDAY was the annual celebration of what is the great day for students of the Royal Academy schools. The distribution of prizes was deprived of some of its interest by the absence of Sir E. J. Poynter on account of illness. The keeper, Mr. Ernest Crofts, R.A., who, in the President's absence, should take his place on such an occasion, was also unable to appear through indisposition. The duty of distributing the prizes therefore fell to Mr. W. F. Yeames, R.A., the librarian, who was supported by several of the Academicians and Associates. The business of the evening was confined to the announcement of the awards. The following is a list of the successful students:—Landscape painting, *Sky Effect over Meadow and River*, with a Bridge in the Foreground, Creswick prize (30*l.*), Marianne Harriette W. Robilliard; design in monochrome for a figure picture, *Joseph Interpreting Pharaoh's Dream* (Gen. chap. xli.), Armitage prizes, first (30*l.* and bronze medal), Mary Dorothy Maltby, second (10*l.*), George Howard Short; design for the decoration of a portion of a public building, "The singers went before, the players on instruments followed after; among them were the damsels playing with timbrels" (Ps. lxxviii. 25), prize (40*l.*), Caron A. C. Oliver Lodge; cartoon of a draped figure, *A Female Figure in Classical Drapery carrying a Pitcher* (no background), silver medal and prize (25*l.*), Amy Joanna Fry; painting of a figure from the life, silver medal, first, Hilda Fraser Parker, silver medal, second, Susan Beatrice Lock; painting of a head from the life, silver medal, first, Ernest Stafford Carlos, silver medal, second, Francis E. Fitzjohn Crisp; perspective drawing in outline (open to painters and sculptors only), *The Pavilion inscribed to Sir Thomas Kennedy, of Cullean, Bart. (Earl of Cassilis): the tenth plate in Chambers's "Civil Architecture,"* silver medal, no competition; set of six drawings of a figure from the life, first prize (20*l.* and silver medal), not awarded, second prize (15*l.*), Francis E. Fitzjohn Crisp (disqualified owing to having received the same prize before), third prize (10*l.*), Kenneth Edwin Wootton; model of a design, *Abraham Sacrificing Isaac* (Gen. chap. xxii.), first prize (30*l.*), Millicent Wadham, second prize (10*l.*), Ferd. Victor Blundstone (disqualified owing to having received the same prize before); model of a bust from the life, silver medal, first, Helen Frazer Rock, silver medal, second, Frederic Lessore; model of a design containing figure and ornament, *A Pair of Spandrels on each side of a Circular Arch, representing respectively Science and Art*, silver medal, Geo. Duncan Macdougald;

set of four models of a figure from the life, first prize (20*l.* and silver medal), Frederic Lessore, second prize (15*l.*), Frank Gatter; design in architecture, *A Town Church, Travelling Studentship* (60*l.*), William Harvey; set of architectural drawings, *The Hall of the Brewers' Company*, silver medal, first, Sidney William Davis, silver medal, second, Albert Edward Bullock; set of architectural designs, prize (25*l.*), Francis James Watson Hart; perspective drawing in outline (open to architects only), *The Interior of the Hall of the Charterhouse*, silver medal, Albert Edward Brooker; original composition in ornament, prize (10*l.*), Frederic Lessore; set of drawings of an architectural design, first prize (15*l.*), William Harvey, second prize (10*l.*), Alan Leslie Belcher; architectural design with coloured decoration, *A Pavement in Coloured Marble for the Entrance Hall of the Royal Academy*, silver medal, Alfred Alexander Carter.

Landseer scholarships of 40*l.* a year each, tenable for one year, have been awarded:—In painting to Arnold Hyndman; in sculpture to Frank Gatter and James Alexander Stevenson.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the meeting held on Monday, December 3, the following candidates were elected as Fellows:—William Adamson, George Lennox Beattie, George Bell, Edward M. Blake, John Henry Blizard, Detmar Jellings Blow, Cecil Claud Brewer, William Lobin Trant Brown, Rudolph Maximilian Butler, William Henry Dashwood Cople, Frank James Chambers Carruthers, J.P., Marcus Evelyn Collins, Albert Selmar Conrad, William Cooper, William Morton Cowdell, Harry Bulkeley Creswell, William Crichton, James Davidson, J.P., William Lionel Eves, James Fasnacht, William John Fennell, Henry William Finch, Edwin Wollaston Fritchley, John Gaff Gillespie, George W. Hamilton-Gordon, Director of Public Works, Orange River Colony; Claude Harrison, Frank Morrish Harvey, Peter Lyle Henderson, Robert Allsebrooke Hinds, George Stanley Hudson, Arthur Rutherford Jemmett, William James Kemp, Sydney Decimus Kitson, William George Blackmore Lewis, James Hector McKay, John Campbell McKellar, Charles Rennie Mackintosh, William Hunter McNab, Duncan McNaughtan, Archibald Macpherson, F.S.A. Scot., Ninian MacWhannell, Henry Edmund Mathews, Stanley James May, Graham Nicholas, William Thomas Oldrieve, F.S.A., H.M. Office of Works; James Wallace Paton, James Piggott Pritchett, Edward Keynes Purchase, Walter Reid, David Robertson, A.R.S.A., Walter Wood Robertson, F.S.A., James Salmon, Jonathan Simpson, Ernest Willmott Sloper, Arthur Pole Small, Arnold Dunbar Smith, Alfred Steinthal, Harold Sudlow, Alfred Swash, Harry Ramsay Taylor, Isaac Taylor, Sir Alfred Brumwell Thomas, Richard Wellings Thomas, James Baird Thomson, William Aitken Thomson, George Alexander Troup, William Joseph Wagborne, William Snowball Walker, William Thomas Mynors Walker, John Waterson, John Watson, William Fleming Wilkie, James Leonard Williams, Cecil Locke Wilson, George Edward Withers, Ernest Woodhouse, Percy Scott Worthington, M.A.

As Associates.—Dennis Bamford, Henry Blackadder, Arthur George Bray, Albert Edward Brooker, Archibald Bulloch, William Wellesley James Calthrop, Harry Reginald Coales, Owen Hanworth Cockrill, Tilleard Horace Osman Collings, William Henry Howard Cooke, Reginald Wentworth Alfred James Cosway, Harry Beecroft Downs, Charles William Eaton, Ernest Harcourt Edleston, George Arthur Farrar, Francis Henry Fitzgerald, Frank Jamieson Forster, Frank Burwell Foster, James Black Fulton, Edward Hall Gandy, Laurence Mursell Gotch, Arthur Christopher Goulder, James William Hepburn, George Bernard Holland Hoole, Percy Cartwright Hoy, Francis John Humphry, David Bateman Hutton, Ernest Thomas Jago, Edwin Riddell Kennedy, Clifford Copeman Makins, C.B., Hugh John Cole Marshall, Harry Moss, Sydney Moss, Joseph Edward Mundell, Harold Franklyne Murrell, John Newton, John Parlett, Stanley Highfield Penlington, George Edward Phillips, Harry Arnold Rowbotham, Joseph Rycroft, Walter Pucker-Rylatt, Jasper Philip Salwey, Victor George Santo, William Peel Schofield, Henry Shackleton, James Smith, Francis Adams Sprules, Frederick George Stockdale, Charles Reginald Thickpenny, Wilfred Irwin Travers, Edward Holsworth Walker, Ewart G. Walker, Bernard Michael Ward, Bryan Watson, Bertie Cecil Westwick, Austin Woodeson.

CHURCHES OF THESSALONICA.

AT a meeting of the architectural section of the Royal Philosophical Society of Glasgow on Monday (Mr. R. D. Sandilands, president, in the chair), Professor Charles Gourlay delivered a lecture on "The Churches of Thessalonica," illustrated by lime-light views, and also by drawings and photographs, many of which had been taken by the lecturer himself. After brief references to the history of Thessalonica, Professor Gourlay described its beautiful situation, and showed how its importance as a seaport at the present day under the name of Salonica was owing to its excellent harbour, and to its being the capital of Macedonia. That Thessalonica was soon a stronghold of the early Christian Church was evident from St. Paul's two epistles to the Church there, while the fact that when the Turks became masters of the city they did not destroy but only slightly disfigured the churches in converting them into use as mosques had led to the preservation of a series of remarkably complete buildings in which the early Christian and Byzantine styles might be fully studied. The church of St. George was a fine example of the domed circular nave. The mosque of Eski Djouma showed the three-aisled church with capacious galleries, and that of St. Demetrius was a nearly perfect specimen of the five-aisled basilica. The church of Sta Sophia was one of the best examples of the Greek cross plan with central dome, and in addition had an outer aisle round three of its sides, while the Neo-Byzantine churches of St. Elias, St. Bardias, the Holy Apostles and St. Pantelemon, though all small, had each special features well worthy of study. At the close a vote of thanks was passed to Professor Gourlay for his lecture.

TESSERÆ.

Studies in English Houses.

AT Wressell Castle, Yorkshire, was a study called Paradise, coloured green and white, "where was a close, in the middle, of eight squares, latished about, and at the toppe of every square was a desk, ledged to set bookes on cofers withyn them, and these semid as yoined hard to the toppe of the closet; and yet by pulling one or al wolde cum downe briste highte in ravettes, and serve for desks to lay bookes on." At Naworth Lord William Howard's library was a small room, in a very secret place, high up in one of the towers, well secured by doors and a narrow staircase. In it was a vast case, 3 feet high, which opened into three leaves, having six great pages pasted in, being an account of St. Joseph of Arimathea and his twelve disciples, who founded Glastonbury, and at the end a long history of Saints, with the number of years and days for which each could grant indulgences. The roof was coarsely carved, the windows high, and had to be ascended by three stone steps, from precaution of the owner, not to be shot at. Close by the library was an ancient oratory, richly ornamented on the sides of the ceiling with coats of arms and carving in wood, painted and gilt. Peacham recommends that studies should face the east, to avoid moths and mouldiness. The clerk at Oxenford, in Chaucer, had at his bed's head twenty books clad in black or red. In another we find a curtain hanging half-way up, and a narrow ledge upon which books were placed, with their sides next the wall.

Piranesi.

Piranesi was well known to several English artists who studied in Rome; among others, to Mylne, the architect of old Blackfriars bridge, with whom he held a regular correspondence for several years, and for whom he engraved a view of that structure in its unfinished state, representing with precision the centres for the arches, &c., for the sake of preserving a memorial of them. Some of his works are also dedicated to Robert Adam, the architect, with whom he became acquainted at Rome. Piranesi was elected a fellow of the Society of Antiquaries in 1758, an honour he was proud of possessing, as he always carefully subjoined that title to his name in his subsequent works. He was likewise a member of the Academy of the Arcadi, by the name of "Salernido Tisio," as he has given it in one of his frontispieces; this was according to a fantastic custom of that Association, to give a new nomenclature to persons admitted to their privileges. Piranesi has been accused of allowing his imagination to embellish his designs, even when given as real views; and, it is said, not without reason. But this accusation must not be repeated to his discredit, as there are certainly many circumstances in

nature where the hand of taste is required to correct exuberance and place objects in the most picturesque and agreeable point of view. It is true that this important task should be entrusted to genius alone; but Piranesi most assuredly was admirably qualified to undertake it. Though professedly an architect, he seems to have indulged his taste less in creations of his own than in recording the works of old, though several of the sovereign pontiffs, especially Clement XIII., gave him commissions to repair or rebuild several of the churches of Rome, among which the principal were the Priory of Malta and the church S. Maria del Popolo. The lover of art regards Piranesi with admiration, as one of the first names in art, for his ingenuity and vastness of invention, his excellence of execution and the wonderful originality and boldness of his designs; but if a scholar, he regards him with still fonder enthusiasm as one who gave up his energies to the perpetuating the relics of antiquity, and by his learning and research illustrating those remains, and so teaching the public justly to appreciate them, preserved them from wanton attacks and neglect to which they had been previously exposed.

Primitive British Architects.

The earliest British architect on record, that is, apart from those mentioned in legends, such as Adhelm, was, according to William of Malinesbury, Ninias or Niniane, whom chronology places about the year 432. He built a church of white stone on the confines of England and Scotland, which appeared at that time so like a miracle to the Britons that it bore the name of *Candida Casa*. It stood in a place called White Heru, which is in Galloway in the south of Scotland. From the time of Ninias in 432 we can glean no information until 200 years afterwards of other architects or architecture, when Wilfrid, who was Archbishop of York in 600, rendered himself famous, during the latter part of the seventh century, for the churches of Ripon and Hexham, &c., of which he was the architect. The church of St. Andrew at Hexham was celebrated by an ancient writer, Eddius, who had seen it, as a miracle of art, and who speaks of it in the following manner:—"Its deep foundations and the many subterraneous rooms there artfully disposed, and above ground the great variety of buildings to be seen, all of hewn stone, and supported by sundry kinds of pillars and many porticoes, and set off by surprising length and height of the walls, surrounded with various mouldings and bands curiously wrought, and the turnings and windings of the passages, sometimes ascending or descending by winding stairs to the different parts of the building, all of which it is not easy to express by words." Richard, prior of Hexham, more fully describes this building in A.D. 1180; the building was then in a decaying state. Wilfrid also repaired York Cathedral, covering the roof with new lead, and filling the windows with glass in such a manner as to prevent the entrance of wind and rain, and yet admit the light. The frequent journeyings of this prelate to the court of Rome and his visits to the churches there, with the instructions which he received from Archdeacon Boniface, made him an excellent architect, while the opportunity which he had of engaging Roman workmen to execute his plans in England gave him every advantage of having his excellent ideas reduced to practice.



Prize Plans for Irish Labourers' Cottages.

SIR,—Now that these are being prepared it may perhaps interest some of your readers to have the views of one who, though not in the profession or in the building trade, has had some experience of erecting them and has given the whole subject much attention.

The primary need of human existence is air, and everything should be done to secure as free a supply as possible; windows should therefore open conveniently in all weathers. As sunlight is also a great foe of disease, and as darkness and dirt go together, the windows should be large. In my opinion only the ordinary sash with weights and pulleys should be used, and the lower sash may be fixed.

Casement windows should be prohibited by law, for no one should sleep in any bedroom the window of which is not more or less open all night; the more the better. Now casement windows cannot be opened in windy or wet weather. Unless people can always open their windows

more or less, they will rarely open them. If they must put up with bad air on wet nights they will make it do on fine ones. It is too much to expect a working man to get up in the middle of the night if the wind rises to shut his window. He will take care next night that he is not so disturbed.

Ireland is scourged with consumption, the deaths from this being nearly 13,000 per annum and steadily rising. We have yet to hear of anyone who habitually worked and slept in rooms with the windows wide-open who afterwards contracted this disease.

Another objection to casements is that, if left partly open, they can easily be opened wide by anyone from the outside. This enables a tramp to abstract things from the house in the temporary absence of the owner, and gives a feeling of insecurity to those occupying ground-floor bedrooms, and may make them shut their window at night. The sash window, if the lower one is fixed, is quite safe.

The sash never leaks, and if green hemp is specified for the cords, needs practically no repairs. The casement window will leak, the hinges get out of order, the frame twist and the fasteners get pulled off in storms. All the sixty or seventy exhibition cottages at Letchworth have them, and I observed that, though put up regardless of cost, about half of them would not open at all freely, many not at all.

These windows are picturesque, and so in England are the rage. Bournville and Port Sunlight have helped to make them popular, but in my opinion there are few bedrooms in either of these "model" villages that any sensible person would spend a night in if he could help it.

The chimneys should not be in the gables; a very large part of the heat of the fire is thereby wasted—quite enough to keep a couple of bedrooms warm and dry.

I may say the judges of the Letchworth Exhibition cottages condemned chimneys in the gables and casement windows, and then gave first prize to a cottage that had both these defects.

I think that one-storey cottages are best. I am aware that they are a little more expensive than two-storey ones, as the roof is larger, but this enables enough rain-water to be stored in a concrete cistern to supply the family, and the expense of a well may be saved, and the water is better for washing. The can of water daily for drinking and cooking can be carried a considerable distance without much trouble. The cost of the stair is saved, and if the eaves are wide the house is kept drier.

These cottages should never be built in pairs. It saves very little when the cost of a wall to separate the gardens is taken into account, and leads to constant trouble between the neighbours, from quarrels among the children or about trespass of fowls. Besides, each house should be set so as to get the maximum of sunshine, and this is impossible if two are built together.

In North China, where fuel is dear, they face all houses south, and one side of the street is always a blank wall. They say "the heat of the sun costs nothing."

Now, single two-storey houses of this size will have a very "tower-like" appearance. It may be a sentimental idea, but the one-storey cottage is characteristically Irish, and I would like to see it preserved.

ROBERT BROWN,

Honorary Secretary of National Association for
Prevention of Consumption, Ulster Branch.
Donaghmore, Tyrone.

GENERAL.

Sir Aston Webb's design for the concert organ to be erected in the great hall of the new university buildings at Bournbrook has been adopted. The specification of the organ has been drawn by Sir Edward Elgar.

The Derby Town Council have sanctioned the proposal to purchase property for 3,450*l.* to enable the enlargement of the art gallery to be carried out.

The Director-General of Archaeology, India, has sanctioned a grant of 10,000 rs. for the restoration of old temples in Kajraha in Central India.

Mr. Muirhead Bone's drawing at the New English Art Club exhibition—"The Great Gantry, Charing Cross Station"—a drawing made on the spot in the spring of the present year, has been purchased by subscription through the National Art Collection Fund for presentation to the British Museum.

The Winchester City Council have been informed that a fault has been discovered in the foundations of the Old Guildhall.

Professor W. R. Lethaby, F.S.A., has been appointed by the Dean and Chapter "Surveyor of the Fabric" of Westminster Abbey. Mr. Arthur G. Wallace has been appointed assistant surveyor.

Miss Alice Perry has been appointed interim county surveyor of County Galway in the room of her father, the late Mr. James Perry. The permanent appointment will be made at the February meeting of the council.

The Improvements Committee of the London County Council have informed the Borough Council that they are not at present prepared to advise the suggested extension westwards of the Chelsea Embankment, and do not propose taking any further action in the matter.

The Walsall Town Hall Committee in a report issued on Saturday state that as a result of negotiations regarding the threatened litigation over the erection of the new municipal buildings, all questions between the Corporation, builders and architect in relation to the outstanding claim for extras had been satisfactorily settled, an allowance of 1,025*l.* having been made to the Corporation off the demand made by the builders, who had, in addition, paid costs amounting to 300*l.*

The Library Committee of the Liverpool City Council at last week's meeting recommended that an application be made to the Local Government Board for a provisional order to enable the Corporation to borrow 35,000*l.* for library, museum and art purposes, but an amendment was accepted to reduce the amount to 12,000*l.*

Messrs. E. & F. N. Spon, Ltd., have published a "Reference Book for Statical Calculations," by M. Francis Ruff, for the use of boards of works, architects and engineers. It gives force-diagrams for frameworks, tables and instructions for statical calculations for various classes of building and engineering structures.

The Mersey and Irwell Joint Rivers Committee have agreed that a civil engineer be appointed as chief inspector. He should be a member or Associate of the Institute of Civil Engineers, and will receive a salary of 600*l.*, office staff and travelling expenses being provided.

The International Society of Sculptors, Painters and Gravers have elected the following Associates:—O. de Boznanska, Cecilia Beaux, Simon Bussy, Walter Crane, P. Dupont, A. Jamieson, A. E. John, Elizabeth Shippen Green, G. W. Lambert, J. Kerr Lawson, Sydney Lee, D. McGill, A. Maillol, Harrington Mann, J. Oppenheimer, W. Orpen, Charles Ricketts, Allen W. Seaby, H. le Sidaner, Ch. Storm van's Gravesande, Havard Thomas, A. G. Walker, H. Wolf. M. A. Bartholomé was elected an honorary member.

The Scarborough Corporation have resolved that the excavation of the Castle Keep and the improvement of the Castle Holms be proceeded with by the unemployed of the town, under the direction of the borough engineer, with a view to relieve the distress in the town.

At the Last Ordinary Meeting of the Institution of Civil Engineers it was announced that 21 associate members had been transferred to the class of members, namely, Messrs. H. C. Barnard, W. B. G. Bennett, E. F. S. Bowen, J. S. Brodie, F. C. Caffin, G. F. Carter, H. R. Ford, Edward Gabbett, Percy Hawkins, J. H. Johnson, G. O. H. Klopp, L. A. Legros, F. J. Pigott, R. N. H. Reid, E. F. Sanders, Herbert Shaw, R. J. Wallis-Jones, T. R. J. Ward, T. P. Wilson, Alexander Woodburn, J. W. Wyatt. It was also reported that 194 candidates had been admitted as students. The monthly ballot resulted in the election of six members—G. W. Buckwell (Barrow-in-Furness), F. R. Hull (Rothbury), E. S. Lindsey (Trichinopoly), F. G. Sharrock (London), J. L. Stirling (Rangoon), and C. Vaughan (Millom)—and six associates.

The Sub-Committee of the Lord Provost's committee on the restoration of the monuments of Edinburgh had a meeting with regard to the work which has been in operation for some time. It seems that a difference of opinion manifested itself with regard to some of the operations. Mr. Pittendreich Macgillivray, who reported on the matter, recommended that after the process of cleaning the monuments should be covered with a solution. It was this part of the report which led to discussion, the opinion being expressed by one member that to do this would be very injudicious, as the action of frost might be most destructive. It was agreed, before coming to any decision, to ask Mr. Macgillivray to have a meeting with the committee. The committee decided to defer operations on any of the other monuments till the summer.

The Architect.

THE WEEK.

SIR WILLIAM ARROL & Co. have in the course of a few years gained so much experience in bridge-building there can be no question about their fitness to undertake the widening of Blackfriars Bridge. The present structure was completed in 1869. The contractors were Messrs. P. & N. THORN, and the engineer was Mr. JOSEPH CUBITT. In the address which Sir WILLIAM TITE delivered as president of the Institute he expressed wonder at the successful manner in which granite, Portland stone and metal were combined. The hardest granite, he said, was polished in an astonishing way, and fitted with smoothness and beauty equal to joiner's work. In those days the polishing of granite was less common than now, and the massive columns were undoubtedly a novelty in bridge-building. Although they constructed the bridge in so excellent a manner, the contractors would not consider the work to be entirely fortunate for them. They brought an action against the Corporation which, after going through all the Courts to the House of Lords, was decided against them. Their case was that they relied on the plans as being practicable. But it was held that they should have tested the documents. In the specifications it was stated that caissons were to be used, but they were found to be impracticable. The width of the bridge between the parapets is at present 75 feet, and the roadway is 45 feet wide. When the alterations are made the roadway will be 73 feet in width, and each footway will be 16 feet wide instead of 15 feet as at present. The alteration will take place on the western side, and it is believed the traffic can be accommodated without the erection of any temporary roadway. The bridge which the present structure superseded was designed by Mr. MYLNE. His design was made the subject of attack by Dr. JOHNSON because it was proposed to use semi-elliptical arches.

DURING the present week the residence of the Archbishop of PARIS in the Rue de Grenelle has been more prominent in the thoughts of Parisians than any of the great buildings of the French capital. In evicting a very aged prelate the French Government did not remember SHAKESPEARE'S advice, that while it is excellent to have a giant's strength it is tyrannous to use it like a giant. No doubt the building was desired for a public office. But so summary a method of obtaining possession was not worthy of a people who pride themselves on their courtesy. The building was constructed in the eighteenth century from the designs of CHERIPTTEL, who was a pupil of BLONDEL, and in his twenty-second year was awarded the Grand Prix for architecture. Several churches in Paris were designed by him. In the Rue de Grenelle he constructed the Hôtel Rochecouart as well as the Hôtel Duchâtelet, which in recent times was the residence of the archbishops of Paris. The Marquise DU CHÂTELET was a scientific lady whose life was closely connected with that of VOLTAIRE'S. In the reign of LOUIS XVI. it belonged to the Duc DE GUICHE. Under the First Empire it was the property of the Duc DE CADORE. At the time of the Restoration it was turned into a public office, next it was used as an Austrian embassy, and finally it became the episcopal palace. Apparently it is destined to be again used for one of the Ministers of the Republic.

THE highways committee of the London County Council have reported against allowing omnibuses to run along any route without the approval of the proper authority. In Paris the companies have to make substantial payments in respect of the privileges they enjoy, besides contributing towards the cost of the repair of the roads. The effect on road surfaces and foundations in the Metropolis has been described by a Parliamentary

committee, who stated that "so long as our streets are full of holes, so long injurious vibration must be caused by heavy vehicles. A weight of a ton and a half on one wheel of a laden motor omnibus, not falling by gravity, but driven downwards by a powerful spring, into a hole half an inch or more deep, delivers a most powerful blow that cannot fail to set up serious vibration." Some of the surveyors have also testified that macadamised and gravelled roads are not adapted to withstand heavy motor cars. The foundations especially suffer. It has also been ascertained that the amount of lubricating oil, &c., which escapes on to the roadway from motor omnibuses, and which is very noticeable, has a very serious effect on asphalted roadways. The oil rapidly dissolves bituminous matter in the asphalt, and the latter becomes a soft pasty substance, which is easily cut into holes by the wheels of passing traffic. The maintenance of the County Council's tracks cost about 525*l.* per street mile. The rates paid on the permanent way are about 267*l.* per mile. The owners of motor omnibuses escape from similar expenditure. The Council have also to consider the complaints of occupiers of houses along the routes, and it is found that in consequence of the objections the number of empty houses in important streets in the central and western districts of London has increased since the advent of motor omnibuses, and that the value of the property has been depreciated, and also that even shop property may be injuriously affected. In fact, complaints have been made that the volume of business transacted in shops has been materially reduced. It is recommended that the attention of the Home Secretary should be called to the grievance, in order that he should consider whether legislation should not be introduced requiring a proper contribution to be made by the owners of these vehicles towards the cost of maintaining the streets.

THE Mayor of New York has appointed a Commission of several experts to investigate and report upon the administrative chaos of that city, which far exceeds that of the vestries of old days in London. The control of the streets is vested not in one department alone, but in many. Thus the Police Department, the Department of Street Cleaning and the Bureau of Encumbrances are each required by law to remove obstructions from the streets, while the Bureau of Buildings is permitted to grant permits for their partial occupation during building operations. The Department of Water Supply, Gas and Electricity, and the Bureau of Sewers have the right to allow the surface of the streets to be opened, while the Bureau of Highways is charged with the duty of keeping the surface of the streets in repair. In addition, the public service corporations claim certain rights to open and disturb the surface of the streets for various purposes, after the exercise of which it is often difficult to obtain from them a speedy and satisfactory restoration of the street. As a result of this divided responsibility, a street is often allowed to remain in a deplorable condition, while it is impossible to call any one department to account for its existing defects. If the Police Department or the Department of Street Cleaning remove building material that is unnecessarily obstructing the traffic on a street or a sidewalk, the defence is offered that such an obstruction has been permitted by the Bureau of Buildings. If it is sought to hold the Bureau of Highways responsible for the condition of a pavement, it is replied that the Bureau is powerless to proceed, because the openings have been ordered and continued by the Department of Water Supply, Gas and Electricity, or the Bureau of Sewers. The Mayor has the hope that his Commission will be inspired to devise some comprehensive plan which will do away with the existing conflict of jurisdiction and concentrate the responsibility for the administration of the city streets under one central authority.

THE LONDON COUNTY HALL.

IT may be taken for granted that since the last week of July, when the general conditions of the competition for the new county hall of the London County Council were announced, a great many sketches of the building have been drawn. There was not sufficient information available to enable a plan to be prepared. But at least it was possible to sketch the long line of frontage to the Thames, according to one's fancy. We publish to-day the conditions which are to govern the competition, and although the block plans are absent, they are sufficient to enable architects to realise the extent of the work which will have to be accomplished.

It will be seen that there is not any essential alteration from the general conditions which we published in July. There is to be a preliminary competition open to architects of any nationality. Works on the scale of the new county hall are not often projected in this country, and we readily understand the objection of some architects when they find that all the world can take part in the contest on equal terms with Londoners. But in advanced or progressive corporations like the London County Council there is what may be called an international element, and it is supposed to display itself in other things besides visits, entertainments and inspections. By a remarkable coincidence representative architects from England, Ireland and Scotland at the last Congress approved of the adoption of international competitions. If it were known that a few days after the resolution had passed the County Council of London would propose to open an international competition, it is not unlikely that those assisting at the Congress would be less impulsive in accepting internationalism with all its consequences.

From the designs submitted in a preliminary competition, not less than ten and not more than fifteen of the best are to be selected in private by assessors, and the authors will take part in the final competition. That clause remains as before. There is a slight alteration in the clause relating to the eight "leading architects" who, in addition to the ten or fifteen of the selected architects of the first competition, are to share in the final contest. At first it was said they were "to send in designs before the expiry of the period within which designs must be sent in for the preliminary competition." In the new regulations it is said, they "shall not be required to lodge their designs with the Council until the date fixed for the delivery of the designs in the final stage of the competition." The new rule allows more time, or about five months, to the selected eight for the preparation of designs, and to that extent is a great convenience to them. But there is a chance that in consequence of the concession some of the unsuccessful competitors will say that features in their designs found their way into some of the designs of the "leading architects." If the original arrangement had been adhered to that objection could not arise. It will be said, and with reason, that not one of the eight architects is likely to seek for inspiration among the unsuccessful designs. But any one who has had experience of competitions is aware that slight coincidences are often interpreted in an extraordinary manner.

Amidst so many architects possessing claims to be considered as "leading," it must have been difficult to make a selection. The establishment committee say it was after most careful consideration they decided on Mr. J. BELCHER, Mr. W. FLOCKHART, Mr. ERNEST GEORGE, Mr. H. T. HARE, Mr. T. G. JACKSON, Mr. E. L. LUTYENS, Mr. E. W. MOUNTFORD and Messrs. NICHOLSON & CORLETTE. It is undoubtedly a distinction to be selected, whatever may be the result in the competition. Each of them is, moreover, to receive a fee of 200 guineas, in common with those who have been successful in the preliminary stage. Under the peculiar circumstances attending architecture it is likely to be concluded that the eight leading architects have been

unduly favoured. It will perhaps be wiser to wait until the competition is over before giving a judgment on what is a novel experiment. The proposal to pay arose out of the belief that the eight architects were likely to be too busy to accept the risks of a competition in which an immense number of architects are expected to take part. But busy men are not always successful in competitions; and, indeed, in some of the most important cases the prizes have been carried off by those who were unable to point to a large number of executed buildings as evidence of their skill. It was expected that the list of selected architects would help to indicate the style that was desired, which was supposed to be some variety of Renaissance. However, the names do not afford any clue, for the architects represent several styles.

The difficult task of selecting not less than ten and not more than fifteen of the best designs is to be undertaken by Mr. NORMAN SHAW and Mr. W. E. RILEY, the Council's architect. In the second competition the two judges will have the aid of a third assessor, who is to be nominated by the architects taking part in the final stage. Mr. NORMAN SHAW and the elected assessor are to receive 1,000 guineas each; Mr. RILEY apparently receives no remuneration for his services in judging. It is stipulated, however, that he will possess discretionary power in matters relating to internal economy, building construction and stability with other works, and that he shall receive one-tenth of the five per cent. commission allowed as architect's fees. It is assumed that the sum of 850,000*l.* will be sufficient to provide a substantial structure suitable for the Council's purposes, exclusive of furniture and embankment superstructure, also of any special foundation which may be necessary.

The particulars given in the instructions show the minimum accommodation required by the Council. It is distinctly mentioned that competitors will have license to depart from the particulars in any details which may be deemed necessary for the development of the elevations. In considering the designs the greatest importance will be attached to simple and convenient planning. The designs in the preliminary competition are to be sent in on May 7. The date of the second competition will be October 3. But the latter will be mainly dependent on the number of the designs to be judged. A large number of inquiries have been already received for official copies of the instructions, and they will be issued as early as possible in the coming year.

It is difficult when considering the competition for the London County Hall to avoid recalling the competition for the Houses of Parliament on the opposite bank of the river. The old buildings were destroyed on October 16, 1834. In a short time Sir ROBERT SMIRKE was instructed to prepare designs for a new structure. That arrangement was not approved by several influential people of the time. In June 1835 the conditions of a competition were arranged, and it was decided the style was to be Gothic or Elizabethan. Four premiums of 500*l.* were promised, it being understood that the architect who won the first premium should carry out the work unless some grave cause to the contrary were discovered, in which case he was to receive an extra premium of 1,000*l.* On November 1, 1835, ninety-seven sets of designs were sent in, and on the last day of February 1836 it was announced that the first premium was awarded to CHARLES BARRY. The buildings were estimated to cost, exclusive of furniture and fittings, 850,000*l.*, and it was stated that they would be completed in about six years. For the new county hall there is likelihood of many more than ninety-seven drawings being submitted. The conditions of the competition for the Houses of Parliament were much more difficult—at least, as interpreted by BARRY. The Commissioners had to admit how minute were the drawings, for apparently BARRY spared no trouble in showing details. The London County Council are

not over-exacting in the requirements for the preliminary competition. All who love London and architecture must devoutly wish that the best design shall win, in order that the Metropolis may possess the finest example of municipal council houses.

REINFORCED CONCRETE.*

ABOUT two years ago we noticed the first edition of the large volume on reinforced concrete by Mr. C. F. MARSH. That time is sufficient for the introduction of many improvements in the use of materials which have received an extraordinary amount of attention. It might almost be supposed that concrete and steel were destined to supersede all other materials. And any opposition to their use does not arise from experts in construction, but from municipal and other authorities, who view departures from everything sanctioned by experience as likely to create danger. The Local Government Board, for instance, insist on loans for structures in concrete being repaid in fifteen years, or half the time allowed to other materials. When we find the London County Council proposing to undertake the preparation of concrete blocks we may suppose that one consequence will be a more definite recognition of the material, especially when it is supplemented by steel in various forms.

The third edition of the volume bears the name of Mr. WILLIAM DUNN on the title-page. It is acknowledged that he gave the author considerable assistance in the preparation of the first edition, and that he has aided also by letterpress and diagrams in the enlarged edition. One great difference is that the part of the book dealing with calculations has been rewritten and simplified. The number of illustrations and diagrams has been increased from 512 to 618. New systems have been described, and the pages therefore embody the latest conclusions on concrete.

The authors' impartiality must strike the reader after perusing a very few pages. Over forty different systems are described in detail, but preference is not given to any one of them. It is also shown that concrete work cannot be safely executed without much deliberation and care in the choice of materials. Nor is the use of concrete advocated on the ground of being more economical than ordinary building. In one place they say:—

Considerable experience in reinforced concrete for building construction has demonstrated that it is not a particularly economical material; its special claims lie rather in other fields. The ordinary building floor of steel joists and concrete is in general cheaper; but if the joists are fully protected against fire by covering them with concrete or plaster or expanded metal, the reinforced concrete floor in which all the metal is surrounded by concrete will be found as cheap and for heavy loads probably cheaper. For walls there is in general no saving in first cost, but the saving in space, and the power to resist injury from shocks and vibrations or rupture from bad foundations, must be taken into account. Reinforced concrete is specially economical when used for warehouses or factories where the walls can be formed in bays with columns or lintels.

The indiscriminate use of reinforced concrete is not advocated in the book, although remarkable examples of what can be done with the material are to be found among the illustrations. Germans and Frenchmen have opportunities for investigating theories of construction which are neglected in England, and as concrete lends itself to an embodiment of the results attained by mathematics and mechanics it follows that the majority of the systems come from foreigners. Indeed, some of the illustrations might be described as concrete and steel diagrams. One Hungarian engineer, whose system has been largely employed in Europe and

America, we are told, likens it to a spider's-web firmly attached to the points of support, for he employs steel wire instead of beams. M. PIKETTY, on the contrary, is described as being so far original that he has never instituted a system. In every instance he adopts a different treatment; he prefers round rods to flat bars or hoop-iron. Herr RABITZ uses ordinary galvanised wire network for reinforcement. The pages present many examples of ingenuity in the arrangement of materials, and somehow they all appear to serve the purposes for which they are intended.

One of the most important considerations in dealing with reinforced concrete is the question of cohesion. The elements of concrete may, if proper precautions are taken, become almost inseparable, *i.e.* if good cement be employed and care is taken in the mixing. But it is not so plain about the adhesion of the concrete with the metal. A brick parapet can be raised on the top flange of a rolled girder, which will be perfectly secure if strong cement is used to connect the bricks with the girder. But concrete differs from cement in being less adaptable. On this subject we are told:—

The property generally referred to as "adherence" of the concrete to the metal is probably only slightly due to any direct adherence, unless the surface of the metal is pitted, and would perhaps be better defined as a frictional resistance due to the setting of the concrete, the outer portions of which harden first, causing the concrete around the reinforcement to become compressed, and so clasp the reinforcement tightly. There is very little real adherence to clean iron, as can be easily proved by the simple experiment of moulding some concrete and placing a piece of square iron on the top, lightly pressing it to the concrete with the fingers. When the concrete has set it will be found that there is very little difficulty in removing the iron. If the piece of smooth square iron is pressed well into the concrete there will be considerable difficulty in its removal, but it will be found that this is caused by the holding of the sides by the concrete, and that the bottom comes away quite easily and is perfectly clean, the concrete being left with a smooth bottom surface. Also, when a reinforced structure is being demolished the iron frequently comes away fairly easily when the concrete is broken away from it on three sides. To whatever cause this property is due, however, it is one which is of the greatest importance in works of reinforced concrete, the resistance obtained in many of the systems now in use depending on it almost entirely. Tests that have been carried out for determining this resistance show that the load which produces the first loosening of the reinforcement is not proportional to the surface of adherence, and it seems very probable that the metal does not commence to slide through the concrete until its limit of elasticity is passed and it commences to become reduced in diameter. MM. Bauschinger and de Joly, from a series of experiments, concluded that the "adherence" of concrete to iron or steel rods was from 570 to 710 lbs. per square inch of surface.

An account is given of the latest experiments of Professor TALBOT, of Illinois, which were arranged for the purpose of discovering all the varieties of failures. They were carried out on beams 12 feet long, and between sixty and seventy were employed. The results obtained by other American professors are likewise given. These are offered for the purpose of illustrating the part of the book relating to calculations of steel and concrete beams and arches. Examples are given of spiral staircases, for the construction of which reinforced concrete appears to be particularly suitable. An example is given in Mr. G. W. VANDERBILT'S house in New York which could with difficulty be carried out in any other material. In a chapel at the Naval Academy at Annapolis there is a dome 70 feet in diameter which is carried by cantilevers from the main columns and which have a curved bracket shape.

A copy is given of the Prussian Government regulations as to the employment of reinforced concrete construction in buildings. Applications for permission to build must be accompanied by drawings, statical calculations and descriptions to enable the authorities to judge of the general arrangement as well as details.

* *Reinforced Concrete.* By Charles F. Marsh and W. Dunn, with 618 Illustrations and Diagrams. Third edition. (London: Archibald Constable.)

The origin and nature of the materials and the proportions in which they are to be mixed must be stated. A certificate from the official testing-station has to be supplied proving their quality. Prussian Portland cement must be employed, and certificates are to be given containing statements about constancy of volume, time of setting, fineness of grinding, tensile and compressive strength. Sharp sand, gravel or other recognised material is insisted on. The compressive strength of the concrete after twenty-eight days is to be stated. The building authority can have the materials tested, and concrete blocks for that purpose are to be supplied. As a rule the concrete is to be mixed by weight and in such quantities as are required for immediate use. Especial care must be taken that the iron for reinforcement is correctly placed and thoroughly coated with cement mortar. Work may not be carried on during frost, except in cases in which the possibility of damage by it is excluded. Until sufficiently hardened, the concrete must be protected from the action of frost, from premature drying, or from shaking or overloading. When inspected for approval portions of the building must be exposed, and test pieces may be taken from parts of the finished building. Rules are given for the statical calculation of the different parts, and in columns the concrete is not to be stressed beyond one-tenth of the ultimate compressive strength. The factor of safety for steel is to be five. The regulations show that in Germany there were doubts about the new material. But as concrete can be said to have demonstrated its safety, some relaxation of the rules could be allowed without any risk of danger to life or limb.

We may assume from the use made of reinforced concrete during a few years, and from the stability of the works executed by firms of repute, that in the coming years it will be realised that far greater use can be made of the combination. The volume by Messrs. MARSH and DUNN enables a reader to comprehend the extent of the possibilities for reinforced concrete, and the various arrangements available in order to overcome the kinds of difficulties likely to arise. All the conclusions are trustworthy, and the explanations are adapted to enlighten novices as well as to offer suggestions to those who possess experience.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Institute of British Architects was held on Monday evening last at 9 Conduit Street, W., Mr. T. E. Colcutt, president, in the chair.

Sir WILLIAM EMERSON, speaking on behalf of the subscribers, said it was his pleasurable duty to ask the Institute to accept a portrait of their past president, Sir Aston Webb. He said he wished to testify to the great ability Sir Aston Webb brought to bear on all questions which came before him as president of the Institute and to his courtesy and unflinching tact and judgment. Sir Aston Webb's career, he said, was a lesson to all of them, inasmuch as it was the outcome of his capacity for hard work and industry. The portrait, which was painted by Mr. Solomon J. Solomon, A.R.A., was, the speaker thought they would all agree, an excellent one.

The PRESIDENT formally accepted the portrait. He said they all knew Sir Aston Webb, his great talent and his distinguished career; but beyond all that was the personality of the man, who inspired the affection of all those who had met him. Sir Aston Webb was unable to attend the meeting, but had sent a letter, which the President read. In the course of the letter Sir Aston Webb wrote:—"Still I must say to you how much I appreciate the compliment (which the fact that it is a usual one to past Presidents in no way diminishes), that my portrait should hang in such distinguished company on the walls of the Institute meeting-room, where I have spent so much time, sometimes in friendly conference, sometimes in friendly combat, but always enjoyably, and my only regret is that I have reached the stage when I must leave the arena, make my bow, and hang lifeless upon its walls. It is the fate of all, and quite

right that it should be so, and from our place of vantage on its walls I trust and believe we shall watch fresh and vigorous generations carrying on the work of the Institute." Mr. W. J. DIBDIN read a paper on

The Composition and Strength of Mortar.

The author said that the composition of ordinary lime mortar in relation to the resulting strength is in the highest degree important. The by-laws of the London County Council regarding the composition of mortar merely specify that it shall be composed of freshly burned lime and clean sharp sand or grit without earthy matter, in the proportions of one of lime to three of sand or grit, but contain no reference to strength, leaving it to be inferred that if the composition is within the strict definition the strength must necessarily be practically constant—quite apart from the particular purpose for which the mortar is to be employed. Further, no "factor of safety" seems to have been considered; so that, whether the mortar is used for a 10-foot wall or one of 100 feet in height, the by-laws equally apply without any precautions.

The author proceeded to describe a series of experiments he had carried out on briquettes and blocks specially made for the purpose, the results of which clearly indicated the danger of mere composition safeguards. These results were discussed under the following headings:—(1) Effect of washed sand of varying degrees of fineness; (2) Effect of varying quantities of clay added to the sand; (3) Effect of washing out the clay naturally present in sand; (4) Effect of varying the time when the mortar was used after being first made; (5) Strength of raw materials employed; (6) Effect of the variation of the percentage of voids in the sand used; (7) Effect of composition on spalling.

The results of the tensile and crushing tests were shown in diagram form, the details being set out in a number of elaborately prepared tables. Diagram 1 showed that mortar made with the proportions of one volume of sand to one volume of lime with the sand unwashed as received had a crushing strength of 150 lbs. per cubic inch. When the sand was increased to two volumes the strength fell to 92 lbs. per inch. With three volumes sand it was only 52 lbs., and with four volumes 53 lbs. This experiment clearly indicated that an arbitrary limit of three to one is unsatisfactory, as it would prevent the use of the "excess" of lime, which in this case gave three times the crushing strength of that obtained when the by-law proportion of three to one was employed. In all the subsequent sets of this series the sand was used washed and graded. The illustrative diagram clearly brought out the fact that when the proportions were from one or two of sand to one volume of lime the strength was greater than when three volumes of sand were employed in all those cases in which the sand was coarser than $\frac{1}{16}$ -inch; but when the grading was from $\frac{1}{16}$ -inch and below, the strengths of the various makes were practically equal, viz. from 58 to 66 lbs. per inch.

The tests for tensile strength were in the same ratio, and clearly indicated that with these particular sands an excess of lime in contravention of the by-laws was a distinct advantage.

The results given in a further series of tests showed the effect of time up to eleven days between the moment when the mortar was mixed and that at which the briquettes and blocks were prepared. From these it would seem that up to seven days there is an increased strength, but after that time—that is to say, after the mortar had once set—the effect of a second breaking up was distinctly detrimental, although better results were even then obtained than at any time before the first setting. The strength at one month gradually rose to 116 lbs. per square inch with mortar which had been mixed for seven days, and fell when the mortar had been standing for eleven days to 83 lbs.

Summing up in conclusion the results of a fairly exhaustive series of tests, so far as the limits of the experiments extended, the author said it seemed certain that the strength of a mortar depends far more upon the physical character of the materials employed than has hitherto been fully realised. If the usual prescription of three to one be rigidly adhered to, the mortar may have in certain cases only one-third of the strength of that which might be obtained with as widely varying proportions as five of sand to one of lime; and it would appear to be desirable that the strength as ascertained by crushing should be the criteria rather than by arbitrary proportions. The tests can be made with great facility, and should be employed in all cases. The author said he must not be taken to

suggest that any and every admixture should be sanctioned; but where the materials are clean and sound and free from dirt (such as unwashed road sweepings, dustbin refuse, old mortar, &c.), no unreasonable objection should be taken to their use provided that they yield a mortar having strength sufficient for the work in hand. If a factor of safety of five were sufficient for any work, it was obviously unnecessary to ask for one of ten, as the strength upon that basis must necessarily increase with the increment of the load. On the other hand, care should be exercised to secure such factor of safety as may be required in any particular case.

It was a common practice to add to the sand hard clinkers crushed in a mill, sometimes in even equal quantities. Experiments conducted on the same lines as those described by the author confirmed the general conclusions in regard to fineness—varying quantities of sand and grit to lime, &c.—and show that mortars made with good hard clinker and sand may be used with safety.

Mr. H. D. SEARLES-WOOD proposed a vote of thanks to Mr. Dibdin for his paper, and said that as far as he knew there were no published results of experiments with lime upon sand, although the experiments on cement and clay and sand have been published. Mr. Dibdin had certainly made important tests, but the speaker wished to see the experiments carried a great deal further, in order that they might have more confidence in the methods of investigation and more assurance in the results obtained. He hoped therefore the author would carry out his experiments in further detail, and at the same time he suggested that, inasmuch as the question was important to all people, there should be an obligation on the part of authorities such as the London County Council or the borough councils, to instruct chemists to conduct series of experiments on the local materials in a district, so that the results of the tests would be available for those who were about to undertake building operations.

Mr. W. WOODWARD seconded the vote of thanks, and remarked that he would like to see more practical experiments than laboratory ones undertaken. First of all, the tests might be made on walls, and they should be able to ascertain the strength of mortar under varying conditions, such as that made up with washed sand. Then they might test a similar wall as the first, the mortar having been made up with unwashed sand. There was also the effect of frosts on various mortars to be investigated. Practical experiments of that sort he considered would be of real importance to architects in their work.

Mr. MAX CLARKE said the paper was just what they wanted at the present time, because he believed the average architect when he put the clause in his specification which dealt with the composition and standard of mortar, satisfied himself with the old average and did not exercise that supervision which was essential for good work. He thought there was need for further experiments, and therefore proposed the following resolution:—"That this meeting is of opinion that the composition of mortar is a matter which deserves the fullest consideration, and with that end in view the Council be asked to devote a sum of money for further inquiry into the subject."

Mr. A. E. MUNBY, in some remarks upon the paper, said the chief difficulty in drawing conclusions from Mr. Dibdin's interesting experiments appears to lie in the very large number of variable factors which are involved. The initial hardening of mortar depends probably for the most part upon (1) the extent of compression in the mass such as may be caused by changes of volume produced on solidification, (2) the amount of evaporation which will result in a contraction varying with the nature of the constituents, (3) the solidification attained, (4) the character of the crystallisation decided by the nature of the crystalline constituents, the quantity of water present, the solubility of the ingredients, their initial temperature and the thermal disturbance caused by chemical reactions, (5) on the time of setting which puts a limit to the motion of the particles in solution. Again, the final strength attained must be governed by the cohesion of the particles, which will of course vary with their composition, and by the area of surfaces of different constituents in contact, their chemical nature, grouping and interspaces, in short, by what is called adherence. Is it rational to expect that among such a wealth of variables any scientific results can be drawn from experiments which attempt to embrace so many simultaneously? In the first place, we do not even know whether any chemical action takes place between the lime and the clay added to the sand. It may seem improbable

that clay, the last resisting remnant of disintegrated felspathic rocks, which has in a minute state of division been suspended for so long in water (alkaline at least initially) should be soluble enough to react with lime during the short interval before the tests. Nevertheless, some recent experiments on American waters show that silica is more soluble than is generally supposed. One would like to see some experiments undertaken on less ambitious lines to begin with. For example, the clay might be replaced by something entirely above chemical suspicion, such as platinum in a similar state of division. Again, a further effort might be made to separate chemical and physical effects by imitating experiments on adherence with fat lime mixtures. Briquettes of lime and shot in place of sand might lead to some information as to the effect of configuration and size of particles, which would then be under control. Something in the nature of a fat lime constant for subsequent deduction might possibly result. As to the setting of mortar when reworked, the supersaturation theory of Le Chatelier and Marignac provides an explanation. These savants have shown that many bodies added in excess to water form supersaturated solutions which deposit crystals after a small interval. As much lime remains unaltered in ordinary mortar, there seems no reason why when ground supersaturation should not again occur on remixing. The subsequent loss of strength after a longer interval might be due to the formation of compounds which would be less soluble than lime, and would consequently produce less concentration in their supersaturated solutions if the rate of setting is not proportionately increased.

Mr. W. D. CAROE seconded the resolution proposed by Mr. Max Clarke, for he said he felt there was a vast amount of knowledge to be acquired on the subject of mortars, and the Institute was the body to acquire it for them. The paper had told them of experiments with mortar a few days after it had been made, but he wished to know what variation there would be in mortar after some years. He generally came to the conclusion, after an inspection of old buildings, that the mortar made in the nineteenth century was not to be compared in excellence with the mortar made in the centuries which preceded it. He had found mortar made in Sir Christopher Wren's time better than that made in the last century, and he believed the reason was that the men who made mortar on the earlier buildings were definitely trained craftsmen who mixed the materials together in traditional proportion.

The PRESIDENT put the resolution to the meeting and it was carried unanimously.

HOLYROOD TAPESTRIES.

IN the beginning of the present year the Duke of Hamilton, as is known, gave up the control of certain rooms in Holyrood which his ancestors, as hereditary keepers of the Palace, had enjoyed for many years. On the Office of Works proceeding to clear out the rooms they found, says the *Scotsman*, among other things, a charter chest of the Hamiltons, which was handed over to the legal representatives of the Duke. At the same time there were discovered in the same rooms ten beautiful pieces of tapestry carefully stored away, which on being exposed to view were found to be in good order. The Office of Works claimed them on behalf of the Government, and the Duke for himself. Mr. Oldrieve, on going carefully into the matter, speedily solved the mystery of the tapestries. It appears that in 1850, on the occasion of a visit to Holyrood of Her late Majesty Queen Victoria, accommodation was required for her maids of honour and superior servants. A large tapestried room was accordingly requisitioned for the purpose, but as it had to be divided into three by wooden partitions, the tapestry on the walls was taken down and stored in the rooms under the control of the Duke of Hamilton. There for fifty-five years these valuable works of art have lain undisturbed. As the Duke, however, would not renounce his claim to the tapestries, an arbitration was opened and evidence taken on the subject. Sir Herbert Maxwell was appointed arbiter, and he has just given his decision, awarding the tapestries to the Government. For this result the Scottish public have to thank Mr. Oldrieve, for the care he bestowed on the investigation of this subject has made the ownership clear. The tapestries are Flemish of the seventeenth century, and are of a highly decorative character. Several of the pieces have figure subjects, others are scenic, others architectural, but all are artistic and valuable.

In connection with this find a project has been mooted,

and has received favour in official quarters, that the tapestries should be employed in decorating the large picture-gallery of the palace. In that case the present fictitious portraits of the kings of Scotland would be removed to another part of the palace, and the tapestries arranged in a series of panels on the walls. There is quite enough of them to cover in this way not only the wall opposite the range of windows, but the two ends, and if the present plain, whitewashed roof were decorated in an adequate manner to match, the result would be a hall of something like regal splendour. The portraits, 110 in number, which it is proposed to transfer to other quarters, were executed under a contract, dated February 26, 1684, between Hugh Wallace, His Majesty's cash-keeper, on the one part, and "James de Witte, painter, indweller in Canongate," on the other, whereby the said James "binds and obleidges him to compleatly draw, finish, and perfyte the pictures of the haill kings who have reigned over the kingdome of Scotland from King Fergus, the first king, to King Charles the Second, our gracious Sovereigne, who now reignes inclusive, being all in number one hundred and ten; and to make them like into the originalls, which are to be given to him." It was further stipulated that the pictures were to be finished "in large royall postures," within two years, the artist's fees being at the rate of 120*l.* per annum. In an official guide to the palace, just issued by Blackwood, with a historical sketch by Sir Herbert Maxwell, Bart., it is said:—"Originally in hanging frames the canvases were badly slashed by the sabres of Hawley's dragoons, who, having been routed by Prince Charlie's Highlanders at Falkirk on January 17, 1746, vented their ill-humour on these works of art. The pictures were subsequently removed from the frames, repaired and fixed in the panels of the wainscoting. Part of De Witte's duty was to inscribe each portrait with the name of the subject, 'the names of the kings most famous in large characters, and the remnant in lesser characters.' All the likenesses and many of the very names of the earlier monarchs are fictitious; others represent the kings of the various divisions—Pictish, Scottish, Cumbrian and others—which were not consolidated into a single realm until under Malcolm II."

Sir R. Rowand Anderson architect, gives the following account of the discovery:—"You have a notice in to-day's *Scotsman* of the accidental finding about one year ago of ten pieces of tapestry in the Duke of Hamilton's rooms at Holyrood. This tapestry was discovered, if such a word may be used, in the year 1895. At that time I was carrying on the Applied Art School, one department of which is known as the National Art Survey, and I had to find winter work for the two students who held the scholarships. Holyrood seemed to be a likely place, and permission was obtained from the Lord Chamberlain for access to the royal apartments on the south and east sides, from the Board of Works for access to Queen Mary's apartments, and from Mr. J. Auldjo Jamieson, W.S., for access to the Duke of Hamilton's apartments. In each case permission was given to make drawings of whatever I thought of national interest or artistic merit.

In searching the Duke of Hamilton's rooms I came upon a number of pieces of old furniture, covered with dust and piled in some cases one on the top of the other, many of the pieces broken, and all having the appearance of having been neglected for years, but I saw that they were of great value in the history of furniture. In one room I came upon a pile of what I at first thought were old carpets, but on turning them over I found that they were tapestries. There were also a number of old engravings in fine old thin black frames, all of them more or less damaged. I represented to Mr. Auldjo Jamieson the value of these things, and that proper care should be taken of them. At that time it never occurred to me that these did not belong to the Duke of Hamilton.

Some time after this they were advertised for sale at Dowell's rooms in George Street, on Saturday, February 18, 1899, and were on show there. Mr. Sands, who had charge of the royal apartments at Holyrood, and who is now inspector at Buckingham Palace, with whom I had several conversations regarding them, had communicated with the authorities, and the question of ownership having been raised, the sale was stopped and the articles brought back to Holyrood, the Crown and the Duke of Hamilton each maintaining a claim to them.

As soon as I knew there was a dispute as to the ownership, I represented to Lord Esher, then the secretary of the Board of Works, their great artistic value, and that they ought to be secured for Holyrood. His Lordship took a

keen interest in the matter but was not able to get the question settled before he left the Office of Works.

I spoke to many others, who were able to urge the authorities not to allow these things to be removed, and specially pressed the matter on the attention of Lord Esher's successor, Sir Schomberg M'Donnell, who took the matter up warmly, and I believe it is mainly due to his exertions that the dispute as to ownership has been brought to a settlement.

I think the public are greatly indebted to Mr. Oldrieve, of the Board of Works, for the careful way he got up the case for the Crown.

The question of the ownership of the furniture is, I suppose, not yet settled. The furniture is of great artistic value and ought not to be allowed to leave Holyrood, even if the Crown has to secure it by making a payment to the Hamilton family.

The engravings I refer to were exhibited at a conversation at the Architectural Association in November 1895.

The drawings of the old furniture and of the magnificent plaster ceilings and woodwork in the royal apartments are deposited in the library of the National Art Survey Department of the Applied Art School, Royal Institution, and are of great interest and value to art students.

NORTHERN ARCHITECTURAL ASSOCIATION.

AT the last meeting of the Association, Mr. G. A. T. Middleton (vice-president of the Society of Architects) delivered a lecture on "Continental, Romanesque and Gothic Detail." In the course of his lecture Mr. Middleton said the development of architectural detail from the period of the Norman Conquest until the time of the Reformation, as it occurred in England, was well known to every English architect, forming part of his necessary education. That there was a similar development upon the Continent was equally well recognised, but as the continental forms do not so greatly influence modern English practice, they had not as a rule been so closely studied, particularly as to do so required personal contact with the buildings of other countries, such as was only to be properly obtained at considerable expenditure of time and extensive travel, while even then so little had been written upon the subject that it was only slowly that the various phases of change fell into their right places. The English forms were distinct to themselves in many respects, due to an entirely different inspiration from that which influenced continental work; and to properly consider the latter it was necessary to temporarily wipe out of one's consciousness all preconceived ideas, and to start, as it were, afresh, as if their insular work were non-existent. Like the English, however, the early Romanesque of the Continent had a Roman origin, but it was much more closely allied to its original. There seemed to have been two streams of influence which followed the two main trade routes into North-Western Europe—one along the Rhine, passing northwards as far as Cologne, and then spreading out like a fan across North France and Germany, and the other traversing the South of France and gradually spreading northwards through Poitou and Berri to the Ile de France. The former stream was much more nearly allied to the Roman than was the latter. In the doorways of Mainz Cathedral, and in many other examples, they formed the Corinthian capital in an exceedingly pure form, though it was often used to carry an archway arranged in orders or stages, either unmodelled or enriched with mere rolls at the angles and shallow hollows on the main faces, such as were employed in the early Norman period in England. Arches of the same character were found in the South of France, but the detail of the carving was more Byzantine in type than Roman—i.e. cut down by incision below the general surface of the stone rather than with projecting leaves and volutes, and showing a less appreciation of the use of the chisel and more of the drill. In the north-west of France those two types coalesced, forming what was known as Norman, there being super-added another influence, namely, that of the Scandinavian pirates, who ravaged the whole coastline. The result was the production of an architecture whose details were of a mixed character, the classic origin being often difficult to discover beneath the Scandinavian overlap of billet or chevron, representing embroidery stitches, or of grotesque animal sculpture, or of forms suggestive of twisted wirework. Towards the end of the twelfth century, when the whole spirit of architecture changed and Gothic replaced the Norman of England and the

Romanesque abroad, they were accustomed to recognise a similar change in the detail, particularly in the matter of mouldings. This was, however, essentially English, and it was at first a surprise to the English student to find that the mouldings of France and of Germany scarcely altered from their Romanesque character until the end of the fourteenth century. The deep undercutting of our beautiful Early English period was unknown in France, save in a few instances where the English influence was paramount. It was much the same, too, with the foliage carving, though in a different degree. It was never so profuse either in France or Germany in the earlier periods as with us, nor of so light and delicate a nature, yet in the thirteenth century it was there representative of the foliage of spring, just as it was with us in England. Our fine rising stem, however, was unknown, but was replaced in the capitals by a broad leaf, like that of the hart's-tongue fern, not yet completely open, and consequently ending with a cluster instead of a point, while in continuous enrichments a large flowing scroll was commonly employed, evidently based in general scheme upon the Roman model, an entire moulding being often thus enriched in place of the foliage lying in a hollow, and having an almost invariable vertical tendency, as with us. In course of time the spirit changed, and the leaves of summer superseded those of spring. This is representative of the fourteenth century, but the undercutting is not often carried to excess, or one might almost say is at present non-existent, the work, whether it be in panels or on capitals, being in low relief, though wonderfully true to nature. The gradual change from spring to summer, and again from summer to autumn, which occurred equally in England, could scarcely have been premeditated, though it was exceedingly interesting to trace, until in the later work of France they find an extreme elaboration and delicacy of treatment, as if the masons had at last acquired the full living Gothic spirit, revelling in the beauty of natural forms and in delicacy of execution. Undercutting was often carried to excess, and the bare, gnarled bough of winter would sometimes appear amidst the decaying leaves and fully ripened fruit. Further eastwards, in German territory, two types of work were found in this period, one exceedingly powerful and even heavy, while the other was thin and wiry to excess. Contemporaneously with this development of a new spirit came the evolution of true Gothic mouldings, the work of the French Flamboyant period in particular being original, and as richly cut as English work of the thirteenth century, entirely different from the flat and lifeless "perpendicular" mouldings to which ours had degenerated by this time.

In the course of the evening Mr. A. B. Plummer (honorary secretary) read out the assessors' award in connection with the measured drawings and sketches competitions. Premier honours in the two competitions respectively were secured by Mr. H. M. Spence (North Shields) and Mr. Wm. Riddle (Newcastle), Mr. H. L. Hicks (Gosforth), and Mr. T. W. Milburn (Sunderland) occupying the second places.

THE ROMAN STATION AT NEWSTEAD.

AT the first monthly meeting of the Society of Antiquaries of Scotland for the present session, a preliminary report on the excavation of the Roman military station at Newstead, Melrose, was given by Mr. James Curle, illustrated by a plan of the buildings made by Mr. Thomas Ross, architect, and by many lantern views of the objects found. The excavations, which have been carried on under Mr. Curle's superintendence without intermission since February 1905, have been successful beyond the most sanguine anticipations. The foundations have been traced of the largest military station yet investigated in Scotland, very strongly defended by a rampart of earth 40 feet thick, faced by a well-built wall $7\frac{1}{2}$ feet in thickness and protected by three parallel lines of ditches. The interior is laid out much in the usual manner—the commandant's quarters, the Pretorium, with its pillared courtyard and narrow buttressed stone buildings, along the principal street fronting to the east, and behind them a series of lines of long, narrow barrack buildings, of which six lay to the north of the main road leading to the east gate and six to the south. A peculiarity of the Newstead plan is that each block is divided into eleven separate buildings, about 30 feet by 15 feet. The things found in the barrack area include a fine bronze ewer, 11 inches in height, with a beautiful handle terminating above in a lotus bud, with arms shaped like

long-beaked birds grasping the rim, and below in a Bacchanal head, with ivory tendrils wreathed in the hair. The type is well known in Pompeii, and belongs to the first century. There were also two Samian ware bowls, one bearing the stamp of Cinnamus, a potter of Lezoux, in the Antonine period. In the block north of the Pretorium was a well 19 feet deep, from which were recovered a quern of Andernach lava, a copper kettle, two spear-heads and pottery. The Pretorium presented evidence of alterations, including the addition of a vault or strong-room beneath the floor of the central chamber and a large hall thrown out in front, extending over the Via Principalis. This hall has been met with in the Roman forts in Germany, but not hitherto in Britain. Beneath the floor level of the earlier Pretorium a still earlier occupation level was observed, from which came coins of Mark Antony and Vespasian. In the field outside the area of the fort, to the southward, fourteen pits were discovered, varying from 10 feet to 30 feet in depth, containing at the bottom a deposit of black mud, from which many objects of great interest were obtained. Chief among these is an iron helmet with face-mask, the headpiece embossed with locks of curling hair; a helmet of brass richly embossed with figures in high relief, an iron helmet without decoration, shoulder-pieces and elbow-pieces of bronze armour bearing the name of the owner scratched on the inside, eight circular and one heart-shaped plates of bronze, also bearing a name scratched on the inner side; two iron swords, five spear-heads, four pioneers' axes and a quantity of smithy tools and other tools of various kinds; two chariot wheels and twenty-nine hub-rings of similar wheels; four scythes, pieces of leather clothing, boots and shoes and many articles of use or ornament. The results obtained during the year encourage the hope that further finds of great importance may be made if the necessary funds are forthcoming to complete the investigation of the interior of the fort and of the annexe on the west, in which is the site of a large well-built building, probably the baths. Other problems in connection with an annexe to the east, and with the several occupations of the site as a whole, also remain to be dealt with. The skulls of horses found in the pits have already formed the subject of an important communication by Professor Cossar Ewart to the Royal Society.

SHEFFIELD SOCIETY OF ARCHITECTS.

A PAPER was read by Mr. J. B. Mitchell-Withers before the Sheffield Society of Architects and Surveyors on "Brickwork." He commenced by a brief reference to the ancient use of plastic materials and sun-dried bricks, leading up to the introduction of Roman bricks or tiles, which were of large size but only about an inch thick, and thence to the bricks of to-day. He also referred to the importance of good mortar and the bonding of the brickwork. After referring to some of the early brickwork in England, illustrated by slides of Hurstmonceaux Castle, Tattershall Castle, Hampton Court and various other buildings, he showed the use of brickwork by the Dutch, and how they introduced stone into their work at points where strength is required and emphasis is needed by the design, generally using it, however, in a sparing manner, especially in domestic buildings. The characteristics of these buildings were such as became a Northern type: high-pitched roofs and ornamental gables, with bold chimneys, being seen both in the domestic buildings and in the towers and public buildings. To show the use of brickwork under entirely different conditions, illustrations were shown of many buildings in Italy, where brickwork forms the main structure, and terracotta, stone, or more frequently marble, is used in conjunction with it. Where marble is used as a facing, the lecturer pointed out that the idea is to use it in just the opposite way to that in which the stonework is used in Holland, namely, for filling in spaces on which there is no special weight or strain, though in some cases the brickwork has been entirely cased in it. After referring to the types of tower used in Italy, a few slides of modern buildings in which brickwork is employed were shown.

Mr. Claude Phillips, keeper of the Wallace Collection, has presented to the Tate Gallery Fred Walker's poster for Wilkie Collins's novel "The Woman in White," representing a woman in a cloak at night. It has been placed in Room VIII.

NOTES AND COMMENTS.

THE notorious HUMBERT case would not appear to be at an end, for a case arising out of it is now before the Paris courts. In the Salon of 1890 there was a picture entitled *Louis XIII. et Mdle. de Hautefort*; it was described as the work of FREDERIC HUMBERT, pupil of CAIN and ROYBET. Recently a lover of art bought some paintings from a dealer, and among them were two called *Bénédiction à la Cour* and *Richelieu attendant le Roi*. It was not long before the purchaser was informed by his friends that the two when combined formed the picture exhibited in 1890. It was afterwards discovered that they were the work of M. ROYBET, one of the cleverest of modern French painters. It appears he used to give lessons in painting to FREDERIC HUMBERT, and that he sold several pictures to the family. Madame HUMBERT informed the artist that her husband was ambitious to be recognised as an artist by having a picture in the Salon. She offered M. ROYBET 4,000*l.* if he would co-operate in the project, and finally he accepted the offer. It is needless to say he did not receive a penny of the 4,000*l.* His picture, signed FREDERIC HUMBERT, was contributed, and obtained a third-class medal. A dealer afterwards obtained the painting for 6,000 francs, and gave M. ROYBET 5,000 francs to work it up. The painter considered it was too large for the ordinary market, and he therefore proposed to make two pictures out of it. He declares in the most formal manner that no other hand has added a stroke to the work. M. ROYBET possesses the sketches and studies he made and he has furnished the Court with the names of his models. M. HUMBERT, however, declares that the idea of the painting was his; that he entirely composed it; that while engaged in painting it M. ROYBET advised him and introduced some strokes occasionally; but otherwise M. HUMBERT claims to be the author. We should imagine that the judges will not find much difficulty in deciding about the artist to whom the dual picture is to be ascribed.

ARCHITECTS are not alone in wishing to have some participation in the works carried out by public authorities. A meeting of the Fellows and professional Associates of the Surveyors' Institute was recently held, in order to consider the advisability of drawing up a scale of charges for the preparation of bills of quantities for building works undertaken by public authorities, and of publishing the same under the authority of the Institution; secondly, to elect a sub-committee to draw up the scale, and to submit the same to an adjourned general meeting of members; and thirdly, to consider any further or alternative proposals for taking action in reference to quantity surveyors' fees. Many members took part in the discussion, but a majority considered that a scale of charges on the lines indicated was inadvisable.

DURING the past year the Commissioners of Public Works of Ireland found it necessary to put in hand the reparation of seventeen ancient and twenty-three national monuments. The more important were the completion of the repairs at the French church, Waterford; the removal of ivy roots from the masonry of Kilcrea Abbey, co. Cork, preparatory to securing the walls; and the removal of ivy and the protection of the walls and slabs at Rathmichael Church and Round Tower, co. Dublin. Initial repairs were put in hand at St. John's Church, Hospital, co. Limerick. Of the national monuments repaired the most interesting is Holycross Abbey, co. Tipperary. Important works of repair were carried out at St. Francis's Abbey at Kilkenny, where the tower for a considerable time has been somewhat insecure. It was supported by metal columns erected by local effort before it was vested in the Commissioners, and timber centring has since been placed under the arches where the stonework showed symptoms of yielding. The east window of

seven lights divided by very slender mullions also required attention, as the ivy was spreading over it and into the joints. Both tower and east window have had the necessary repairs executed, but the latter, from its construction and the difficulty of supporting it (except by building up the openings in solid masonry, which would spoil the beautiful appearance of this singular window, and is not to be recommended), will require constant attention. At Inchcleraun (Quaker Island), Lough Ree, near Athlone, the repairs which were commenced last year have been completed, and for the better protection of the churches on the island wrought-iron railings have been erected around them to keep out cattle. Some repairs were executed at several of the ruins at Glendalough. The stone roof of St. Kevin's "Kitchen," through which rain had commenced to percolate, was repaired and stanchied. The walls of "St. Mary's Church" and the "Cathedral" were repaired by removing the vegetation and pointing the masonry in cement, and the Monastery of St. Saviour's had the tops of the walls secured to prevent rain entering. Under the provisions of the Irish Land Act, 1903, the Land Commissioners may, with the consent of the Board, vest in them any ancient monument possessing historic, traditional, or artistic interest, situated on lands sold under the Act, and if the Board decline to accept the custody of the monument it may, with the consent of the Council of the county in which the monument is situated, be vested in that body. During the past year twenty-six cases have been brought under the Board's notice by the Land Commissioners, and after examination one case only—viz. Ballyboggan Abbey—has been considered of such a character as to admit of the Board accepting guardianship.

ILLUSTRATIONS.

CATHEDRAL SERIES.—MANCHESTER: THE CHOIR, WESTWARDS.

DESIGN FOR THE PEACE PALACE, THE HAGUE.

THE designers in their endeavour to separate the library from the courts, in accordance with the instructions to competitors, devised it in the form of a semicircular plan with a connecting corridor. This arrangement allows of very equable lighting on the curved side, aided by tall windows in the wall at the straight side.

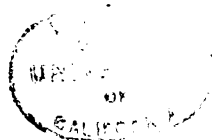
The courts are arranged to the right and left of a central domed hall, which has the grand staircase rising from it to the upper floor. On this upper floor the most important apartment is the council-room, which is near the great staircase and over the corridor of communication between the court blocks and the library. A quiet phase of Classic architecture has been chosen as most in harmony with the sentiment and purpose of the building. The design was prepared by Mr. G. S. AITKEN and Mr. H. F. KERR, architects, Edinburgh.

GRANTSWOOD, HORSHAM.

NORNEY, SHACKLEFORD, NEAR GODALMING, SURREY.
THE ORCHARD, CHORLEY WOOD, HERTS.
HOUSE ON THE HOG'S BACK, NEAR GUILDFORD, SURREY.
PERRYCROFT, COLWALL, HEREFORDSHIRE.
HOUSE AT CASTLEMORTON, WORCESTERSHIRE.

WE illustrate this week some examples of Mr. C. F. A. VOYSEY's work. The house Perrycroft, Colwall, Herefordshire, for Mr. J. W. WILSON, M.P., is built of brick and rough-cast, with stone dressings, iron casements and Westmoreland green slates to roof; the inside woodwork is all of white enamel. The house at Castlemorton, for Mr. R. H. CAZALET, is brick built, with rough-cast and roof of red tiles. The others given are Norney, Shackleford, near Godalming, Surrey; The Orchard, Chorley Wood, Herts; house on the Hog's Back, near Guildford, Surrey.

THE architects for the Baptist church, Shooter's Hill Road, Blackheath, are Mr. SAMUEL S. DOTTRIDGE, A.R.I.B.A., in connection with Mr. WILLIAM J. WALFORD, A.R.I.B.A.

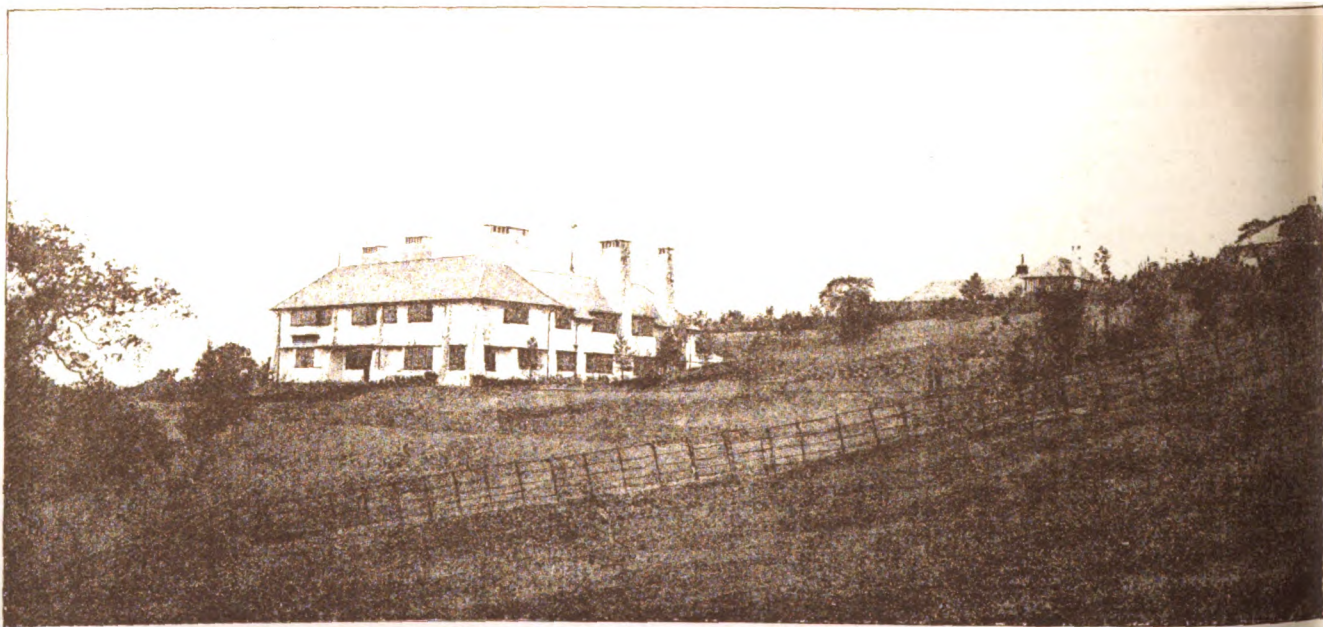




"NORNEY" SHACKLEFORD, NEAR GODALMING, SURREY.



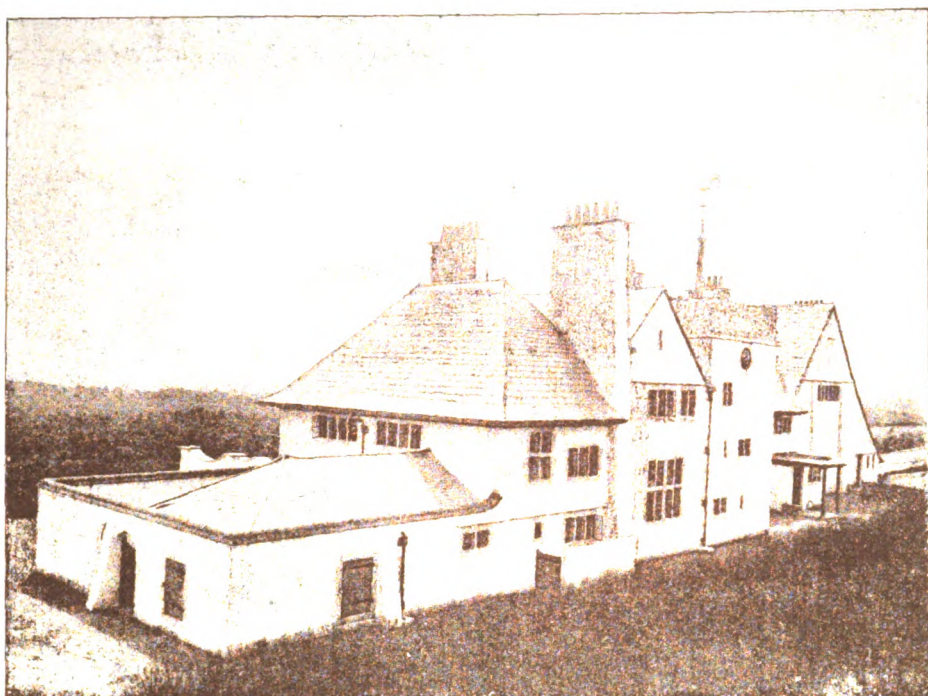
THE ORCHARD, CHICHESTER.



PERRYCROFT, COLWALL, HEREFORDSHIRE.



ORCHLEY WOOD, HERTS.

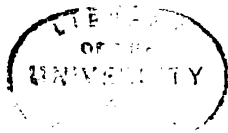


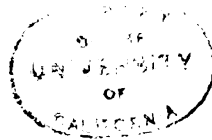
HOUSE ON THE HOG'S BACK, NEAR GUILDFORD, SURREY.



HOUSE AT CASTLEMORTON, WORCESTERSHIRE.

C. F. A. VOYSEY, Architect.





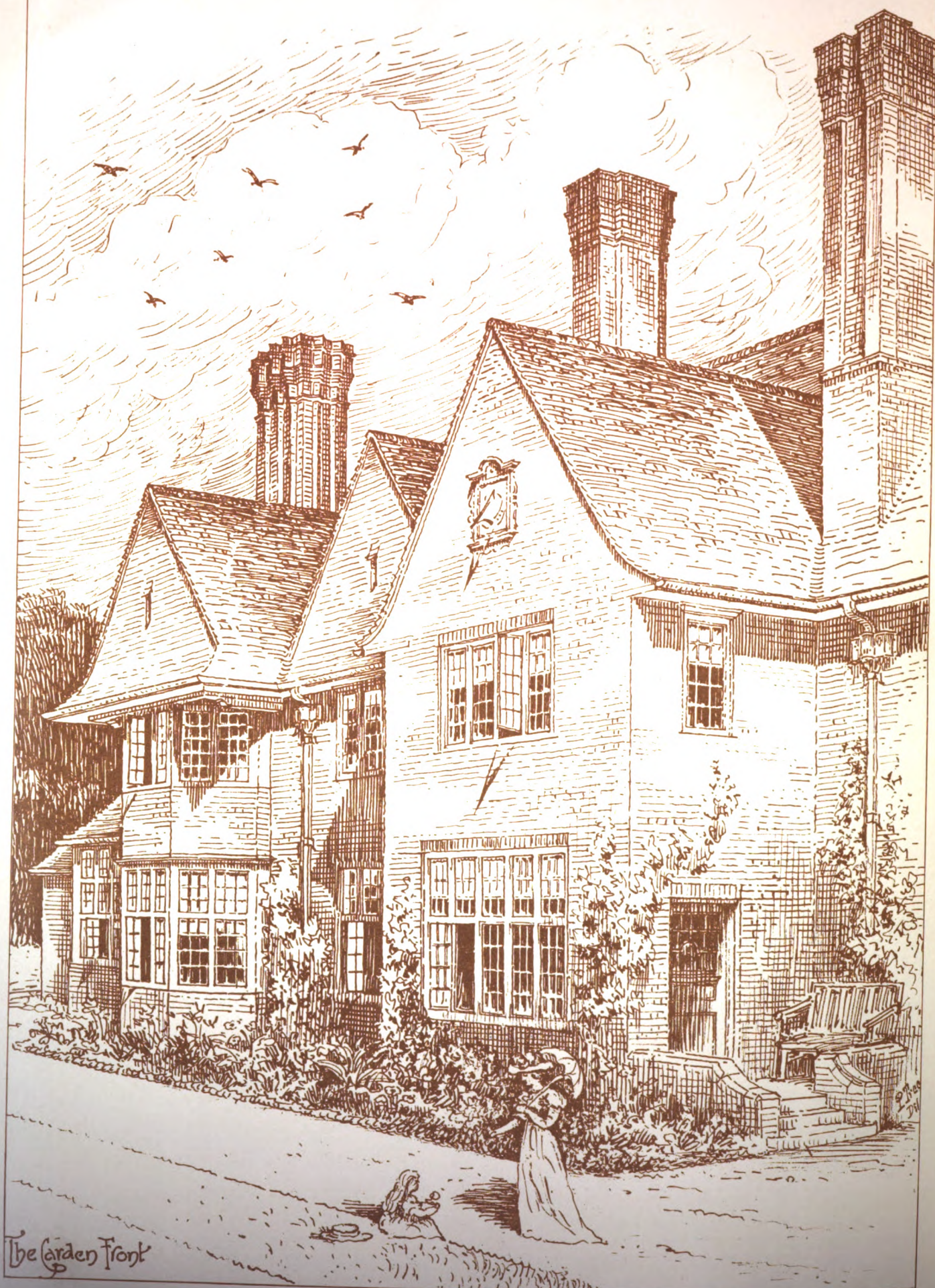


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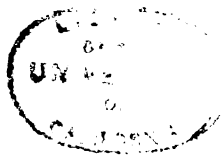
"GRANTSWOOD," HORSHAM.
PHILIP TREE, F.R.I.B.A., Architect.

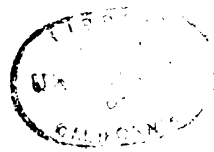


PHOTO-LITHO SPRACUE & CO. LTD. 435 EAST HARDING STREET, FETTER LANE, E.C.

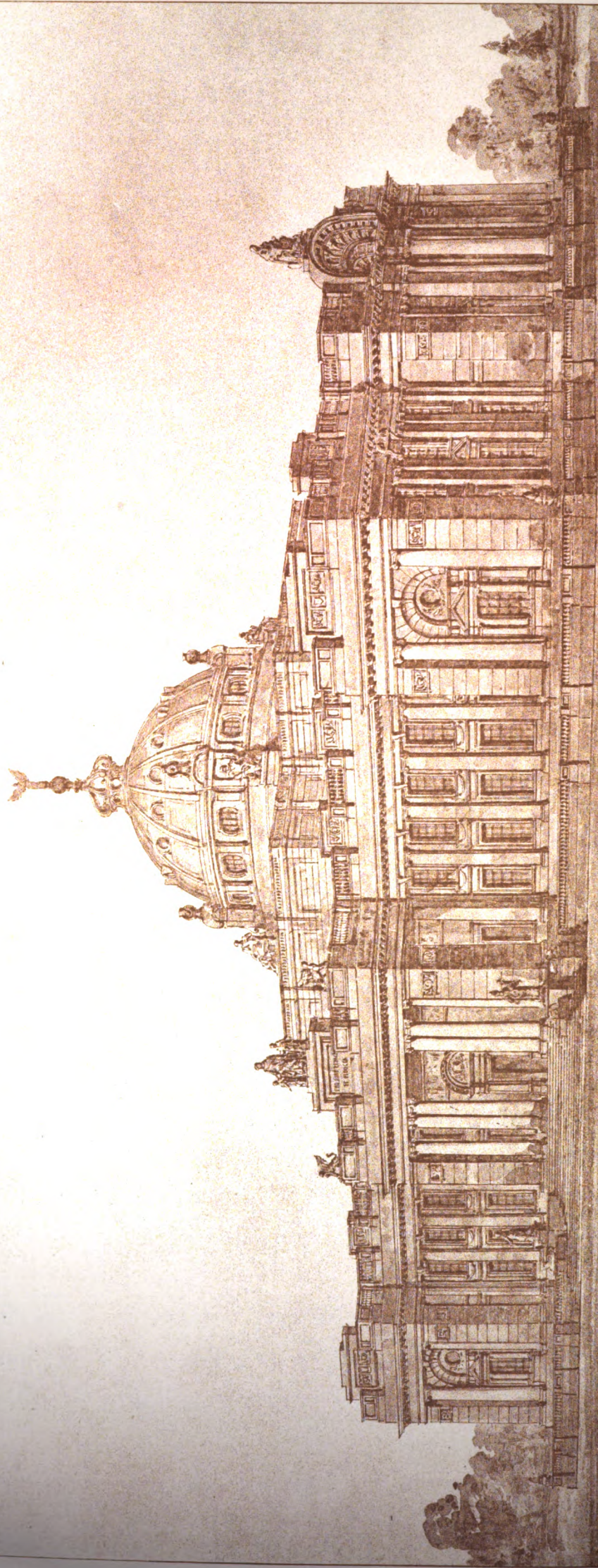
"GRANTSWOOD," HORSHAM.

PHILIP TREE, F.R.I.B.A., Architect.





Chap. Architect, Dec. 21st 1906

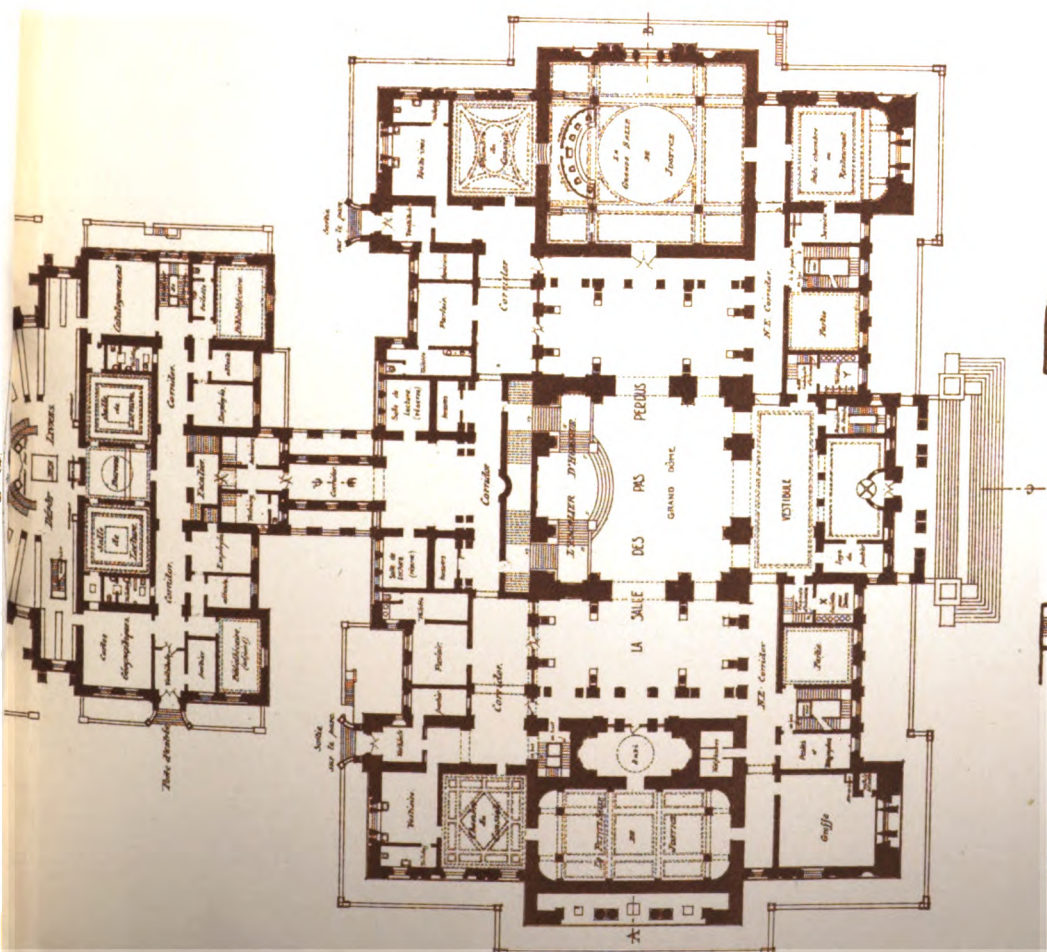


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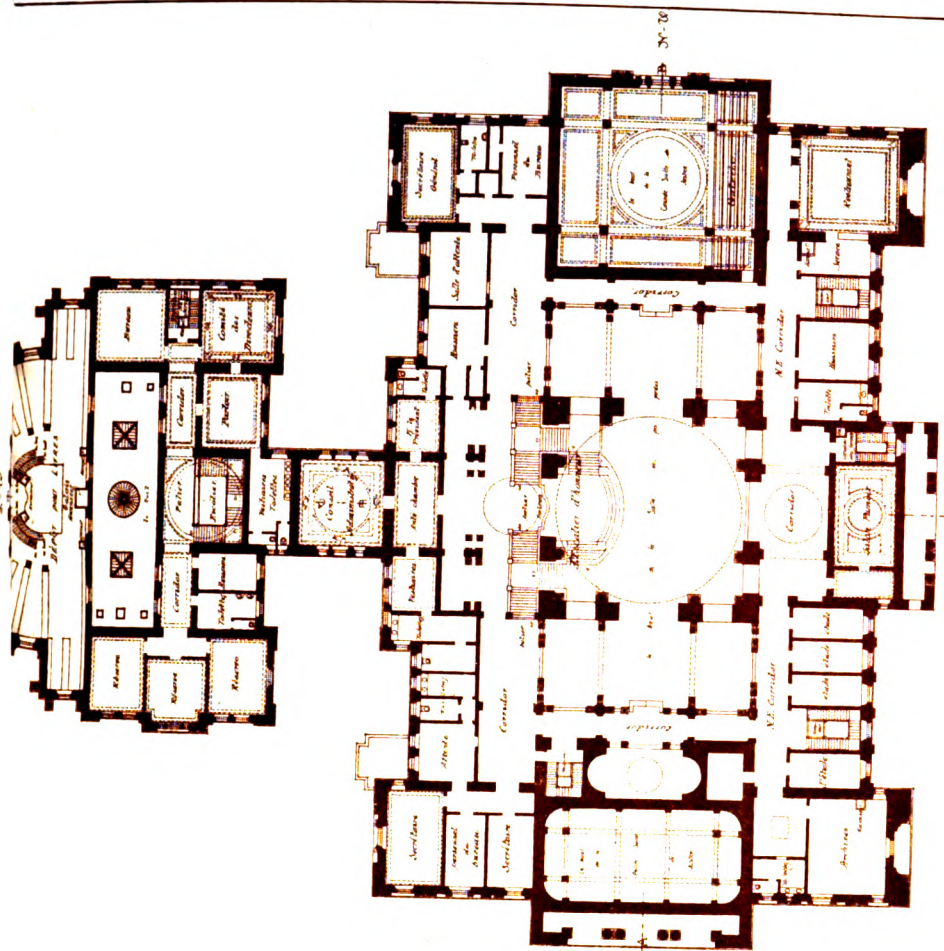


BEL-ÉTAGE

A. COUR D'ARBITRAGE

CSAITKEN, AND: HENRY F. KERR ARIDA ARCHITECTS
33 CASTLE STREET EDINBURGH

PRO JUNE ET PEACE ET FINANCIAL



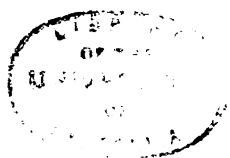
ÉTAGE SUPÉRIEUR

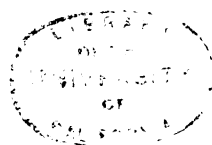
A. COUR D'ARBITRAGE

CSAITKEN, AND: HENRY F. KERR ARIDA ARCHITECTS
33 CASTLE STREET EDINBURGH

PRO JUNE ET PEACE ET FINANCIAL



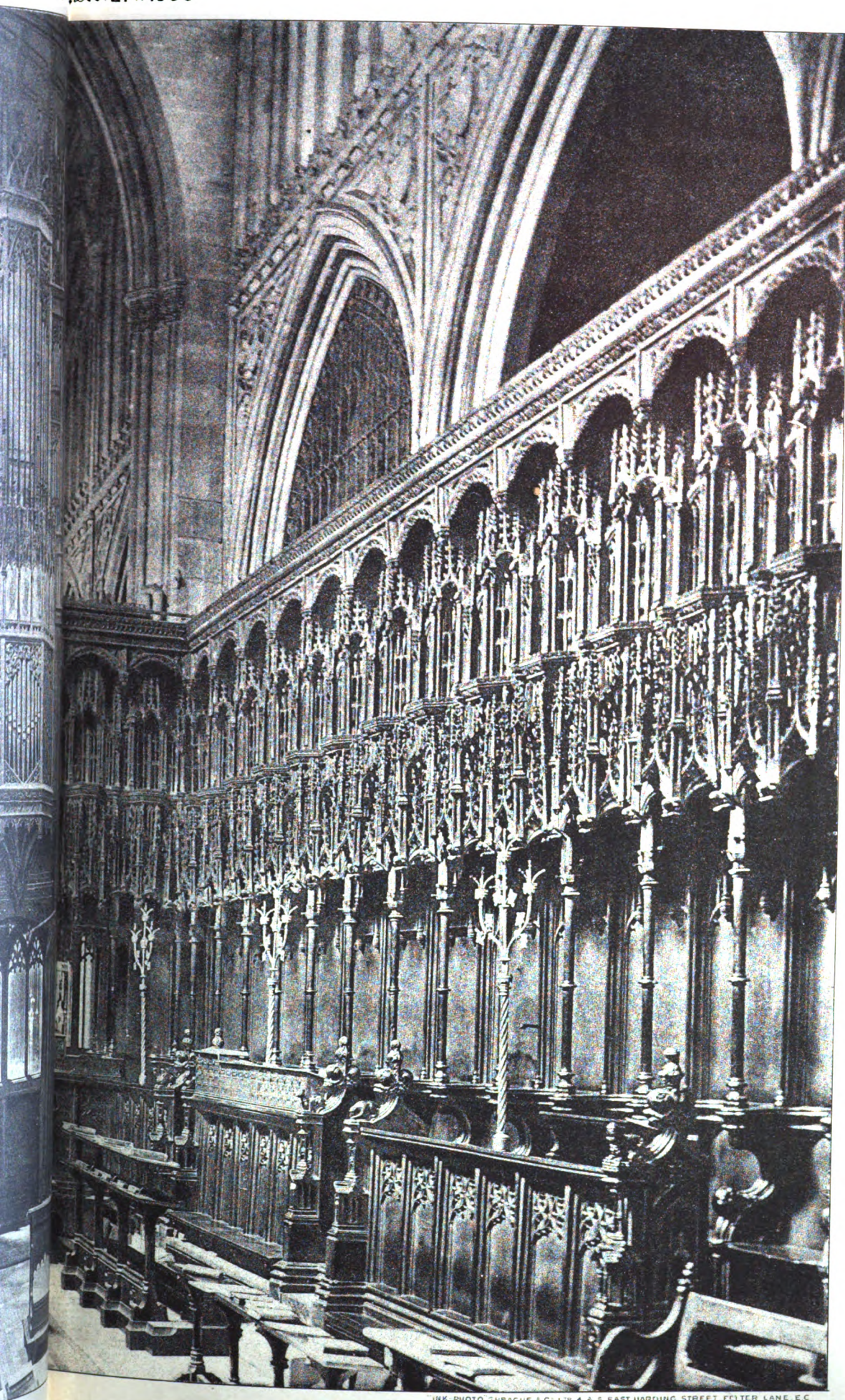






CATHEDRAL SERIES, No. 589.—MANCHESTER: THE CHOIR.

Dec. 21st 1906



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SERIES No. 1
CHESTER: THE CHOIR, WESTWARDS



THE LONDON COUNTY HALL.

THE instructions to competing architects for the new county hall and offices have been prepared by the establishment committee of the London County Council. The building which it is proposed to erect will be on a site bounded by the river Thames, Belvedere Road, Westminster bridge and the Council's works department, offices and depot.

1. The competition will be divided into two stages, viz. (a) the preliminary; (b) the final. The preliminary stage will be open to architects of any nationality.

2. In the preliminary stage the professional assessors will select in private not less than ten nor more than fifteen designs. The authors of the designs selected by the assessors in the preliminary stage, together with eight architects invited by the Council, will compete in the final stage.

3. The eight selected architects will be required to send in designs at the date fixed for the delivery of the final designs of the architects selected as the result of the preliminary stage of the competition (see clause No. 18).

4. The designs of the successful competitors will be returned on the completion of the adjudication in the preliminary stage, to enable their authors to compete in the final stage.

5. Each architect submitting a design for the final stage, in accordance with conditions, will receive an honorarium of 200 guineas (210*l.*)

6. The Council has appointed Mr. Norman Shaw, R.A., and Mr. W. E. Riley, F.R.I.B.A., the official architect, to act for it in this competition as its professional advisers and assessors, to draw up the instructions and to select and recommend to the Council the architects who have sent in the designs which in their opinion are the best of those submitted, both in the preliminary and final stages of the competition.

7. These two assessors will be further assisted in the final stage of the competition by a third assessor who will only act in that stage. This assessor, who will be nominated by the competitors in the final stage of the competition, will be required to give an undertaking that he did not participate in the preliminary stage of the competition.

8. It is the intention of the Council to assign to the author of the design placed first in the final stage the work of carrying out his design, and the Council has decided that Mr. W. E. Riley, the official architect, shall have discretionary power in all matters relating to internal economy, building construction and stability. The successful architect shall obtain all the information he requires upon the site, making the necessary estimates, preparing all the necessary sketches, working drawings, detail drawings and specifications subject to the Council's approval in all matters which in the opinion of the official architect should be brought to it for decision. The successful architect shall prepare all the necessary copies of the drawings and documents for the proper execution of and use on the works, and also the drawings, &c., for the records of the Council, and exercise in conjunction with the official architect general and usual superintendence of works during progress, examine and certify the accounts for the works and payments under the contract.

9. For these services the successful architect and the Council's official architect will be remunerated on the basis of the usual 5 per cent. on the total cost of the completed building other than the work connected therewith which will not devolve on the successful architect, and this commission will be paid in the usual manner and will be divisible between the two architects in the proportion of nine-tenths to the successful architect and one-tenth to the Council's official architect.

10. The buildings may at the discretion of the Council be erected in successive blocks, but no special liabilities for extra payment shall accrue through this cause.

11. The Council will employ one or more of the firms on their own list for preparing the quantities, whose fees and the lithography charges will be defrayed by the Council.

12. A clerk of works or clerks of works will be employed to superintend the work at the expense of the Council.

13. Should the building from any cause not be erected within a reasonable time after the two competitions shall have been held, the author of the selected design will be paid at the rate of one-fifth of the commission to be given for his services, the basis being his estimate of the whole

cost, such amount to form part of the commission if the building is erected from his design.

14. Any competitor sending any drawings, photographs or statement of any kind in reference to his design, or giving any clue to his identity to anyone directly or indirectly connected with the Council or its administration, to the assessors or the public, until after the award of the assessors in the final stage shall have been officially announced, will be disqualified. The special attention of competitors is called to this condition.

15. Designs will be excluded from the competition:—

(a) If sent in after the time fixed for receiving the designs, &c. (b) If considered by the assessors as not in strict accordance with the instructions. (c) If they do not provide substantially the accommodation asked for. (d) If they exceed the limits of the site. (e) If the assessors should determine that the probable cost of the buildings will materially exceed the outlay stated. (f) If any competitor attempts to make known his identity or to influence the decision personally or through any member of the Council or the assessors.

16. The drawings submitted in the preliminary stage of the competition will be returned under seal to their respective authors after the award, and, with the exception of the assessors, no one else (pending the final award) will be permitted to see the drawings under any circumstances during the time they are in the keeping of the Council.

17. The successful competitors in the preliminary stage of the competition, if they so desire, can amend or redraw their designs for the final stage of the competition.

18. Four calendar months will be allowed from the date the drawings are despatched to the successful architects in which to complete their matured schemes, at the end of which time both the eight originally invited architects and those who won their position in the preliminary competition must deposit their final designs; the precise time and a date will be named by the assessors.

19. The accepted design will become the property of the Council, which reserves to itself the right of exhibiting the other designs sent in for the final stage of the competition for a limited time after the final award shall have been made.

20. All schedules, reports, writings on drawings and scales are to be in English.

21. Each design, report, schedule, packing-case, label, &c., must be unsigned and without distinctive mark of any kind, and all documents must be typewritten or printed. There must be enclosed with the documents, &c., a sealed envelope (supplied by the Council) containing the name and address of the author, and these will be numbered as they are received.

22. An adhesive printed label, addressed to Mr. W. E. Riley, superintending architect, County Hall, Spring Gardens, London, S.W., will be supplied with the conditions of the competition. This label must be affixed to the package containing the designs, reports, schedules, &c., and must be delivered at the competitor's own expense on or before noon on Tuesday, May 7, 1907. The time stated above for sending in the designs will not in any circumstances be extended.

23. Every care will be taken of the drawings and any other documents sent in by competitors, but the Council will not be responsible for any loss of such drawings or documents or any injury or damage such drawings or documents may sustain whilst in its possession.

24. The land edged green on the block plan is reclaimed foreshore. An embankment wall will be constructed by the Council to a height of 18.00 above Ordnance datum, which would be the level of the surface of the embankment. The competitors will be required to include in their scheme a design for the superstructure of this embankment wall, which is to be of granite. They are to estimate separately for this superstructure and facing the wall with granite from 2 feet below low-water level (which is minus 6.00 Ordnance datum), also for all steps and ornamentation in connection with this wall required to complete their design.

25. A block plan, showing the site of the proposed buildings, accompanies these instructions, giving the levels of the site and environments above Ordnance datum, which for the purposes of this competition may be taken as correct. The whole of the buildings must be provided within the area edged pink. Belvedere Road is to be widened to 50 feet between the buildings, and, as set out in an agreement between the Council and the freeholders on the east side of Belvedere Road. A copy of the clause to be observed is appended (Schedule "D.")

26. For the information of competitors the site shown on the block plan is contained on the two London Ordnance sheets, Nos. VII. 83 and VII. 84, scale 88 feet to an inch; these can be obtained from Messrs. Stanford & Co., Long Acre, London.

27. A sketch plan of the proposed first floor is attached, which shows a suggested arrangement of the accommodation on that floor, but it is to be regarded as merely a suggestion which competitors may modify in any way they desire.

28. A schedule of provisional requirements is included, giving the several departments to be accommodated, their approximate positions in the general scheme, the names and numbers of the rooms, &c., and their approximate areas; but these requirements are subject to revision.

29. Elevations of the London County Council works department workshops, which are on the north boundary of the site, are also supplied for the convenience of competitors, but it is thought very desirable that each intending competitor should visit the site before preparing his design.

30. In considering the designs the greatest importance will be attached to simple and convenient planning, and it is essential that all parts of the buildings should be amply lighted. The construction is to be fire-resisting material throughout.

31. Attention of competitors is invited to the London Building Acts, 1894 to 1905, with which the construction of the building should conform.

32. The hall provided in the schedule is to be planned as to means of exit, &c., in accordance with the requirements of the London County Council Theatres Regulations.

33. The choice of materials to be used for the building will be left to the discretion of the competitors.

34. The sum of 850,000*l.* is considered sufficient to provide a substantial structure suitable for the Council's purpose, exclusive of embankment superstructure and furniture, also of any special foundation which may be necessary.

35. The site will be covered with a concrete raft, the upper surface of which will be at a level of minus 3.00 Ordnance datum, and upon this raft the footings of the superstructure must rest. This concrete raft will be constructed by the Council.

36. Each competitor must accompany his design by a short typewritten descriptive report in duplicate giving all information that may be considered necessary by the competitor to fully explain his design.

37. This report is to be accompanied by a typewritten schedule in duplicate giving the areas of the accommodation apportioned to each department on each floor, and showing (1) the area of office floor space; (2) the area of space devoted to waiting-room, storage, &c.; (3) a description of the material and mode of construction proposed to be adopted, the cubic contents of the building (such cube to be taken from minus 3.00 Ordnance datum to the ceiling of the topmost storey), to include all architectural features, &c. A copy of the dimensions in which the cube is based, and an approximate estimate of the cost of carrying out the design must also be supplied, together with the detail basis of their estimate, and if the value is priced at per cube foot the authority for this price is to be quoted.

38. Open fireplaces are to be provided in the principal rooms, in addition to which the whole of the building is to be heated by radiators. A system of mechanical ventilation is also to be provided. Accommodation to be shown on the plans submitted for the necessary plant for both systems.

39. The object of the first stage of the competition being to obtain a good design and general scheme, full details of the construction and heating arrangements need not be shown, but the general proposals for the heating and ventilation should be described in the report, together with any other points competitors may consider necessary for the proper illustration of the scheme, but all schemes sent in at the final stage of the competition must show the intention in regard to heating and ventilating the various parts of the building.

40. The competitors are to tint the areas on each floor allocated to the various departments as shown in the following schedule, the shade of colours given to be adhered to as closely as possible.

(Here will be inserted Schedule "A," showing the shade of colours to be used in indicating the location of the departments.)

41. Each plan is to have clearly marked thereon the areas of all the rooms and also a schedule of the areas apportioned to each department in the bottom left-hand corner.

42. Each design must be accompanied by a declaration, signed by the competitor, stating that the design is his own work and that the drawings have been prepared under his own supervision, in his own offices and by his own staff. The declaration must be enclosed in the before-mentioned sealed envelope.

SCHEDULE B.—Approximate Areas of the Principal Rooms.

Council chamber, 4,000 super feet; lobby for "ayes," 650 super feet; lobby for "Noes," 650 super feet; committee-rooms, 600, 900, 1,000, 750, 900, 1,200, 600, 1,000, 850, 1,200, 850 and 850 super feet; chairman of Council, 550 super feet; secretary, 300 super feet; waiting-room, 550 super feet; deputy-chairman, 550 super feet, and vice-chairman, 550 super feet.

Suitable accommodation, amounting in the aggregate to an area of 16,000 square feet, for the general use of members. The library, which shall be as conveniently situated as possible to the Council chamber, and a hall to seat 800 persons is to be provided. The whole of the principal floor is to be devoted to the accommodation as set forth in this schedule, and to the accommodation of those heads of departments (as set forth below) who should be located as near the committee-rooms as possible. Such accommodation should consist of a large room about 500 super feet for head of department, a small waiting-room and also about three rooms of approximately 350 super feet each. These areas are not to be included in areas required by the undermentioned departments.

Heads of departments, &c., to be accommodated on principal floor:—(1) Clerk of the Council, (2) comptroller, (3) chief engineer, (4) architect, (5) solicitor, (6) medical officer of health, (7) valuer, (8) statistical officer, (9) chief officer of the fire brigade, (10) manager of works, (11) chief officer of tramways, (12) educational adviser, (13) executive officer, (14) chief inspector.

SCHEDULE C.—List of Drawings.

The whole of the drawings in the preliminary stage of the competition are to be drawn to a scale of 16 feet to 1 inch, with the exception of the site plan showing the block plan of the new building in relation to the immediate surroundings drawn to a scale of 40 feet to an inch. Preliminary stage of the competition—plans of each floor, elevations of the three principal façades, sections, one longitudinal, one cross through the building, showing internal courts, &c. No perspective drawings are to be submitted in either stage of the competition.

Note.—(Clause 17).—The successful architects can amend or redraw their designs for the final stage of the competition if they so desire.

Additional Drawings for the Final Stage of the Competition.

Sections through council chamber and main staircase: scale 8 feet to 1 inch. Detail of a portion of one of the façades; scale 2 feet to 1 inch. All the plans, with the exception of the block plan, to be drawn on paper 52 inches by 30 inches and mounted on strainers with a 2-inch margin. All the drawings sent in to be in dark brown or black ink, in line only and in geometrical projection, but the plans and sections should have the sectional parts filled in solid. In elevations no washes, shading or hatched shadows for the purposes of embellishment will be permitted other than flat washes in the openings. Strict compliance with these restrictions will be enforced.

SCHEDULE D.

Extract from an agreement between the Ecclesiastical Commissioners for England and the London County Council, dated October 17, 1906:—

"The said assurance shall be executed in duplicate and shall contain all such exceptions grants reservations provisions stipulations and conditions as shall be necessary for securing that the Commissioners as regards the land edged blue on the Plan No. 1 hereto annexed but subject to the rights of the existing lessees thereof (short particulars of which are contained in the 4th Schedule hereto) and the Council as regards the land coloured pink on the Plan No. 1 hereto annexed but subject until the Council shall have acquired the same to the rights of existing lessees thereof shall respectively have power at all times without obtaining any consent from or making to each other any compensation to erect as to the Commissioners on the land edged blue and as to the Council on the land coloured pink new buildings the main front walls of which may be carried up to a height of 60 feet from the pavement level next such buildings to the top of the parapet or eaves gutter as the case

may be on the line of the existing frontages (which are shown upon the Plan No. 2) of the said several properties in Belvedere Road shown on the said Plan No. 1 whether such buildings shall or shall not affect or diminish the light or air which may now or at any time or times hereafter be enjoyed by the Council or the Commissioners respectively in respect of the said hereditaments and that the Commissioners and the Council shall have power to deal with the architectural features and the roofs of their respective buildings next Belvedere Road in accordance with the provision contained in the London Building Act 1894 as if that Act applied to the said buildings of the Council. The said assurance shall also contain such exceptions grants reservations provisions stipulations and agreements as shall be necessary for securing that the Commissioners and the Council shall respectively have power in manner aforesaid and without obtaining any consent as aforesaid or making any compensation as aforesaid to increase the height to the top of the said parapet or eaves gutter of the buildings next Belvedere Road on their respective estates edged blue and coloured pink on the said Plan No. 1 to a greater height than 60 feet as aforesaid provided that for every 3 feet increase in height or portion of 3 feet increase beyond the height of 60 feet aforesaid the main front walls of the buildings to be erected on their said respective estates shall be set back 2 feet behind the existing lines of frontage in Belvedere Road aforesaid in respect of the premises of which the height shall be increased beyond the height of 60 feet as aforesaid whether such increased height shall or shall not affect or diminish the light or air which may now or at any time or times hereafter be enjoyed by the Council or the Commissioners respectively in respect of the said hereditaments and the Commissioners and the Council shall have power to deal with the architectural features and the roofs of the said respective buildings in manner aforesaid."

NOTE.—The portion of the site enclosed within the green verge is that which will be reclaimed from the river. The part of the site of which the Ecclesiastical Commissioners were the freeholders is indicated by red stripes. The property referred to in the above extract from the agreement as being edged blue on Plan No. 1 is that lying between the points A and B and edged brown on the block plan which accompanies these conditions. The property referred to as coloured pink on Plan No. 1 is that which was the freehold of the Ecclesiastical Commissioners, and as stated above as shown by red stripes on the block plan which accompanies these conditions. The extent of the Ecclesiastical Commissioners' estate on the east side of Belvedere Road, so far as it affects the Council's site, is indicated on the block plan which accompanies the conditions by a brown verge.

THE ARCHITECTURAL ASSOCIATION.

A MEETING of the Association was held on Friday evening last, Mr. Walter Cave, vice-president, in the chair.

The following gentlemen were elected members:—Messrs. W. H. Adams, F. R. Hiorns, John Usse, H. A. Welch, G. H. Ledger, C. S. Mordaunt, J. H. P. Fulford, B. P. Collin, S. P. Bush and Sir Chas. A. Nicholson, Bart.

On the motion of the CHAIRMAN votes of thanks were passed to Mr. S. B. Bolas for his donation of a large collection of photographs of Westminster Abbey, and to Mr. Batsford for his presentation of a bust of Inigo Jones.

Mr. W. H. SETH-SMITH read the following paper, illustrated by sketches and lantern slides, entitled—

The Architecture of Sicily.

Italy as the grave of Classic and the birthplace of Christian architecture will probably be the first and most attractive influence to the architectural student, and having paid his homage to the departed Romans and Greeks, mastered the records of the infancy and adolescence of Byzantine and Romanesque from Constantine's conversion in the fourth century, and tried to unravel the tangle of styles and influences up to the Renaissance, he will be in a position to proceed systematically and thus intelligently to study the growth of Gothic art, its external formative influences, and its decline under the all-pervading force of the revival of the Classic spirit. Nor can our travelling student intelligently enjoy this, the most delightful of his experiences, unless he has a sufficient grasp of general European history from the earliest Greek to the end of the eighteenth century.

The loveliness of Sicilian scenery and climate is too well known to need description. Most travellers visit it for these reasons. These qualities will surely be no less enjoyed by the architect whose trained eye for colour and form, and whose field of interest is made so much wider by the pursuit of his specialty—Sicily is beautiful indeed. The rugged barrenness of the mountainous interior is in striking contrast to the undulating luxury of the sea coast, along which, on the north and east of the island, the railways wind amid dense and continuous groves of lemon, orange and almond trees, harmonising with the bluish-green sea. There are no fairer spots in the world than Taormina and Palermo.

Sicily may not be the best destination of a young student of architecture, on account of the very intricate problems its post-Classic architecture presents. To the older architect, however, all this only intensifies the interest, and sets him to work till his mind is as tolerably clear as to the origin as his sense of beauty is awake to the charm of its wondrous buildings of the twelfth century. May I add a warning to the student as to accepting even the best guide-books as authorities on the origin, history, or description of architectural works? In this instance let him read beforehand, and again on the spot, such works as C. A. Cummings's "History of Architecture in Italy," Fergusson's "History of Architecture," Baldwin Brown's "From Schola to Cathedral," Leader Scott's "Cathedral Builders," and consult in the Institute Library such works as Gravina's "Il Duomo di Monreale," Dehli, Gally-Knight, Hittorff, Mothes, Sabazaro, Dautier, &c. I am, however, specially indebted to Cummings. I have not hesitated to quote freely from him, where I could not pretend to his historical research, nor improve on his terseness of general description. Mr. Banister F. Fletcher and others have also kindly allowed me to reproduce some of the plates from their well-known works, and Messrs. Millard, Gerald C. Horsley and J. J. Joass have lent their colour sketches. My object to-night is to give you, if possible, some views and particulars (without, alas! the wealth of colour) which, when you visit Palermo, may make it somewhat easier for you to pursue your studies.

The Early History of the Island.

Situated in the direct and only sea route from the east to west and northern Europe, Sicily was naturally among the earliest lands to be colonised. Moreover, its great beauty, its fertility and good climate and strategic position made it the envy of all nations from the earliest Grecian era to modern times. It is not difficult, therefore, to explain why it has been termed "The Battlefield of the Nations." Phœnicians, Etruscans, Greeks, Romans, Byzantines, Saracens, Normans and Spaniards in succession have struggled in long and deadly conflict for supremacy over the fair and unhappy island, only, in most cases, to enjoy a brief or partial occupation. If we expect to find many monumental evidences of these successive occupations we shall be disappointed, for, with the exception of those of the Greek, Roman and Norman periods, scarcely any traces remain.

The Classic Greek period of 500 years extended from 735 B.C. to 210 B.C., when the Romans finally conquered the island. Notwithstanding the obliteration of the vast city of Syracuse (excepting the theatre), we have important remains still standing of two fine temples at Girgenti and one at Segesta, all, however, bereft of their setting as the central or foreground objects in great and beautiful cities, and of the fine white plaster coating adorned no doubt with colour. In their now dilapidated and fragmentary character and with their coarse yellow sandstone facing it requires a good deal of imagination to restore their primitive magnificence. To my mind, the vast desolation of the recumbent ruins of Selinunte is still more eloquent of the chequered history of these early Grecian colonies. Of the scale of some among these temples an idea can be formed when I remind you that the cast of an abacus of a capital in the Palermo Museum is 12 feet 6 inches square, and that the caryatid of Jupiter in his temple at Girgenti measures more than 24 feet in height. Fewer still are the evidences of the Roman dominion, which lasted 600 years, namely, from 210 B.C. to about 400 A.D. The Romans plundered Sicily of all its treasures of Greek art. The great theatre at Taormina is, however, mostly Roman. From Roman times until 535 A.D. the northern tribes held sway, when it was made subject to the Byzantine emperors, who retained it till they, in their turn, were conquered by the Arabs.

The Saracens.

In 827 Euphemius, the Byzantine governor of Sicily, revolting against the emperor, called to his aid in an evil hour a force of Mussulmans, whose predatory fleets had long infested the Mediterranean. Seizing their opportunity, they conquered Palermo four years later and promptly established themselves as masters of the whole western half of the island, and before the end of the ninth century all Sicily lay under Mohammedan domination. The Arabs had thus an admirable base of operations for attacks on Italy, but notwithstanding their rule of more than 200 years, almost the only genuine Arab monuments remaining are, I believe, the baths of Cefalà and the gate of the town of Ortigia (Syracuse).

The Normans in South Italy.

In 1016 forty Norman knights returning from Palestine stopped at Salerno in South Italy, then in the hands of the Lombard rulers, and found the town hotly attacked by Saracens. Encouraged by their aid the Lombards took heart and the Saracens were driven to their boats. The Normans, ambitious of conquest in this fair land, made several expeditions, which resulted in 1040 in their establishment at Melfi, and in 1053 the Normans were confirmed in their possession of most of South Italy under Robert Guiscard, one of the many sons of Tancred de Hauteville, of Normandy, and received the Pope's pardon. These rude warriors, who had not blushed in the beginning of their career to follow the trade of highwaymen, and were absolutely illiterate, here became the enlightened promoters of knowledge and progress, encouraging with enthusiasm at their court and throughout their territories letters, arts and science, without regard to differences of race or religion.

Sicilian Architecture.

We have very briefly outlined the history of the island of Sicily from its first colonisation by the Greeks of classic times to the fall of the western Roman dominion, and the consolidation in 476 of east and west in the Byzantine Empire. From that time for about 400 years a close connection existed between this island and the eastern part of the empire. Count Roger, the brother of Robert Guiscard, finally completed the work of conquering the Saracens and inaugurated, in 1090, the most brilliant period in the history of Sicily. The population he found there was, as in South Italy, composed of Greeks, Lombards, Italians, Arabs and Jews, who had enjoyed under Saracen rule an extraordinary measure of liberty, each race retaining its own language and to a great extent its civil and religious customs. The official languages were Greek and Arabic. This tolerance was imitated by the Norman conqueror. The Greeks were still allowed to adhere to the code of Justinian, the Lombards to that of Rothari, the Saracens still took their official oaths on the Koran, and the Normans brought in the Frankish laws and customs. Roger set himself to work to pacify and develop Sicily as his brother had done in South Italy. He created the beginning of a civilisation which had no equal in Europe. He had as a foundation the Arab fineness and intelligence consolidated by 200 years of continuous enlightened administration. "Christians and Northmen adopted the habits and imbibed the culture of their Mussulman subjects. Nor did these Scandinavian sultans of Palermo cease to play an active part in the affairs, both civil and ecclesiastical, of Europe. As hereditary legatees of the Holy See they dispensed benefices and assumed the mitre and dalmatic, together with the sceptre and the crown. The commander of Roger's navy was styled Emir or Ammiraglio. The workers in his silk factories were slaves from Thebes and Corinth. His charters ran in Arabic as well as Greek and Latin. His jewellers engraved the gems of the Orient with Christian mottoes in Semitic characters. His architects were Mussulmans who adapted their native style to the requirements of Christian ritual, and inscribed the walls of cathedrals with Catholic legends in Cuphic language. The predominant characteristic of Palermo is Orientalism. The Saracens had their own quarters in the towns and their mosques and schools. Count Roger found a machinery of taxation in full working order—a whole bureaucracy, in fact, ready to his use. In applying this machinery he became the richest potentate in Europe. In this court life men of letters played a first part three centuries before Petrarch taught the princes of Italy to respect the pen of a poet" (John Addington Symonds).

It is estimated that the Normans never formed more than 1 per cent. of the population, and these almost wholly

a feudal aristocracy. Palermo had then a population of about three hundred thousand. Count Roger died in 1101, and was succeeded by his son Roger, the first king, who continued for fifty years the noble work of his father. During his reign peace prevailed and the arts were encouraged. This tolerance, of the Saracens especially, is all the more remarkable when one recalls the fact that the Crusaders, with all the animus they implied towards Mohammedans, were contemporary, but it also suggests the long and close contact of east with west which may explain in some degree the phenomena we are about to examine. Another point to bear in mind is that the second great period of Byzantine art was co-existent with the creation of these Sicilian monuments, that the mosaic decorations of such churches as S. Mark's, at Venice, were not yet completed, and those of the Church of the Saviour, Constantinople, and others at Jerusalem and Bethlehem, and S. Front, at Périgueux, were in progress.

The Early Churches.

The first Norman church, S. Giovanni dei Lebbrosi, was built outside the walls as early as 1071 by Robert Guiscard during his long siege of Palermo. It is a basilican plan with arcades of round arches over octagon piers, fully developed transept, not projecting beyond the aisle walls, but rising as high as the nave. The central bay is covered by a dome. The adhesion to the Roman basilican plan is explained by the fact that the Normans were, on the whole, loyal throughout to Papal authority and to the traditions of the Western Church. When Roger, the first king, was firmly established and was crowned in 1030, churches began to rise all over the island. Those of most interest as illustrating this brilliant episode of European history are all in or near the capital city of Palermo. They group themselves into two divisions, according as their founders followed the traditions of the continental architecture to which they were accustomed, or were governed by those of the native races forming the population. Several of the earlier churches are modified transcripts of smaller monuments of the eastern towns—a Greek cross in a square with central dome, sometimes repeated in the adjacent bays, and with three apses on the eastern side.

The little church of La Martorana, commenced about 1129, well illustrates this type. From the roughly measured plan I made on the spot its original form is seen. Its author was George of Antioch, High Admiral of King Roger. The interior is a Greek cross divided into nine bays, the centre one covered by a high dome on an octagon drum with pointed windows, the transition from the square to the octagon being made by arched squinches. The four oblong bays are covered by pointed barrel vaults, the four square angle bays are lowered and covered by groined vaulting.

Comparing this and other Palermo plans with some of the early Christian churches of Syria and Greece, we can hardly doubt the source of their inspiration. Here, again, are the three eastern apses; in the angles of the openings are set small columns of porphyry and Verde antique. The walls and vaults are covered with mosaics, many of them contemporary. One, probably the oldest in Sicily, shows the founder prostrate before the Virgin, who exhibits to Christ a scroll bearing these words, "Oh, Son of God, protect ever from all harm George, the first of princes, who has raised this temple to me from the foundations." The prevailing tints of the mosaics are blue-greys, greens, madders and white. The aisle vaults are of a rich indigo blue starred with gold, a fine combination giving profundity and strength to the colour composition. The pavement is of beautiful mosaic. The tower is probably older, and is detached by about 50 feet from the original church. It is in four stages, the lower two square and plain, the upper with round angle turrets, which may have suggested those of the cathedral towers, and it was originally crowned with a hemispherical dome. The ornament, such as the billet moulding, is clearly due to Saracenic influence.

Close by is S. Cataldo, about contemporary. It is also a Greek cross in plan, the side bays being narrower, and the three bays of the nave are all covered by domes. The drums are pierced by eight simple pointed windows, and four small windows are set at the base of the dome itself. The domes, as in all the eastern examples, and like all their fellows in Sicily, are simple hemispheres, without ribs or lantern. The side bays are all covered by groined vaults. Four serpentine columns with free Corinthian caps and varied bases divide the interior bays. The aisle apses are

formed in the thickness of the wall. Two steps lead up to the tribune.

S. Giovanni degli Eremiti, finished, like La Martorana, in 1132, but now in a ruinous condition, has a different plan altogether. It is T-shaped and without aisles. The nave consists of two square bays opening into a square tribune. The transept arms, as well as tribune and the two nave bays, are covered by domes. The dividing arches are partly round and partly pointed. The exterior is thoroughly Oriental, although not Saracenic. The domes are formed over squinch arches exactly like those of S. Cataldo. The tower is of same date as the church, and is domed to correspond with the church itself. One is told by the custodian and by most of the guide-books that this church was originally an Arab mosque converted to Christian uses, but the plan is thoroughly Byzantine. Some of the windows are closed by bare plates of marble perforated with an Arabic pattern. The cloisters are very beautiful—arcades of pointed arches on coupled twisted columns.

Another and most remarkable example of Byzantine arrangement and construction is the little chapel at Malvagna, near Randazzo. It is only 18 feet square, and from three sides has open semicircular apses covered as usual by semi-domes, which abut against and buttress the central dome, repeating upon a small scale that of S. Sophia, at Constantinople.

In all these instances the Normans allowed their monument to be built in the style and with the decorations familiar to the peoples they governed. The pointed arch here first introduced to them became general, but it was the arch of the Saracens, broad, high-stilted and without mouldings, and had no relation whatever to the use of the pointed arch of the north of Europe, which was even then beginning to be introduced in the monastic architecture of Italy. Nowhere in Sicily is there any instance dating from this period of an interior which has any hint of a Gothic system. The use of the intersecting vault is confined entirely to the small bays of the aisles or porches, while the naves, where not domed or covered by the equally Oriental stalactite ceiling, are invariably covered with an open timber roof.

The Cappella Palatina.

At the same time King Roger was building, in the royal palace of Count Roger, his predecessor, a chapel whose general plan was more in harmony with the tradition of Italy, and which furnished the type of most of the later churches of the Normans. The Cappella Palatina is, as we see it to-day, substantially the chapel King Roger consecrated in 1140, and is one of the most interesting and valuable monuments of the splendid architecture of the Norman kings. The chapel is entered from the arcaded gallery surrounding the court on the second storey of the palace. Its plan is divided into nave and aisles, with transept as high as the nave, but with no projection beyond the walls, and three apses as in all the earlier churches, the crossing covered with a Byzantine dome like many of the Romanesque churches in both the north and south of Italy. It is only in the treatment of its details, in the use of the pointed arch, and in its sumptuous decoration that we feel the influence of the mixed Orientalism which coloured all the art of Sicily at this period. The nave arcades are of highly-stilted arches with columns alternately of polished granite and marble, with Corinthian capitals. The height of the arch is nearly as great as that of the column, and the stilt nearly half its height. The four columns which support the dome are of unequal diameter, and form, not a square, but a rectangle, longest by about 4 feet in the direction of the nave; the base of the dome at two points thus falls some 2 feet inside its supporting arches, the wall being corbelled forward to carry it. The shadow thus produced as seen from the nave and softened by the rounded surface of the corbel is very effective. The dome resembles many of the smaller churches, and has a ring of small windows at its base. The transept aisles have barrel vaults, and the nave aisles are covered with wood ceilings following the line of the nave roof. The nave has a carved wood ceiling of the richest Moorish character, similar to those in Granada and Seville, and decorated lavishly with gold and colour. The interior surfaces elsewhere are flat, the arches without mouldings and the clerestory and apses without belt or cornice. But these flat surfaces are decorated throughout with the utmost splendour.

Even without their gorgeous colour and lighting of these churches would be fine. The windows of the clerestory and aisles, of nave and transepts, are so small as scarcely

to be seen in perspective, and to give depth and mystery to the ceilings and interspaces; these masses of deep dark and half-tone being repeated beneath the ambone and organ gallery and in the semi-domes of the apses, while a flood of diffused light descends from the dome windows forming a splendid contrast and throwing into high light the clergy in their sumptuous robes and the brilliant accompaniment assembled below, their forms and colours being reflected, as it were, in the series of mosaic figures of saints and angels depicted in the mosaics above. In no other interior which I have seen is this contrast of light and shade so fine, reminding one of the Spanish cathedrals, but the prevailing gloom of a nave so decorated would not have been justifiable in the Middle Ages, except in a private chapel.

The great principle of "breadth" is carried to perfection. I need not say that the glazing of the windows is quite without colour—another most important principle. Any stained glass would have confused the scheme of wall colouring. Everywhere the effort to obtain diffused rather than direct sunlight for the decorations is apparent. There are practically only two divisions of the composition, the upper and the lower portions of the church, the upper being entirely covered, walls, arches, domes, vaults and even soffits of arches, with a wealth of colour, the lower kept quite quiet yet sufficiently broken by line or colour (without pattern) to harmonise with the other portions. For instance, the mosaic pavement, inlaid with circles of serpentine and porphyry, surrounded by winding bands of Alexandrine work, is comparatively cool and subdued, and of geometric design; so is the frieze which separates the great vertical slabs of Cipollino marble, 14 feet high, from the pictorial mosaic above; these slabs being formed into panels by bands of geometric mosaic resembling those in the Alhambra and in S. Sophia, while the marble columns are enriched with fluting to harmonise with their richer toned granite neighbours and other surroundings.

Nowhere are they (the mosaics) permitted to be within 14 feet of the observer. The colour spaces are not broken up by architectural features such as mouldings, but divided by bands or lines of the same material. Every angle or projection is rounded off and the mosaic carried round it, obviating sharp lines of light, and giving beautiful gradation between the different surfaces. Even the wall surfaces themselves are not flat; whether this is due to the method of fixing or was intentionally arranged in preparation of the surfaces for the tesserae, perhaps expert mosaicists present can tell us. We only know the result is excellent. These wall-pictures are of the greatest variety and beauty; the ground is all gold and the figures have much expressiveness and dignity without the rigid formality of most of the Byzantine mosaics. Some are doubtless contemporary with the structure, but the greater part were added during the reign of William I., the son of King Roger, before the end of the twelfth century, and all have been more or less restored, as have also those of the Martorana and of Monreale, the madders in the draperies harmonising beautifully with the porphyry columns and discs. The inscriptions are in black and are both in Greek and Latin, and silver tesserae are used in parts. The silver band of the cupola bears the date of 1143. The organ gallery is a most beautiful composition in porphyry and serpentine, white and red marbles, with gold glass, its design closely following the examples we find in Ravello and Salerno cathedrals. Cummings also speaks of a paschal candlestick of great beauty standing beside the former pulpit. If more beautiful than that we have here it must be beautiful indeed. The pavement in Opus Alexandrinum is of great beauty, consisting of circular slabs of porphyry with bands of colour. In this lovely chapel Norman architecture in Sicily came to its full flowering. In later monuments we find equal magnificence, but nowhere more typical or more beautiful expression of the geniuses of the place and time.

(To be concluded.)

Mr. E. R. Catterns, secretary of the Glasgow School of Art, has received the following letter from the Scotch Education Department:—"Adverting to the letter from this department of the 22nd ult., and to your letter of the 11th inst., I am to state, for the information of your governors, that the department will be prepared to contribute an equivalent of the sum which is raised locally up to a maximum sum of 15,000*l.* But I am to add that the department cannot undertake to make a grant from the funds at present at their disposal in respect of contributions not intimated to them by January 31, 1907."

STEYNING CHURCH.

IN the course of repairing the plaster on the interior walls of the north aisle of the church the stonework of the upper portion of the north doorway was uncovered; it was found in an excellent state of preservation with the staple and hinge of the door itself, which had been built in. This doorway is of the Early English style of architecture, following the Norman, and although in these matters no arbitrary date can be fixed, it was probably erected about A.D. 1300.

The vicar and churchwardens decided not to fill in the recess, and they may, perhaps, go a step further and open out altogether this doorway, thereby adding another entrance to the church, increasing its architectural interest and in part restoring it to its original condition. From the evidence of the brickwork the door had been blocked up in comparatively modern times, possibly in 1832, when the galleries were erected. Few, perhaps, of the parishioners of Steyning attempt to realise the noble proportions of their church in its original condition. The nave extended to the west one or more arches further than it does now, the tower not then being in its present position, and upon the site of the chancel rose the tower with transepts and chapels, the church being a cruciform one.

Steyning Church belonged to the abbey of Fécamp, in Normandy, and is supposed to have been built about A.D. 1150, and the door now referred to was no doubt for the use of the Benedictine monks in passing from the monastic buildings, which stood to the north, into the church itself. Upon the breaking out of the French war in 1415 the possessions of the alien monasteries were taken from them by Henry V., and those in Steyning were granted to the newly founded English abbey of Sion, in whose hands they remained until some time shortly previous to the year 1519, as is shown by extracts from early wills. Upon the withdrawal of the support of the wealthy abbey of Fécamp the monastic buildings and church may have been neglected and allowed gradually to fall into that decay and ruin which doubtless was completed upon the suppression of the monasteries in the reign of Henry VIII.

The influential family of Farnfold resided at Gatwick for many generations, and extracts from their early wills and from those of Pellatt of Charlton Court prove the existence of this north doorway early in the sixteenth century.

EDINBURGH ARCHITECTURAL ASSOCIATION.

AT the last meeting of the Edinburgh Architectural Association a paper was read by Mr. James L. Lawrence, member of the Sanitary Institute, on "The Sanitary Considerations of Building." After treating of the importance of sanitary science, made-up sites, ground air, dry-rot, &c., he proceeded to deal with the purely public health side, and asked—What, for instance, was the effect of huge blocks of buildings on the health of their inmates? Some authorities say that ordinary infectious diseases are not spread through people living closely together in flats, though one might almost think otherwise. One most insanitary piece of construction brought about by this style of building was, however, the inner court or smaller well. The only good point about it, and even this is doubtful, was that you could open your window at any time of the year without fear of a draught. But instead of pure air they might get a smell of their neighbour's dinner or a concentrated knowledge of the ash bucket in the court below. This, with practically no sunlight and too often the need of artificial light from November till March, should make them hope that planning of this nature would not be long perpetuated. He (the lecturer) noticed some time ago that a reason put forth for the cause of the domestic servant problem in London and elsewhere was the bad quarters to which servants were relegated, often with an outlook into these wells. Nor did he think they were much better off elsewhere, when an old, badly-lit room without a fire was found to appear on a plan, and which was found convenient to designate "box-room." How often was such a room made to serve the purpose of housing the unlucky servant? He did not think ordinary people nowadays were blessed with quite so many boxes as an architect would sometimes make out from the space he allots to them, and, too, he thought the Dean of Guild Court sometimes expressed a similar opinion. Of course, if a fire could not be arranged for, it might also be difficult to put in what the law demanded—a flue, or one that really did its work; but, if possible, this

should be provided, because, after all, how many people do have fires in their bedrooms except in cases of illness? A point sometimes apt to be forgotten in modern kitchens was the necessity of leaving a flue for gas stoves. No matter the size of the house, tenement or otherwise, they may safely infer that if gas was to be obtained a gas stove would be used, and provision should always be made for it. The kitchen was to a great extent a dwelling-room, and special provision in ventilation should be introduced for the comfort of its inmates. No doubt the badly-cooked dinners one perhaps reads about more than experiences were partly occasioned through indisposition of the cook caused by bad kitchen ventilation.

On the motion of Mr. Thomas Fairbairn, a vote of thanks was conveyed to Mr. Lawrence. The Association has resolved to open an exhibition of architectural interest to be held next summer during the months of June, July and August. An exhibition of this nature has not been held in Edinburgh for a quarter of a century, and as the Edinburgh Architects' Association celebrates the jubilee of its existence in 1907 the year is considered a specially suitable one for the venture. The exhibition will be held in the Galleries of the Royal Scottish Academy.

IRISH ARCHITECTS' PROTEST.

THE following letter has been forwarded to the members of the Royal Hibernian Academy by the Council of the Royal Institute of the Architects of Ireland:—

Mr. President and gentlemen,—We, the President and Council of the Royal Institute of the Architects of Ireland, desire to add an unanimous voice to the protest which you will, doubtless, make against the majority report of the Commission on the Royal Hibernian Academy and the Metropolitan School of Art lately issued.

We deprecate most strongly the proposal to reduce the Royal Hibernian Academy to the level of a society of merely exhibiting artists, thereby depriving it of all claim to its academic functions.

We would wish also to express our appreciation of the admirable minority report presented by Mr. Justice Madden and Mr. J. P. Boland, M.P., a report which indicates how thoroughly these gentlemen recognise the fundamental difference between the functions of an academy of arts and an art school.

We conclude in expressing our earnest hope that the voice of the artists of Ireland may not be stifled by recommendations based solely on the evidence and suggestion of Department officials, and that no action by the Government, conceived on the lines of the majority report, may result in what would undoubtedly be the extinction of our Academy.

We are, Mr. President and gentlemen, your obedient servants,

Signed on behalf of the Council of the Royal Institute
of the Architects of Ireland,

W. M. MITCHELL, President.

J. H. WEBB, Hon. Sec.

20 Lincoln Place, Dublin:
December 14, 1906.

AMALGAMATION OF GALLERIES.

IN a letter to the *Glasgow Herald* Mr. John Honeyman, R.S.A., offers the following suggestions:—

In view of differences of opinion which have arisen regarding the constitution of the Board which is to be entrusted with the care of the National Gallery, I venture to suggest an arrangement which I think would be found workable and advantageous, although likely at first sight to stir up patriotic prejudices. It is that the National Gallery and the Scottish and Irish Galleries—nominally, but not really, national—should be amalgamated, so that we should have only one National Gallery, part of the national collection finding a home at Edinburgh and part at Dublin.

By some this might be regarded as an encroachment on "Scottish rights," but I am disposed to take a broader view of the subject. Every Scotsman will continue to admire and venerate Edinburgh and give her pre-eminence over other cities as the capital of the ancient kingdom; but she is not the capital of the United Kingdom, and in a United Kingdom there can be only one king and one capital, and—strictly speaking—only one National Gallery. It would be a great mistake—indeed, altogether wrong—were we to

despite the privileges we may claim or disregard the duties and responsibilities which devolve upon us as subjects of the wider realm.

The suggested arrangement would have two important economic results. It would lessen the chance of competition for works of art, and it would save any need for the extension of the present building on the Mound if the Royal Scottish Academy is removed from it, if a wise system of interchange among the three sections of the national collection is adopted. For it would obviously be better to have the present building full of pictures of the highest merit than to have a gallery twice the size filled with inferior work.

If the Edinburgh Town Council thinks otherwise, and prefers quantity to quality, it has only to carry out its scheme for completing its national monument and converting it into a municipal art gallery, but in that case the people of Edinburgh would require to raise the necessary funds, like their neighbours in the West.

DISTRICT SURVEYORS' DISTRICTS.

THE Building Act committee of the London County Council report that they have under consideration the question of adjusting the limits of several more district surveyors' districts in order to make them, so far as may be possible and convenient, coterminous with the boundaries of the electoral areas constituted under or in pursuance of the London Government Act 1899. The present time is particularly favourable for such alterations, as, owing to deaths and resignations, a considerable number of districts are vacant. Section 139 (i) of the London Building Act 1894 provides that the Council may, subject to the payment of compensation to any district surveyor who is thereby deprived of his office, alter the limits of the district of any district surveyor or unite any two or more such districts, and place any such altered district under the supervision of any district surveyor. Broadly speaking, the effect of the recommendations, if adopted by the Council, will be the reduction of the three Islington districts to two, viz. Islington (South) and Shoreditch, and Islington (North) and St. Pancras (North); the reduction of the four districts into which the City of London is divided to three, viz. City of London, East, South and West; the union of the two districts of Fulham, north and south; the division of the existing district of Lewisham into two districts and the modification in other respects of the boundaries of nine districts. In the event of the recommendations being adopted, it is proposed to invite applications for the appointments of district surveyors for the several vacant districts by advertisement and to submit recommendations with regard thereto as soon as possible. The committee have negotiated with the district surveyors concerned and recommend—

(a) That the Islington portion of the district known as Clerkenwell and part of Islington be severed from that district, and be added to the adjoining district of Islington (South), Shoreditch and Norton Folgate.

(b) That the portion of the vacant district of Islington (South-west), St. Luke, Old Street and the parish of Glasshouse Yard, within the metropolitan Borough of Islington, southward of the railway through Highbury station and Maiden Lane station, be added to the adjoining district of Islington (South), Shoreditch and Norton Folgate.

(c) That Norton Folgate be severed from the district known as Islington (South), Shoreditch and Norton Folgate, and added to the adjoining district of Whitechapel, Spitalfields, Mile End New Town and Tower Liberty.

(d) That the district of Islington (South), Shoreditch and Norton Folgate, readjusted as outlined in the foregoing resolutions (a), (b) and (c), be designated Islington (South) and Shoreditch.

(e) That the portion of the vacant district of Islington (South-west), St. Luke, Old Street and the parish of Glasshouse Yard, within the metropolitan Borough of Islington, northward of the railway through Highbury station and Maiden Lane station, be added to the adjoining district of Islington (North) and St. Pancras (East).

(f) That the portion of the district of St. Pancras (West), northward of the railway through Camden Town station and Chalk Farm station, be severed from that district and added to the adjoining district of Islington (North) and St. Pancras (East).

(g) That the portion of the district known as Islington (North) and St. Pancras (East), southward of the railway through Maiden Lane station and Camden Town station, be

severed from that district and added to the adjoining district of St. Pancras (West).

(h) That the district of Islington (North) and St. Pancras (East), readjusted as outlined in the foregoing resolutions (e), (f) and (g), be designated Islington (North) and St. Pancras (North).

(i) That the portion of the district known as Holborn, East Strand and part of St. Pancras, within the metropolitan Borough of St. Pancras, be severed from that district and added to the adjoining district of St. Pancras (West).

(j) That the district of St. Pancras (West), readjusted as outlined in the foregoing resolutions (f), (g) and (i), be designated St. Pancras (South).

(k) That the portion of the district known as Holborn, East Strand and part of St. Pancras, within the metropolitan Borough of Finsbury, be severed from that district and added to the adjoining district of Clerkenwell and part of Islington.

(l) That the portion of the vacant district known as Islington (South-west), St. Luke, Old Street, and the parish of Glasshouse Yard, within the metropolitan Borough of Finsbury, be added to the adjoining district of Clerkenwell and part of Islington.

(m) That the district known as Clerkenwell and part of Islington, readjusted as outlined in the foregoing resolutions (a), (k) and (l), be designated Finsbury.

(n) That the portion of the district known as Holborn, East Strand and part of St. Pancras within the city of Westminster, be severed from that district and added to the adjoining vacant district of Bloomsbury, St. Martin-in-the-Fields, Soho and Covent Garden.

(o) That the portion of the vacant district known as Bloomsbury, St. Martin-in-the-Fields, Soho and Covent Garden, within the metropolitan Borough of Holborn, be severed from that district and added to the adjoining district of Holborn, East Strand and part of St. Pancras.

(p) That the district of Holborn, East Strand and part of St. Pancras, readjusted as outlined in the foregoing resolutions (i), (k), (n) and (o), be designated Holborn.

(q) That the vacant district of Bloomsbury, St. Martin-in-the-Fields, Soho and Covent Garden, readjusted as outlined in the foregoing resolutions (n) and (o), be designated Strand.

(r) That the Queen's Park ward of the metropolitan Borough of Paddington be added to the district of Paddington, and that the late detached portion of St. George, Hanover Square, on the north side of Bayswater Road, be severed from the district of St. George, Hanover Square (North) and added to the district of Paddington.

(s) That the detached portion of the vacant district known as City of London, Western Division (viz. Cheap Ward), be added to the vacant district known as City of London, Eastern Division.

(t) That so much of the vacant district known as City of London, Northern Division, as is situate westward of a line running north and south along the centres of Moor Lane, Fore Street, Aldermanbury Postern, Aldermanbury and Milk Street be added to the vacant district of City of London, Western Division.

(u) That so much of the vacant district known as City of London, Northern Division, as is situate eastward of a line running north and south along the centres of Moor Lane, Fore Street, Aldermanbury Postern, Aldermanbury and Milk Street, be added to the vacant district of City of London, Eastern Division.

(v) That the district known as City of London, Western Division, readjusted as outlined in the foregoing resolutions (s) and (t), be designated City of London (West).

(w) That the district known as City of London, Eastern Division, readjusted as outlined in the foregoing resolutions (s) and (u), be designated City of London (East).

(x) That the district of Lewisham be divided by a line along the South-Eastern and Chatham Railway through Lewisham Road and Catford stations, and that the two districts so constituted be designated Lewisham East and Lewisham West.

(y) That the district of Fulham (South), when vacant, be added to the district of Fulham (North), and that the district so constituted be designated Fulham.

(z) That where alterations in the limits of districts are approved by the Council, the solicitor do take such steps as may be necessary to secure the carrying out of such alterations, which shall be subject to the conditions that any works in progress, and any proceedings in progress relating to any dangerous or neglected structure, or any other building or structure in areas surrendered by a district

surveyor shall, notwithstanding the transference of those areas from his supervision, continue to be supervised by him until the completion of such works and proceedings, and that no district surveyor shall claim compensation for any diminution of income which may hereafter arise by reason of such adjustments of limits.

(aa) That unless otherwise specified, and subject to the conditions mentioned in the foregoing resolutions, the alterations of district limits do take effect on and after January 1, 1907, and that the solicitor do take such steps as may be necessary with reference thereto.



Sculpture in Relation to Architecture.

SIR,—Will Mr. S. C. K. Smith allow an addition to his moral? It is this—that in order to become allies the sculptor must understand something at least of architectural form and proportion, and the architect something of human form and proportion. It is marvellous how incompetent architects and architectural draughtsmen are to draw the human figure, clothed or unclothed, or to proportion it to the scale and perspective of even high-class architectural drawings. It is marvellous, first, because one would think that a professional draughtsman would be able almost intuitively to produce something with some more or less correct and artistic approximation to the shape of the human figure, and secondly, because those whose occupation almost daily is drawing to scale spoil masterly productions by introducing figures to the scale of those on tradesmen's illustrated paper bags. Week after week drawings are reproduced in the architectural papers containing caricatures not only of the human form divine, but of animals, trees, benches, carriages and horses, and goodness knows what besides, that would be a disgrace to a sixth-standard schoolboy. One of the subjects in architectural examinations should be figure and landscape drawing, and then perhaps the unnecessary introduction of diminutive figures that have not a joint that is not dislocated, nor a member that is not deformed, and which can only just look over the top of the stall boards of the shops, or might perhaps by standing on tiptoe be able to reach the bell-pull, but certainly not the knocker, would not be so frequent in the drawings that are sent to the architectural papers for reproduction. If the architect cannot introduce decent figure-work into his drawings, how can he expect or be expected to be able to deal with sculpture?

ROBERT A. DAVIS.

Broxwood, Pembridge, Herefordshire :

December 15, 1906.

Fire at Messrs. Whitehead's.

SIR,—Will you kindly allow us the opportunity, through the columns of *The Architect*, to state that the serious fire at our store yard in Dorset Road, which was so prominently noticed in the daily press of the 13th inst., has not in any way affected our workshops, stables and main yard (situated at Portland Place North), and in no way inconveniences us except as regards loss of stock. Our business is therefore being carried on as usual, and the insertion of this statement will remove the impression to the contrary that has become current, and has caused us considerable trouble. Thanking you in anticipation, we remain, yours faithfully,

L. WHITEHEAD & Co., LTD.

JAS. WALLIS, director.

Portland Works, Portland Place North,

Clapham Road, London, S.W. :

December 17, 1906.

GENERAL.

Mr. Sydney F. Hall, M.A., M.V.O., has had the honour of submitting for the King's inspection a sketch of the Chapter of the Order of the Garter and Investiture of the King of Norway held by his Majesty at Windsor Castle.

Mr. Frank Burnett, a Glasgow architect, has offered to give 2,000 square yards of ground near Earlston Avenue, St. Rollox, for a playground, on condition that it be left an open space for all time. The Town Council resolved to accept the gift.

Aston Parish Church is to be restored at a cost of 2,500l. under the direction of Messrs. J. A. Chatwin & Sons. The work will include the erection of a porch at the south door.

Professor F. M. Simpson is to deliver a course of ten lectures at University College on "The Seven Ages of Architecture" before the teachers of the London County Council. He has been appointed architect to advise as to the redistribution and adaptation of the buildings of London University College consequent upon the removal of University College school to Hampstead.

Dr. F. Parkes Weber has presented the Guildhall Library with a valuable collection of historical coins, tokens and pieces of money, numbering in all about 1,200 specimens. The British Museum authorities have also selected over 5,000 specimens. The rest of the collection will be sold for the benefit of the German Hospital.

The Duke of Devonshire has contributed 300l. towards the restoration of Selby Abbey, which was partly destroyed by fire in October. The fund is now fast approaching 30,000l., and the work of restoration will be proceeded with almost immediately under the direction of Mr. J. Oldred Scott.

"The Five Sisters" Window in the north transept of York Minster is to be protected at a cost of 200l. The present green plates and iron stanchions used as a protection will be removed, and replaced by a complete outer skin of clear white glass similar to that lately supplied to the chapter-house windows. The five windows each require 1,750 feet of glass.

The Late Charles Lock Eastlake, architect, who was keeper and secretary of the National Gallery, has left property of the value of 15,082l. 6s. 3d.

The Bridge House Estates Committee on Monday accepted the tender of Sir William Arrol & Co. for 203,000l. for widening of Blackfriars Bridge. The work will commence early in 1907 and will take about two years to complete.

The Death has taken place at Bristol at the age of eighty-four of Mr. Clement Tate, who was for many years in the Government service at Dover, Woolwich and Portland. As surveyor of works at Dover he was instrumental in unearthing the Roman pharos on which the Lords Warden of the Cinque Ports were sworn into office up to about a hundred years ago, when the site was lost.

Sir Rowand Anderson has been appointed architect by the Council of Dundee University College for the new physics laboratory provided by a gift of 12,500l. from Mr. Carnegie. He is also to advise regarding the site to be selected for the new buildings.

Mansfield College, Oxford, has just received two interesting gifts. An anonymous donor has given 3,000l. for the purpose of beautifying the chapel with stained-glass windows; while Miss Clark, a lineal descendant of Gainsborough, has handed the College four works by that artist.

Mr. Banister Fletcher is to deliver a lecture on "Roman Architecture" (introductory in connection with the University Extension Guild) at the University of London, South Kensington, on January 7 next.

A Gift of £300 has been made anonymously by a friend of Mr. T. Graham Jackson, R.A., to be spent during the ensuing year on completing the decorative carving in the Examination Schools, Oxford. Brasenose College has made a grant of 100l. towards the provision of new cases at the Ashmolean Museum.

Mr. J. C. Dollman's *Famine*, which was exhibited at the Royal Academy in 1904, has been presented to the Art Gallery in Peel Park, Salford, by Mr. James Gresham.

A Stained-Glass Window has been placed in the Roman Catholic church at Bishop's Stortford, which is composed of fragments of a window which was in the adjoining church of St. Michael's, in pre-Reformation times, and which was discovered in a summer-house window.

The Rev. James King, vicar of St. Mary's, Berwick-upon-Tweed, has issued a pamphlet on "The Edwardian Wallis and Elizabethan Ramparts of Berwick-upon-Tweed." The profits will be devoted to the poor. The author says his little book is not a history of Berwick, but a brief account of its magnificent walls and masonry, furnished by the internal evidence of the decaying stonework, and supplemented by a little knowledge of architecture, archaeology, and fortification.

The American Institute of Architects have decided to award medals to those who have most signally contributed to the art aspect of architecture. Sir Aston Webb, R.A., is to be the first recipient. The presentation of the medal will take place at Washington on January 7, and Sir Aston and Lady Webb will leave for America on Saturday.

The Architect.

THE WEEK.

THE limited competition for the new buildings at Bangor for the University College of North Wales has been decided in favour of Mr. HENRY T. HARE. Sir ASTON WEBB, R.A., was the assessor, and in his award he says:—"I have now carefully examined the four sets of designs, with the reports of their authors, that have been sent in for the proposed new buildings, and I am of opinion that all of them have sufficiently complied with the conditions of competition to entitle them to the premiums offered. I have also made a careful examination of the site and its surroundings, and I am of opinion that the design that best meets the requirements and the conditions laid down for the competition is that marked No. 2, and I therefore place this design first, and consider that the author is entitled to the premium of 250*l.* Judging from this design, I feel confident the author would provide a satisfactory building, and, subject to his being prepared to meet the Council in making any variations in the plan and arrangements that they may think desirable after consultation with him, and to his being able to justify his estimate, I should strongly recommend the Council to appoint the author of the design marked No. 2 as the architect for the new buildings." The expenditure is calculated at over 200,000*l.* The Council have accepted Mr. HARE's plans, and the KING has been invited to lay the foundation-stone.

WE have already referred to the remarkable will of the late JOHN STUART M'CAIG, who died in 1903. His property was worth from 2,000*l.* to 3,000*l.* a year, and there was some 10,000*l.* in money. The revenue of his estate was, according to the testator, "to be used for the purpose of erecting monuments and statues for myself, brothers and sisters on the tower or circular building called the Stuart M'Caig Tower, situated on Battery Hill, above Oban, the making of these statues to be given to Scotch sculptors from time to time as the necessary funds may accumulate for that purpose; also that artistic towers be built on the hillock at the end of Aird's Park, in the parish of Muckairn, and on other prominent points on the Muckairn estate, and on other prominent places on the various estates; such, in particular, as the Meolreor of Balagown, lying north-east of Kilachonish farmhouse. My wish and desire is to encourage young and rising artists, and for that purpose prizes be given for the best plans of the proposed statues, towers, &c., before building them." In a codicil he added:—"I particularly want the trustees to erect on the top of the wall of the tower I built in Oban statues in large figures of all my five brothers and of myself, namely, DUNCAN, JOHN, DUGALD, DONALD, PETER and of my father MALCOLM, and of my mother MARGRET, and of my sisters JEAN, CATHERINE, MARGRET and ANN, and that these statues be modelled after photographs. And where these may not be available that the statues may have a family likeness to my own photograph or to any other member of my foresaid family, and that these statues will cost not less than one thousand pounds sterling, and that money to come out of the accumulated clear revenue." The authorities of the University of Glasgow were constituted as his trustees. A sister of the testator brought an action to have the will set aside on the grounds that she could not be divested of her rights of succession except by constituting beneficial rights in favour of third parties. In the first Court the action was dismissed and an appeal was brought before the higher Courts. A majority of the judges found in favour of the plaintiff. The Lord Justice Clerk said it could not be suggested that Oban would be benefited by the statues. Nor could it be considered as a charity or education, for

there was to be a competition among young artists for the towers and statues. If the cost of the designs, another of the judges said, represented the whole of the expenditure, it might be concluded that the prizes could be bestowed without the erection of the towers, and the burden could be borne by the estate. The arrangement was proposed to be continuous. But the creation of statues and artistic towers could not go on for ever. The young architects and sculptors of Scotland have accordingly lost a source of income which was without a precedent, and it would not be impossible to use the money in a more serviceable way than the Court of Session imagined.

AN inquiry was held last week in Dublin by Mr. COWAN, the chief engineering inspector of the Local Government Board, respecting an application of the Corporation for authority to borrow 134,000*l.* for the construction of a reservoir. Plans were submitted, but the inspector said he could not discover who was responsible for their accuracy. In 1895 the estimate for the work was only 65,000*l.* After the objection of the inspector, the solicitor to the Corporation asked for an adjournment for six weeks in order to allow of further consideration of the plans. The inspector in agreeing said that, although his examination of the plans could only be superficial, his suggestions had led to a reduction of 12,000*l.* in addition to a correction of prices amounting to 9,000*l.* The proceedings are a commentary on the methods of carrying out public works in the poorest city of the country. It must be allowed, however, that the inhabitants have hitherto been fortunate in obtaining cheap water. A return was read by the inspector from which it appeared that the capital cost of water was in Dublin 2*1*/₂*l.* per head; Belfast, 4*5*/₈*l.*; Birkenhead, 2*1*/₂*l.*; Birmingham, 7*2*/₃*l.*; Bolton, 3*0*/₃*l.*; Bradford, 7*1*/₅*l.*; Cardiff, 5*9*/₈*l.*; Dundee, 4*5*/₈*l.*; Edinburgh, 4*4*/₅*l.*; Glasgow, 3*5*/₈*l.*; Leeds, 4*9*/₈*l.*; Liverpool, 5*1*/₂*l.*; Manchester, 5*5*/₈*l.*; Oldham, 5*2*/₈*l.*; Sheffield, 6*6*/₈*l.* The cost per head to the population per annum for water was:—Dublin, 3*8*/₈*d.*; Vienna, 3*9*/₈*d.*; Glasgow, 4*8*/₈*d.*; Berlin, 4*8*/₈*d.*; Paris, 4*8*/₈*d.*; Manchester, 5*8*/₈*d.*; Liverpool, 5*8*/₈*d.*; Birmingham, 6*8*/₈*d.*; Melbourne, 6*8*/₈*d.*; Chicago, 7*8*/₈*d.*; London, 7*8*/₈*d.*; New York, 8*8*/₈*d.*; Philadelphia, 10*8*/₈*d.*; Boston, 10*8*/₈*d.*

THE International Conference on Labour Regulation which was held in Berne in September was confined to the official representatives of the fourteen States of Europe. It is accepted that restrictions on industrial methods for the benefit of workpeople should be simultaneously employed by countries which are competitors, and also applied in an equal degree. One important measure which was brought forward was not received with the unanimity which had been anticipated. It was a proposal to establish an International Commission on which each of the States would be represented, which would meet whenever there was business to transact, and whose function would be to inquire into disputes that might arise from the interpretation or execution of the Convention and to express an opinion on the matter at issue. Continued disagreements would be referred to arbitration. The Commission would also be charged with the duty of choosing the subjects and preparing the material for future conferences on industrial questions. It was not intended that it should possess any powers of authoritative control. Its function would be that of a board of conciliation offering advice, not that of a judicial tribunal issuing decrees. On this proposition the opinion of the Conference was divided. At the outset only six of the fourteen States declared themselves in its favour. After prolonged discussions the number of States supporting a somewhat modified proposal on the same lines was raised to ten. But the remaining four—Germany, Austria, Hungary and Belgium—were not ready to assent, and it was thought inadvisable to proceed to the establishment of a Commission of this character without concurrence by Google

THE REPORT ON HOUSING OF THE WORKING CLASSES.

THERE has been such an accumulation of volumes, reports and returns on the subject of the dwellings of the working classes in this country, it might be supposed that no further information was needed. We should remember that in a progressive State the standards become higher as time rolls on, and what would satisfy the sanitary commissions half a century ago is now regarded as inadequate. This fact should not be lost sight of. Another and no less satisfactory circumstance is that even among the rural classes there are new ideas of their position. As the last committee say, "A higher standard of living throughout the country has correspondingly increased the demand among the younger generation for a better-kept cottage, with more accommodation and space than the older generation were content with."

A comparison of the select committee's report on the Housing of the Working Classes Act Amendment Bill with one of the earlier documents of the same class would suggest how far ideas have advanced, especially in recent years. The committee say they have gone through the Amendment Bill and have agreed to report it without amendment. That may seem hardly sufficient to explain the necessity of having thirty-six sittings in order to examine witnesses and to consider the different clauses. But when it is recalled that the committee treated the subject of housing both in towns and in the rural districts, a shorter period for examination would appear to be insufficient.

All who have studied the subject are aware that for many years what may be called the sanitary movement has been identified with cities and towns alone. One of the earliest inquiries was undertaken by the Health of Towns Commission, and for a long time the country was ignored. It did not require much observation to discover that the cottage homes of England, which appear to be so attractive in the descriptions of poets and the paintings of artists, were full of defects. The earthen floors were considered by ERASMUS, who was in England in the time of HENRY VIII., as one of the causes of the recurrence of epidemics. Everyone who was not satisfied with admiring the picturesqueness of labourers' cottages could discover similar difficulties without trouble. But somehow the dangers were cloaked over, or it was believed that pure air and healthy occupations were compensations provided by nature, and that the agricultural labourer was always a model of vigorous health. WILLIAM COBBETT was the first to suggest in modern times that there were evils which men of the class to which he belonged found it difficult to overcome, and he explained how the rustic labourer's life was trying and dangerous.

The select committee make no distinction between country and town, and they propose that such a distinction should be overlooked, and that housing should be treated as one important national subject regardless of the position of the dwellings. But about dwellings in towns there has been of recent years so much legislation, the committee wisely bestow most attention upon the problem as it relates to rural districts. What is remarkable is that the emigration from the country to towns is now on a greater scale than in any former time. It has been ascertained that in the post office, police, railways, gasworks, breweries, stores, &c., 46 per cent. out of the total number of men employed were country born. That is not advantageous for many reasons, and the remedy, as the committee say, "would seem to be rather in retaining the existing rural population than in endeavouring to restore to the land those who have already left it for the towns." For that purpose it is necessary to provide suitable dwellings of the cottage class. The committee do not lay the whole blame for the change of population on landowners. They recognise that, in spite of decreasing rentals and the increased cost of building, many of

them have expended large sums in the erection of good cottages from which no direct return is available. They believe that cottage property does not pay. Efforts have been made to prove the possibility of erecting comfortable, though modest, cottages for 120*l*. The committee believe that cottages built in a pair cannot be erected at less than from 150*l*. to 175*l*. each, and that this sum would not include the cost of site nor the provision of a water supply where none exists. But the committee were convinced that, however cheaply they were constructed, rural cottages cannot be produced on an economic basis.

They are no less confident that if land could be added then a more satisfactory result might be anticipated. One witness declined to consider a cottage apart from attached land, for he believed that it was easier to pay fair rent for land and cottage together. Under whatever circumstances the land is obtained, a plot would appear to be essential for every cottage which is to be erected to meet the existing difficulties.

The condition of cottage property can often be traced to the indifference of landowners; some are absentees, and agents in general have an antipathy to laying out money on repairs. In London and in large towns buildings are often allowed to remain vacant from that cause, and in the country, where the occupants are generally poor, the agents are less unbending than with town houses. Cottages are also owned by investors who, although punctual in demanding the rents, are negligent about repairs. Neglect, according to the committee, leads to insanitary dilapidations and to the creation of village slums; the better-class tenants are driven to towns while those who remain are degraded. Care is taken in some places to avoid erecting better dwellings through fear that the bad cottages would become unoccupied. The committee do not hesitate to say that "on many rural district councils members may be found who are interested in property of this character." It is curious that in respect of repairs, as in other economic problems, Switzerland has provided examples for imitation. According to the report:—"A charge of 10 per cent. is put on the cottages and at the end of the year a refund, more or less according to the amount of the repairs required, is made to the tenant. This acts by way of a bonus to the careful tenant. It stops the little defects that would otherwise become more serious, and the rough or careless occupier is trained to good habits. The committee see no reason why some such system should not be adopted, by way of experiment, with houses that may be erected by the local authorities, and would like to see it done in different parts of the country by landlords in a position to give it a trial." Up to 1875 the condition of dwelling-houses was considered to be a matter for owners and occupiers, but when public authorities were allowed to inspect and to order improvements of dwellings, the door was, as it were, opened for further interference with property by Government or local officials. It has been found that out of 667 districts 427 have by-laws relating to new buildings. There is, however, a rural code as well as an urban code, and under the former the committee say "wooden cottages can be built," for questions of stability are not recognised. We doubt whether all rural authorities would agree with the committee, for in some country places efforts have been made to enforce stringent regulations. But in other places there has been so much indifference shown that many witnesses have advocated the transfer of the power of the rural district councils to the Local Government Board, or to some larger or more central body.

The select committee have endeavoured to be as impartial as possible, and they state that councils and their officers hesitate to condemn insanitary property in the country because proper accommodation was not to be obtained. The only alternative was to allow the inmates to live amidst surroundings that were risky or to deprive them of a home. They think, however, that

without demolition many nuisances might be suppressed, and that it is much easier to repair cottages under the existing law than to build new cottages in several places. Many local authorities hesitate about taking advantage of the Act of 1890, because, as the Norfolk County Council have declared, it is perfectly clear that suitable cottages cannot be built at a rent which will guard the rates from liability and loss. The compulsory purchase of land becomes expensive and the district council, as well as the speculative builder, find it an obstacle not easy to be overcome.

The committee are compelled to say "that if any real improvement is to be effected, it can only be by drastic change in the character and administration of the law." Architects and surveyors would agree that such a conclusion was inevitable, but ratepayers in general must look forward to the changes with some alarm. The committee believe there is no use in confiding the carrying out of sanitary laws to small bodies, and especially in all matters relating to building. It is said:—"A rural district council are at a disadvantage in regard to building cottages as against the ordinary builder. The council must, as the sanitary authority, rather set an example to other builders. They have not usually much experience in building nor in the drafting of specifications, neither have they usually a competent staff to supervise such work. Building houses singly or in small numbers adds to the cost of a house in every item. An authority having jurisdiction over a wide area could enter into larger contracts and secure the corresponding saving; it could borrow more cheaply and lay down a more uniform and therefore more economical and efficient procedure."

It is therefore proposed to make each county council the proper authority, although it may be necessary to increase the number of the members. Each council, it is said, should be required to appoint a public health and housing committee, and to add to them men or women who are known to be well-informed on the subject of housing. The chief executive officer should be a medical officer of health, who is not to be allowed to undertake private practice. He should have an adequate staff of sanitary inspectors, whose whole time should be given to their duties. It is considered of the greatest importance that a register should be prepared of every house and tenement in rural districts of a certain specified value, and which should record the number and description of rooms and offices in each house, the occupants, the sanitary condition, the state of repair, water supply, rateable value, &c. In Holland a similar survey is demanded under the new housing law, and no less than twenty-one points of detail are required. In Germany, France and Belgium similar records are made. All our owners of property are to prepare returns relating to the sanitary condition of each house, and they are to be liable to a fine if it should be found to be false. Water supply and drainage are also to be considered; in fact, the committee are of opinion that it is desirable to keep the administration of public health and property under one authority. As part of the system, it is proposed that "the Local Government Board should establish a staff of officers for the special purpose of supervising the construction, sanitary condition and repair of houses under the Public Health Acts, and the provision of houses under the Housing Acts. These inspectors would also be useful in giving practical advice on the preparation of schemes and in co-ordinating the activities of private and municipal enterprise. They should be instructed to make continuous but not necessarily regular visits to the area allotted to them from time to time. It is important that the inspectors should be interchangeable and not tied down to one district."

So much importance is given to land, which may vary from one-quarter acre to three acres, the committee believe that no solution will be satisfactory until the local authority can purchase land compulsorily on the basis of its rateable value. If the young labourer

should have a prospect of rising to be a farmer, some thing must be done to alter the present conditions, which are not auxiliary to his advancement. If the County Council cannot purchase the land at agricultural price needed for cottages, it is proposed to allow them to take the land on lease and to sublet it. The Council may advance to any occupier of a house in an agricultural district four-fifths of its fair purchase value, to be repaid by instalments at low interest. The committee point out the room for reform in the procedure for the transfer of ownership in land, and they have been struck by the relatively enormous amount of solicitors' costs in comparison with the actual value of what is conveyed, which of necessity has a repressive effect on the free interchange of land.

The great difficulty still remains to be considered—that of finance. The Imperial Exchequer will have to give the aid that is necessary. The rate of interest on loans must be lowered. At present the rates vary from $2\frac{1}{2}$ to $4\frac{1}{2}$ per cent., the minimum rates being $2\frac{1}{2}$. The difference between $2\frac{1}{2}$ and $4\frac{1}{2}$ per cent. on a house costing 200*l.* is equivalent to 3*l.* a year in rent or 60*l.* in capital. The committee also find that the Treasury are charging for the capital expended in the erection of workmen's dwellings something between 20 and 40 per cent. more than the workman gets for the money he lends the State through the friendly societies and the Post Office Savings Banks. Those banks have deposits amounting to 150,000,000*l.*, upon which only $2\frac{1}{2}$ per cent. interest is allowed, and it is suggested that the money should be lent to the local authorities for the purpose of building cottages for the working classes. Trustees of charitable funds have over 20,000,000*l.* invested in $2\frac{1}{2}$ per cent. consols and annuities. It is suggested that this sum also should be utilised for housing. The committee are of opinion that the time for redemption should be extended to sixty years.

It will be evident that if the recommendations of the select committee are carried out there will be nothing less than a revolution in rural life. Although it is not believed that cottages can be erected for less than 150*l.*, it is possible that when a vast number have to be erected arrangements could be made which would enable builders either to lower the price or to employ a better class of materials. If a labourer's cottage is to last for eighty years it cannot be of the jerry-built class. The undertaking of housing by the County Council would necessarily give an impetus to building, for ordinary proprietors of estates would enter into competition with the local authorities in order to keep sufficient workmen near them. The committee have precedents in the reports of other committees for some of their most startling proposals, and it may therefore be concluded that sooner or later the recommendations will have to be carried out. At the present time land in many parts of England is practically of no account, and as it cannot be rendered profitable without human agency, it becomes necessary that houses for agricultural labourers should be easily obtained. In other words, the builder, if properly employed, is the best friend of the English landed proprietor.

A FORGOTTEN EXPERIMENT.

THE walls of Roman and Italian buildings were adorned with paintings from an early date. Whether the art was derived from Greeks or Etruscans we need not now inquire. It is sufficient to say that VITRUVIUS, in giving directions for performing the work, describes fresco-painting as if it were well established in his time. In one place, no doubt, he says that *fresco* was the kind of painting adopted in maritime cities for the outsides of buildings and other uncovered places, and which, according to PLINY, was invented by LUDIVS. But commentators believe that PLINY was referring to distemper paintings, which are only superficial and unlike true frescowork, in which preparation is made in order to have the paints absorbed

The elaborate procedure which was advised by VITRUVIUS is enough to prove that the kind of painting which came under the direction of an architect would be out of place on an uncovered wall. He shows how the roof is to be constructed of timber which will not warp, such as box, oak, cypress, juniper, olive, and the pieces are to be united by strong nails for that purpose. If the roof could be constructed of brick it would be preferable to one of timber. Some of the means to be adopted for keeping the roofs secure do not correspond with modern practice, and the value of the recommendations of the Roman architect cannot be judged.

VITRUVIUS advises very great care to be taken with the preparation of the walls for the painting. According to him there should be several coats of sand, crushed marble and lime. It was pointed out that PANÆUS, a brother of PHIDIAS, covered the walls of the temple of Elis with lime and marble mixed with milk and saffron. The milk was supposed to make the lime more solid and whiter, while the saffron imparted a pleasing odour. A writer on a technical subject usually supposes his readers are so well acquainted with a process or a stage of one, it is not necessary to furnish details. Great as was VITRUVIUS he could not be free from the weakness. While writing so much about plastering or stuccoing the walls, he does not inform us how the Roman frescoists kept the surface wet while laying on their colours, nor how they were able to complete the painting before the plaster dried.

As to colours, it is evident the painters could have an ample palette. Traders brought them from Egypt, Spain, Lemnos and other places. Besides natural colours, there was a supply of others obtained by simple chemical processes. Both on materials and preparatory operations VITRUVIUS supplies useful information, but he does not condescend to write such a chapter as a contemporary frescoist could dictate, and in consequence the part of his treatise relating to fresco is somewhat disappointing. A like judgment is applicable to other parts. We recall the instructions of VITRUVIUS in order to suggest that fresco-painting as practised in Italy was in an early age a difficult and tedious manner of painting. The very few books which were written on the subject in subsequent times also reveal that work had to be performed slowly and deliberately. It is no wonder impatient artists could not endure the delays or intervals, and that more expeditious methods were sought. The slacking and mixing of lime required, it was believed, about three months at the least. In taking every other step time had also to be respected. In fact, fresco-painting was an admirable discipline in patience, and we can easily understand how some painters were irritable and disposed to quarrel, as if they were seeking to be rid of their contracts and their lives.

Unattainable as fresco may now appear to us, the Italians had reason to become tired of its excellent qualities. It was everywhere presenting its dull surfaces. Pope JULIUS was to be excused when he besought MICHEL ANGELO to enrich the Sistine Chapel with colours and gold, as the effect of fresco was that of poverty. The reply of the artist about the prophets having been holy men who despised riches was hardly the explanation which met the objection. And we know that gold can still be traced in the ceiling. The way in which fresco was quickly superseded in the eyes of ordinary Italians by oil-painting suggests that grandeur, when accompanied by severity, is too much for weak humanity.

We have no intention of entering on the difficult subject of the origin of oil-painting in Italy. Whether ANTONELLO DA MESSINA was a pupil of the Fleming VAN EYCK, or whether, as VASARI believed, ANDREA DEL CASTAGNO assassinated DOMENICO VENEZIANO, who was possessed of the secret, we need not inquire. It is sufficient for our purpose to know that whoever first used oils in Italy created a revolution. Easel pictures were commissioned to an extent that must at the time have appeared incredible.

The new art, as we may call it, was adopted not

only by the greatest men of the time, but by young artists to whom the expedition of the process was a recommendation. Compared with fresco it seemed a pastime, for in laying on oils upon canvas there were none of those unexpected failures which arose from the contest between limes and sands and different varieties of each. The painters in oils considered that they could without difficulty undertake fresco with as much success as their predecessors. But we have the testimony of VASARI that they were deceived. According to him, fresco demands more force, more assurance and more resolution than is attainable by working at easel pictures, and it cannot be denied that the decadence of Italian art was marked by a decline in fresco-painting.

The forgotten experiment which is the subject of this article was connected with an attempt to make painting in oil supersede the ancient fresco for mural work. Everyone who has visited the National Gallery knows the painting of *The Raising of Lazarus* by SEBASTIANO DEL PIOMBO. To most people it is disappointing, especially when they learn that it was designed by the great MICHEL ANGELO, and was an effort to diminish the glory of RAPHAEL by the union of Venetian colouring with Florentine modelling. We can also see a portrait of SEBASTIANO in company with a cardinal of the MEDICI family. Another work is a portrait of GIULIA GONZAGA. The painter lived in Venice, and began his studies in the atelier of JOHN BELLINI. Then, attracted by GIORGIONE's wonderful colouring, he became a disciple of the younger painter. He was invited by CHIGI, the banker, to aid in painting the Farnesina Palace, and went to Rome for that purpose. There he became acquainted with MICHEL ANGELO, and was accepted as a disciple, if not a partner, of the great master. He was fortunate in obtaining a lucrative office in the papal Court. In the old days, when patents enriched the law officers in England, a man who took out a patent for a safety-pin had to pay a big fee to the deputy sealer and the deputy chaff-wax. In Rome the seals were made not of wax, but of lead, and the painter therefore held an office analogous to our chaff-wax and sealer. Many an artist in the early part of the sixteenth century must have envied him.

We have said that SEBASTIANO considered that oil-painting could be made to endure on walls as well as fresco. He was not the first to make the experiment in Venice. DOMENICO VENEZIANO and others had produced works in that medium. But they were not sufficiently acquainted with the chemistry of art to prevent the colours from blackening and the painting assuming an appearance of age. SEBASTIANO's attempts were more successful, for they appear to have endured in their original state not only during his life but up to a later time, and it was therefore supposed by some sanguine artists that he had succeeded in accomplishing a feat in which many painters could rejoice. VASARI was one of those who believed in the discovery, and he gives the following account of the means adopted by the painter:—"SEBASTIANO used very great and many precautions in his preparations for these works, forming his intonaco with mastic and pitch from the pine, all mixed carefully over the fire and laid on the wall, where it was laid smoothly with a trowel, and covered with a surface of plaster brought glowing from the fire. By this process his works have been enabled to resist the effects of damp and escape all evil consequences from humidity, insomuch that they preserve their colours admirably well and without suffering any change. With the same mixture SEBASTIANO worked on peperino marbles of different kinds, vari-coloured stones, porphyries, and other very hard surfaces, paintings which may without doubt be expected to endure for a vast period of time. He has besides hereby taught us how we may paint on silver, copper, brass, and other metals." The most important example of the new system which has survived is *The Scourging*

of Christ in one of the chapels of St. Peter in Montorio, in Rome. It also is supposed to have been designed by MICHEL ANGELO; and although the colours are faded the general effect is as striking as that of many another work executed in the more ancient manner. It was impossible for SEBASTIANO to paint all his pictures on walls. But he met the demand for smaller works, and at the same time adhered to the principle by using slate which he prepared in his own way. According to VASARI, he introduced ornaments in his paintings which were made of coloured stone, and which were supposed at the time to add to their beauty.

The number of the examples of what might be called his own system is not very great. But that is not to be taken as evidence that his works were not admired. The painter was an easy-going man, and having interest, he was able to look forward to a comfortable settlement, and fortunately for him his expectations were realised. But he did not produce in Rome more works than were necessary. Like all enthusiasts, he believed that his method of mural painting was better than any of those in which the traditions of centuries were embodied. Although he was so deeply indebted to MICHEL ANGELO, he did not hesitate to advise the Pope to have *The Last Judgment* painted in oil-colours, contrary to the intention of MICHEL ANGELO, to whom the commission had been given. The wall was prepared according to SEBASTIANO's directions, but the great master declined to let a brush touch it. After a delay of several months the coating had to be removed, and then MICHEL ANGELO had it prepared in his own way. His rebuke to his meddlesome friend is well known, for he declared that oil-painting was merely an art adapted for women or for idle people like Fra BASTIANO. There was a breach between the two, and it is doubtful whether they were ever fully reconciled. SEBASTIANO died in 1547, or sixteen years before the painter of *The Last Judgment*.

ART EDUCATION IN IRELAND.

THE following evidence was given before the committee of inquiry by Mr. William Orpen, an Irish painter, who received part of his training in the Metropolitan School of Art in Dublin:—

The Chairman: You have been good enough to come here to give your views upon matters affecting this inquiry, which is with regard to the Royal Hibernian Academy and the Metropolitan School of Art. I don't know upon what particular points you will give evidence, and therefore I would rather leave it to you to give us your views as to the Metropolitan School of Art?—Witness: Well, the only views I can give are in relation to the course they pursue in teaching the students. I was taught there myself for six years, so am speaking from personal experience. I have also seen the working of art schools in Paris and London. When I was in the Metropolitan School of Art here it was under the control of South Kensington, whose method of teaching the fine arts, I can confidently assert, is utterly bad: the Metropolitan School of Art has got a large grant of money, and better buildings than generally exist in England and France for art teaching. Soon after I left it was taken away from South Kensington, I understand, and put under the Department of Agriculture and Technical Instruction, and they were given a splendid opportunity of doing something for Irish art. I came to Dublin some three years ago to conduct a summer course in life drawing for teachers. I found that the school still prepared pupils for the South Kensington examinations, and had not availed themselves of the opportunity of breaking away from that system. It is ridiculous to have industrial arts as well as the fine arts under the head-mastership of one man.

Do you think that up to a certain point the teaching in the Metropolitan School of Art is on the right line?—I think perspective and geometry are well taught. When it comes to the fine arts and painting—I am not talking about sculpture—it is quite a different thing. Mr. Sheppard, the sculpture master, himself an artist, visits the school three or four times a week, but he is, I understand, the only teacher who attends under an arrangement like this. If he were offered a mastership, like the others, requiring all his

time, so that he could not go on with his own work, he would refuse it. They won't get an artist to give up his life to teach in a school—to give up his art, if he has any art in him. Even Mr. Sheppard, I understand, has not got a free hand. He is under the head-master, who is under the inspector, and he, in turn, is not free, being under the higher officials of the Department of Agriculture, which knows nothing about painting and sculpture. I consider that the only method of teaching the school well would be to have a separate teacher and visitor for each subject, each with full control of his own branch, the general business being done by a secretary. I understand that the expense of the school—the money that is given by way of grant to it—not taking into account site, rent, lighting or heating, but just the holding of the school—is 4,000*l.* a year on an average. When you come to the Academy, you find that they get 300*l.* a year to maintain an exhibition and their school, which is absurdly inadequate. I think there should be one good school in Dublin. I heard something about healthy rivalry, but there won't be enough materials to make two good schools.

The Earl of Westmeath: I don't quite know what you mean by the South Kensington method?—The method comes down to this. They take a student into the school and they train him to be what they call an "art teacher." The people who train him have gone through the same course and have become "art teachers." He, in his turn, will probably train the next generation to become "art teachers." The idea of training a student to be an artist, who produces works of art, never seems to enter their heads. The one object of the students in their schools is to become a student in training and to blossom into an "art teacher," a business in which a student, however dull, can always make a living. I can understand an art critic being a help to an artist, but he cannot teach painting. A painter is the only person who can teach painting. When I was here for six years I was kept nine months at one figure. They worked me up to get a gold medal. They simply wanted in a particular class of work that the student should be first. That is one of the objections to the South Kensington system. In all the other branches it is exactly the same. If there were visitors I do not think they should be necessarily Irishmen. I am not so national as all that. Whistler has said that art is cosmopolitan. It would be well if we had American artists, and English, Scotch and French artists to come to Ireland to work out an art centre. There is no reason why English artists should not teach here. Why not bring the best people? But I do not think you will get any artist to come here to take it up for more than one season each. A most important thing is that the modern pictures should be close to the school.

The Chairman: You mean a collection of modern pictures?—Something of the kind should certainly be in Dublin. It is very difficult for students, especially beginners, to understand the Old Masters. The whole thing has changed. The best modern painters have picked all they could from the Old Masters, and it would be much easier for students to learn from the modern painters at the beginning. It is much better for them to have painters of their own time before them. My idea of a school would be to have a managing secretary and visitors for each branch—the best they can find—English, Irish, Scotch or French. It doesn't matter what nationality they are.

The only school in England that is worked on that principle is the Slade School?—Yes, so far as I know, except the Royal Academy schools. At the Slade they have very able artists visiting two or three times a week—Professor Brown, Henry Tonks, Wilson Steer and W. W. Russell. The school is managed by a secretary.

Mr. Holmes: Do you think there should be one school?—I think so.

Mr. Boland: Do you mean one life school?—One school for all kinds.

Do I understand that you would not like to see the Royal Hibernian Academy exist as a separate body?—In my opinion it is not material whether the name of the Department of Agriculture or that of the Academy is put over the door.

But the Royal Hibernian Academy is at present a separate institution; would you like to see it continue a separate institution, or be fused in the Metropolitan School of Art?—I would like to see the School of Art fused in the Royal Hibernian Academy. It has a better title than the School of Art. I don't mind by what name it is called. But at there be one school. At present the School of Art belongs to the Board of Agriculture.

The Chairman: But they have an income to keep it up properly?—4,000*l.* a year would keep up any school.

Would there be an advantage in having the school under the control of artists?—Yes, it should be under the control of artists. It is absurd to have artists under the control of a Board of Agriculture. Why not let the artists control themselves?

Mr. Justice Madden: Is the point of your suggestions that it should be the School of the Academy—is that the matter underlying your evidence?—It should be under the control of artists. I don't mind their getting outsiders to teach if they like. Let it be a good school. It must be under somebody; and it would be much better to have it under the Academy than under the Board of Agriculture. They had their opportunity and they missed it.

What degree of supervision did South Kensington exercise in its time?—It had the appointment of the teachers to begin with. They had also a system of inspection?—Oh, yes, they send inspectors over. I inquired this morning about the present inspector. His only distinction is that he is an Associate of the Royal College of Art; but whether he is a painter, a sculptor or a bootmaker I could not ascertain. Mr. Sheppard is a very good teacher, but he is not his own master. This inspector can dictate to him about sculpture, and to my knowledge does so. He would do much better if he were his own master. Another objectionable thing is that the masters have to sign their names in a book, and if they are late they have to explain. It is absurd. It shows how little the interest the teachers take in their work is trusted by the officials above them.

The Earl of Westmeath: Supposing that one of the visito's neglected his duty, who should call him to account—that might happen?—That would be a thing to be settled. There is no doubt an artist teaching ought not to be tied down to minutes. The only place I know to be worked on proper lines is the Slade School, and I never hear of any hitch, or of any person not turning up to do his work there. They all have a great interest in the school.

The Chairman: Do they give what time they have for love of the school?—No; but most of them lose money by leaving their work.

Part of the subject of our inquiry is the question of the present position or site of the Royal Hibernian Academy, and the whole question of its exhibiting side—have you anything special to say on that point?—The site of the Royal Hibernian Academy is not good at present. Of course they cannot do anything with the money they have got, nor can they do much in the way of inviting works with the money they have got. If they invite works they have to pay for them and insure them, consequently they invite very few. I think it would be a great thing if they could invite much more foreign works here. The students have no idea of many of the great painters. If they had more money they could bring pictures over and let the students see good art.

The Earl of Westmeath: Do your remarks apply to painting only?—I don't believe in any person going outside his own province. I want to stick to painting. I think what I have said about the school and the teachers, and the way they are paid, applies exactly the same to the others as well as to the teachers of painting. If a man is teaching stained glass he is not making a living by it, and he will probably give up all his time to the school.

Mr. Justice Madden: Where did you study; was it in London?—Yes. I went to the Slade for a couple of years, and then studied myself in the National Gallery.

You said that when you lived here your education was not an artistic education?—No; it was very good for a very young child, but it did not do for a person beginning to think for himself. It was not nearly free enough. On the contrary, there is very much red tape in the School of Art education. You must not be tied down too much. You cannot be told that you must work from ten till four. People refuse to be forced—nature goes against it.

Chairman: Is there anything else that strikes you?—Well, as to the question of this teaching in the provinces, it is a puzzle to anybody. I came over and taught one of these classes of life drawing for teachers from the provinces for one year. Teachers from the country in Ireland came up to be taught for three weeks. They got paid by the Government for doing this badly; and I can honestly say that not one of them had the faintest idea of art. How these people are teaching I don't know, whether they are getting any good from their pupils or doing harm. Teaching a person who has no taste for drawing is practically a

waste of time. They seem to think that people should waste their lives in learning how to draw cubes. Hundreds of men come in and draw cubes, but I walked round one day and saw that none of the cubes were square. Why should they be wasting the teacher's time—our time and money?

Of course, that criticism of the present system may be quite right, but we have to come to the difficult question of what can be put in its place?—You are not talking of the School of Art now.

Mr. Justice Madden: You are talking of a matter that came under my notice elsewhere. When the elementary teaching of art in primary schools was started an attempt was made—rightly or wrongly—to get a certain number of teachers educated up to a certain point by learning in the School of Art, but you don't seem to think that that was very useful. They did not acquire sufficient to become capable teachers?—I don't think so.

Mr. Holmes: I think you said that not one of them that came under your notice was in any sense an artist?—Yes.

Mr. Justice Madden: Before you leave the subject of the teaching of art and the development of art in Ireland, I should like to ask you whether you think the present movement is likely to be useful, if men educated up to a certain point were to teach promising pupils in the primary schools, without wasting time on persons who have no talent—isn't it the only way in which the possible artist can be found in Ireland?—That is the difficulty. I fear that the present teachers are not capable of even recognising talent, far less an artist, if they chanced on one.

If the "mute inglorious Milton" has not been taught to read and write he must remain inglorious; and doesn't the same principle apply to the bringing out of the latent artistic talent of Ireland?—It might be stopped by bad teaching.

It is an interesting subject akin to our inquiry. The idea is, by a certain general training of hand and eye in the primary schools, to find the pupils who have a certain amount of taste. These are to be brought up here by bursaries, and ultimately educated as artists. Your criticism is very valuable as to the present existing methods; but does this general idea commend itself to your mind?—The general idea of what?

Of teaching pupils in the primary schools enough of drawing to give them an opportunity of showing if they have any talent in that direction, and of dropping art teaching if they haven't—isn't that the only way in which a general movement in the direction of art culture can be generated in the country?—Art is taught in every public school, and practically I think that would be quite enough.

Mr. Boland: What about the national schools in the country? Was it always taught there?—I am not sure.

Mr. Justice Madden: You don't think that any good result is likely to come from the amount of art teaching that is now given in the primary schools?—Not in the way in which it is given. I don't think the teachers are capable of seeing an artist. Don't send any man who merely passed for a certificate.

The Earl of Westmeath: No genius has yet been discovered by this system of teaching.

Mr. Justice Madden: Then your idea is that real artists should be used if art is to be developed through the country?—Most certainly.

And you would give access to good pictures in local exhibitions?—Yes, if good pictures could be sent all through Ireland.

Mr. Russell's Evidence.

Another Irish artist, Mr. George Russell, in the course of his examination said, in reply to the Chairman:—I was asked about five or ten minutes ago to come here, without my ideas being very clear on the subject; but I understand it is the reform of the teaching of the Hibernian Academy and of the Art School. I had experience in both. I was an art student a number of years ago, and went through the School of Art and the Academy. With regard to the Academy, my opinion is that as far as art, pure and simple, is concerned, apart from design, the Academy is the proper place for that teaching to be carried on, and I think assistance should be given to it to do so. But it should be on the condition of supervision being exercised over the way in which the money is spent. When I was an art student there I painted round the life. There were four visitors, who were Academicians. I understood that they had some fee for visiting. One visitor, Mr. Duffy, is an excellent landscape-painter and I have a great admiration for his

work. Another was Mr. Gray, who painted bulls and cows; the third was Mr. William Osborne, who painted cats and dogs; and the fourth was Sir Thomas Farrell, who did not paint at all. These gentlemen, not one of whom painted figures, were put there to assist us in our work. They never put their fingers on the students' work, which was probably the best thing they could have done under the circumstances. They left us very much to ourselves. I don't know what they are doing at present, but if they get assistance, there should be some guarantee that the older Academicians shall not swallow up all those fees amongst themselves unless a fitter selection of visitors was made. The only member of the Academy whom I would regard as a competent teacher is Mr. Orpen, and if assistance were given, to make it worth his while to come and visit the school, it would be a most desirable thing. But I would not be at all in favour of assisting them unless I was sure that some competent person would be there to visit the school, and not persons who have a reputation for painting something other than what they are to teach.

As to the School of Art, I think they ought to divide art, as applied to industry and design, and so forth, from pure art teaching. I think you cannot have very good teaching when you have somebody to do it who is employed rather as a clerk—going round from ten to three and from seven to nine, and spending all his time in that way. He loses all spirit; and, while he may be competent to teach mechanical courses and freehand drawing, it is not desirable to have a person of that kind when you come to painting from the life. I think a visitor would be sufficient for the purpose, someone who would come on two days in the week, on Tuesday, when the students begin painting, and perhaps on Friday. That would be quite sufficient, because people learn more from each other than from the teacher. What you want is a fresh eye. A man who has been going round all day has nothing fresh to say. Mr. Hughes, who is a very competent sculptor and a man of genius, told me that the great difficulty he felt all day long was having anything fresh to say. He felt that his presence was not required all the time, but he was forced to spend so many hours every day at the school. Mr. Hughes is a man of genius, and no man of genius would give up his time permanently to that work. He would have been quite willing to spend a certain number of hours there, which would have left him time to carry on his own work. No painter will give up all his time, and for that reason the life class in the School of Art should not be put under the charge of the permanent officials, but of some competent visitor, who should be asked to visit on two days in the week, for a couple of hours, as in the French studios, where they get a distinguished artist to come for a few hours and give advice. That is really what is required.

The Chairman: Supposing that the life school of the Metropolitan School of Art was controlled and administered in some such way as you propose, would you suggest that there should be going on at the same time a life school under the Hibernian Academy?—Well, theoretically, I should say that there is not room for both; but practically I would like to see it, and, if there should not be efficient management in one, I would like to have the other as an alternative. I do not think that Ireland produces enough artists for the two schools, but under present conditions it is an alternative from one school to another.

It has been suggested to us that the life class of the Metropolitan School of Art is necessary for the highest part of the education of those who are going to apply their art as designers, but that the purpose of the teaching there is somewhat different from the purpose in the Academy school, which is intended to produce simply painters of pictures by profession. Do you think that is so, that they diverge a little?—Yes, of course, they do diverge afterwards; but, as far as drawing from the life is concerned, it must mean the same thing. When a model is before you, no matter what you do afterwards, you must draw it as accurately as possible. If you have a model before you, your purpose is to copy it as exactly as you can; how you may apply it afterwards is another question. I think, perhaps, the ideal plan would be to make the technical school in Kevin Street do a great deal of the work that the School of Art does at present. There is no reason for overlapping. I understand that a great many of the students who used to go to the School of Art go to Kevin Street. If they could make the School of Art an art school, pure and simple, the Academy might take charge of the school here. The School of Art rooms might be used for Mr. Lane's collection of

pictures. There would be no better way of helping the students than to enable them to see good pictures.

Mr. Boland: The Metropolitan School is not meant for Dublin alone, but for Ireland; it has to do work for the whole of Ireland, and it would not do to send part of the work over to the technical school in Kevin Street?—Oh, yes; perhaps so.

Mr. Holmes: They have to train teachers for the whole of Ireland, and that could not be well done in Kevin Street?—I don't know whether the question of a new site for the Academy enters into this inquiry.

The Chairman: Yes.—Because I heard that a great deal has been said about the unsuitability of the site of the Academy. I think that was quite absurd. The Academy is unfortunate, because the people who are managing it at present have not sufficient energy to make it popular. When Mr. Lane brought his loan collection to the Academy he made it very popular, and a great number of people came there. Any person with a talent for managing affairs could make the Academy as popular as if it was in Merrion Square. You have an admirable site in the National Gallery, but who goes there? The position has very little to say to it. It depends simply on the energy of the people who manage. Mr. Lane could make an exhibition popular in the slums of Dublin.

Provided that the building was a good one.—I think their site is very suitable, and the only reason why I wish them a new building is in order that Mr. Lane might have that building for his collection. I am sure he would make it more popular than the new Academy would be.

Mr. Boland: Do you think the present building is sufficiently lighted?—I don't think they require the inner room at all. They have so many bad pictures that one room would do.

Mr. Holmes: Would you like to improve the school accommodation there?

The Chairman: They say they can't do any drawing from the antique because they have only got one room.—That is so; but as the room below is not required for half the year they could turn it, while the Exhibition is not on, into a room for drawing from the antique. The Exhibition goes on for a couple of months in the year, and then the large room is vacant. I don't think the inner room is required, unless they insist that a great number of very bad pictures should be exhibited every year.

Mr. Justice Madden: Whether they are good or bad, nobody can see pictures there.—It is no advantage to have them there at all. The room might be made useful for the painting class.

The Chairman: There is this consideration which I would put to you. In the Royal Academy of London and in the Scottish Academy they depend to a great extent for their revenue on the number of people who attend and pay their shilling, and on the number of persons who come in to buy. From that point of view do you think the question of a site unimportant?—It would be difficult to say. I think that with really effective management it would be as attractive as if it were in Merrion Square. I think it is because the management of the Academy is very defective. There are any number of things that they could have done. They had the Loan Collection, but they left it to Mr. Lane to do the work. It was their business to have done it. I myself suggested a loan collection of pictures about seven years ago, and it paid its expenses.

The Works and Stores Committee of the Metropolitan Water Board have had before them the question of the terms and conditions of employment of the workmen in the employ of the Board, with a view, if possible, of securing uniformity throughout the service. They found the matter one of extreme difficulty owing to the greatly varying conditions which existed in the areas of the water companies. In this connection, too, it was necessary to take into consideration the question of the desirability and practicability of adopting trade union terms and conditions. The committee invited the men in the various districts to elect representatives to confer with certain members of the Board in order that they might have the views of the men themselves. A conference accordingly took place on November 13. The question which acquired special prominence was as to whether the Board should endeavour to bring all the men in their employ under trade union terms and conditions, or whether the present terms and conditions should continue. Upon this issue it was decided to take a ballot of the men, and the result of the ballot was that 2,888 were in favour of continuing the existing conditions of employment and 49 voted for trade union terms and conditions.

NOTES AND COMMENTS.

THE proposal to reconstruct the Pont Notre-Dame in Paris has more than usual interest for archæologists. The cathedral, it need hardly be said, stands at one extremity of the island on which the earliest settlers established themselves, and between it and the surrounding city several bridges have been constructed. The Pont Notre-Dame leads from the Rue Saint-Martin to the Rue Saint-Jacques, and must have been a part of the earliest thoroughfare. In the thirteenth century there is a record of a wooden bridge in the same position. It was rebuilt in 1413, and, as with other bridges, sixty houses were erected on both sides of the roadway. In 1499 bridge and houses collapsed. It was then resolved to provide a bridge of masonry. About that time the Dominican Friar GIOVANNI GIOCONDO was in the Quartier Latin lecturing on the works of VITRUVIUS. He was selected as "reconstructor of stone edifices" out of a number of architects, and was entrusted with the erection of the new three-arched bridge. It seems incredible that in the beginning of the sixteenth century there were no houses on the island of Notre-Dame, and it was arranged that the stone should be quarried there, and the centrigs and other timberwork repaired. The bridge took five years to complete and cost 1,160,000 lire. On both sides was a row of shops and houses four storeys high. The houses were taken down in 1786. The bridge was the most ancient of all in Paris, and in 1793 the name was changed and it became the Pont de la Raison. The piles on which the bridge stood were not removed in 1853, when Giocondo's bridge was reconstructed. The river near the bridge is difficult to navigate, and it is proposed to substitute a steel arch of about 190 feet span for the three arches over the central part of the river. At the same time the bridge will be widened.

THE following important resolution was adopted at a meeting of the Royal Hibernian Academy:—"The Royal Hibernian Academy, having considered the two reports of the committee appointed to inquire into the art institutions of Dublin, express their entire approval of the report as presented by the minority, and their dissent from, and rejection of, the report of the majority of that committee, and will reject any offers based on the recommendations as made by the majority, if proposed." The report of the majority recommended that money should be granted for repairing the existing buildings of the Academy in Lower Abbey Street, that a new charter should be granted reducing the number of the Academicians from thirty to fifteen or twenty, and increasing the Associates from ten to twenty or twenty-five. It was also recommended that teaching should be no longer carried on in the Academy building, and that a professorship of painting should be established in connection with the new Life School at the Metropolitan School of Art. The minority recommended the erection of a suitable building for the Academy which would also serve as a gallery of modern art, and that the increased income from exhibitions and the sale of pictures would enable the Academicians to add to the efficiency of the school. Also it was suggested that if further aid is given to the development of art it could not be devoted to a better purpose than to enable promising art students to complete their education in the Academy. The majority of the committee considered that hereafter it might be possible for the Academy to resume its life school. But for the present, owing to the paucity of qualified students and to the character of the teaching, it was considered that the Academy would most effectually aid in co-operating with the Metropolitan School of Art. Official authority appears to be opposed to the Academy. The students, if Mr. RUSSELL can be taken as a representative, are not favourable to the Hibernian Academy system, and the people of Dublin in general seem indifferent whether the Academy remains in its present position or is removed to a more central site.

FOR the extension of the Council House, Birmingham, of which the late YEOVILLE THOMPSON was architect, 124 sets of sketch-plans were submitted. Sir ASTON WEBB and Mr. INGRESS BELL were appointed assessors, and they selected ten designs for the second competition. The design by Messrs. H. V. ASHLEY & WINTON NEWMAN, 10 Gray's Inn Square, W.C., was placed first, and the selection has been approved by the City Council. The style adopted is Renaissance, and the estimated cost of the work is 150,000/.

AFTER expending over 30,000/ in replacing decayed stone in the new municipal buildings, Glasgow, it was only to be expected that much deliberation would be exercised in the selection of stone for the Mitchell library in that city. Mr. W. T. OLDRIEVE was consulted, and he has recommended the use of a stone from Blackpasture, in Northumberland, treating it with preservative liquid as a precaution. The use of an English stone in a Scottish town seems to be like carrying coals to Newcastle, and the stone in question has been used in only one public building in Glasgow. It is said to be a very hard stone, and costly to work, and therefore is not in favour with contractors. One of the official clerks of works says of it:—"It has two qualities which enable it to withstand the action of the atmosphere of Glasgow better, I believe, than any white freestone now in the market. It is highly silicious—97.5 per cent.—and it is very dense, absorbing very little moisture. There are good stones among the 'new red' sandstones of Annandale, but their weakness is their porosity. They absorb so much acid-laden moisture from the atmosphere of Glasgow that they perish very soon." It is claimed, however, that Lochaber stone, which has been used with advantage in some Glasgow buildings, contains 97.88 per cent. of silicious matter insoluble in acid.

ILLUSTRATIONS.

A PROPOSED LONDON CHURCH.

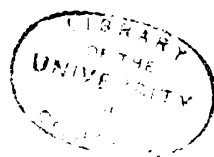
ST. JOHN'S COLLEGE, BATTERSEA.—THE NEW DINING HALL.

THIS college, founded between fifty and sixty years ago as a National Training College for King's Scholars, has, under the present energetic principal, the Rev. H. WESLEY DENNIS, M.A., been practically remodelled, and so far as much of the new work is concerned, can lay claim to being quite equal to many of the colleges of the Universities. The addition shown in the two views was, owing to the nature of the site, an extremely difficult one to execute, much of the older work having to be underpinned or shored up. The work consists of the buttery stores, pantries and larders, the hall, with music, staff and other rooms beyond. The hall and buildings are connected up by a wide corridor. The work has been carried out by Messrs. JENKIN & CO., of Mitcham Lane, Streatham, to the designs of the college architect, Mr. A. H. RYAN-TENISON, F.R.I.B.A., 12 Little College Street, Westminster, S.W.

LAON, FROM THE ARSENAL.

HOUSES, 18 TO 23 HYDE PARK PLACE, W.

IN each of these houses the design has been varied. The accommodation consists of:—*Basement*.—Kitchen and servants' offices. *Ground floor*.—Two large reception-rooms (one of sufficient size to take a full-sized billiard table), service lifts to kitchen, hall and lavatories. *First floor*.—Two large reception-rooms. *Upper floor*.—Ample bedroom accommodation. The elevations are in red brick and stone. The internal decorations are in some of the houses of an elaborate character. Messrs. MYRING & Co., of St. John's Wood, were the contractors, and the work has been carried out from the design and under the supervision of Mr. E. KEYNES PURCHASE, of 20 and 22 Maddox Street, W.

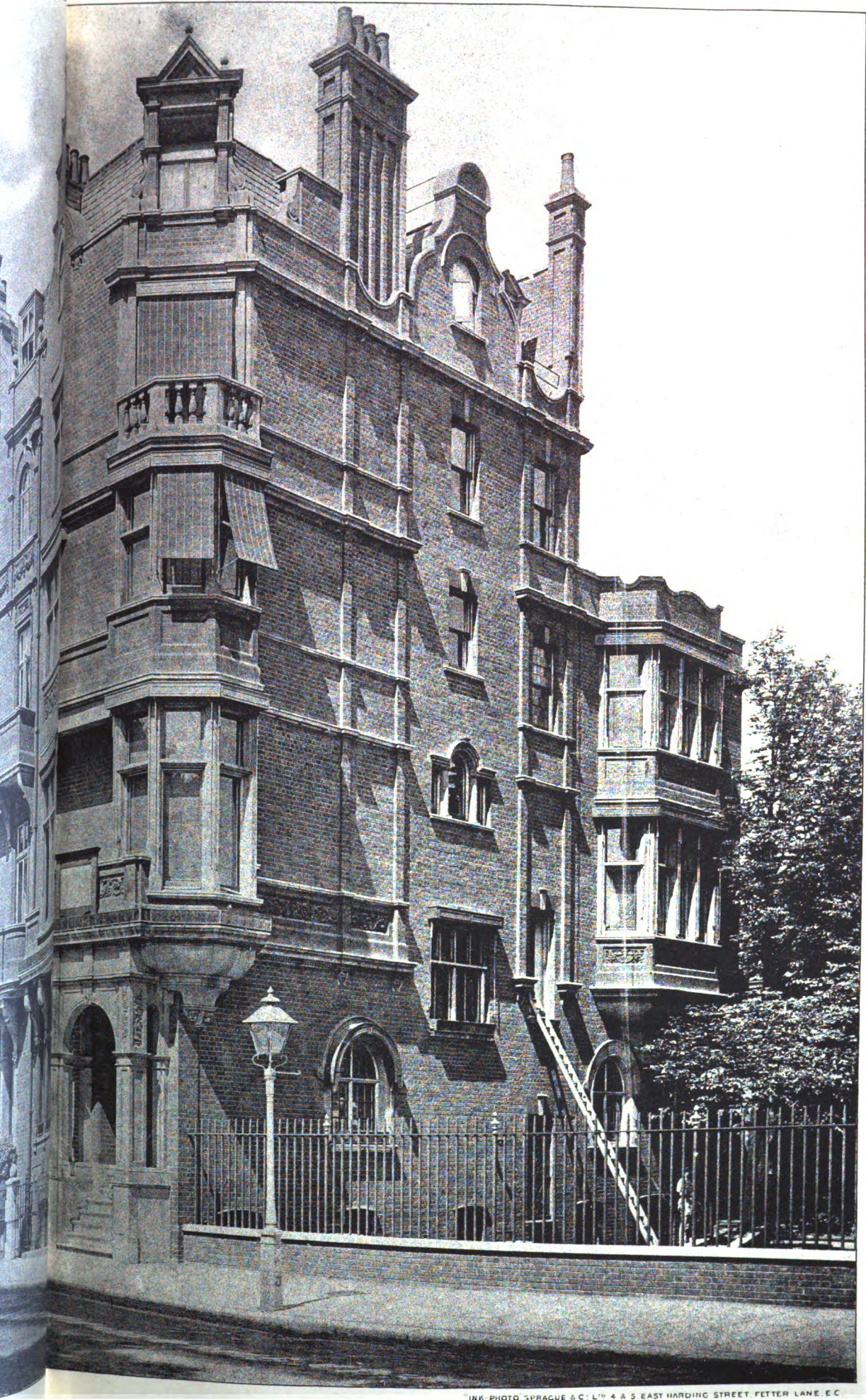




PHOTOGRAPHED BY BEDFORD LEMERE & CO 147, STRAND, W.C.

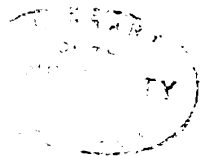
HOUSES: 18 TO 23, FIVE PARK PLACE, W.
E. KEYNES PURCHASER, ARCHT.

Dec 28th 1906.

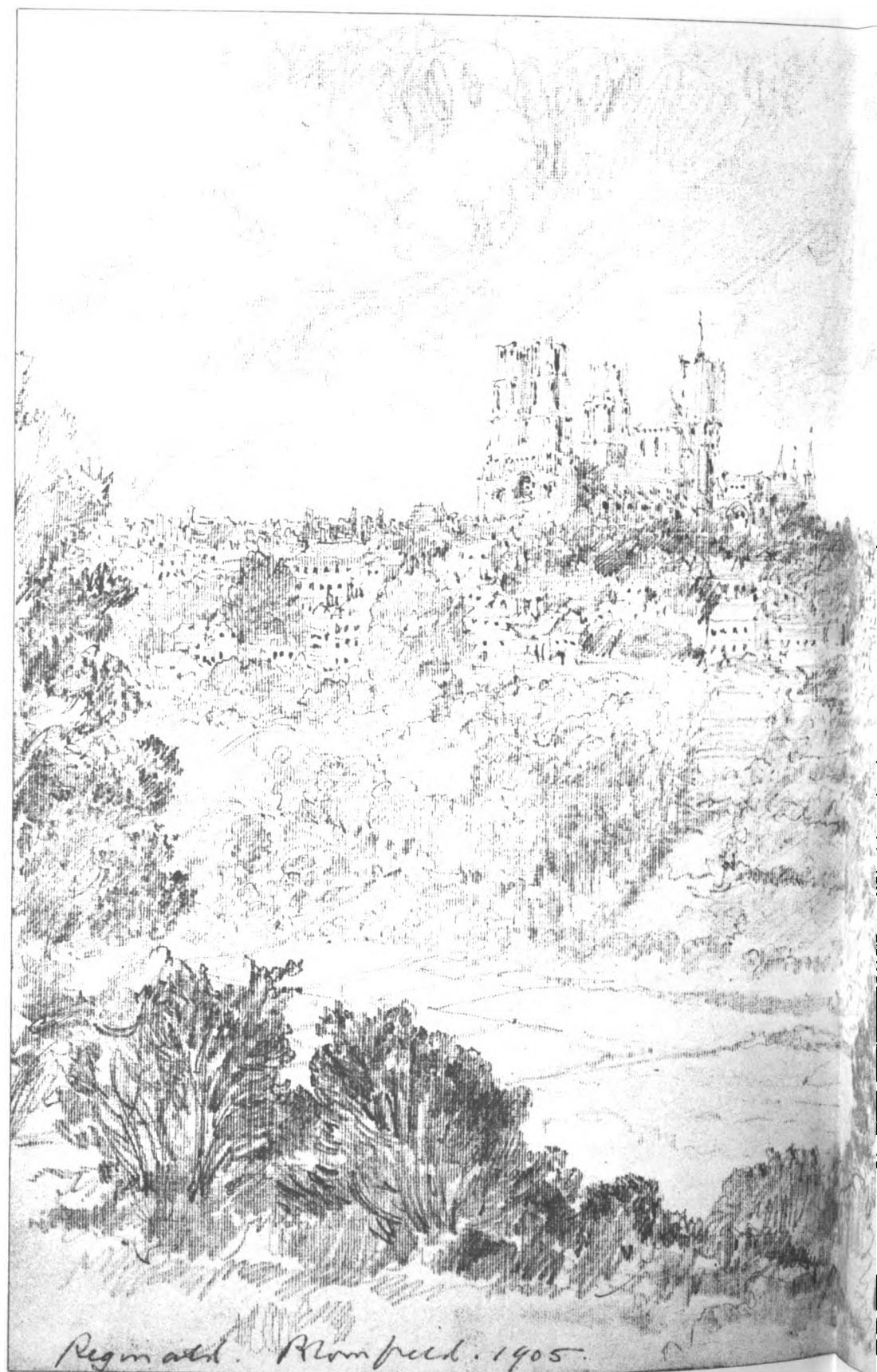


INK PHOTO. SPRAGUE & CO. LTD. 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

HYDE PARK PLACE, W.
E. F.R.I.B.A., Architect.



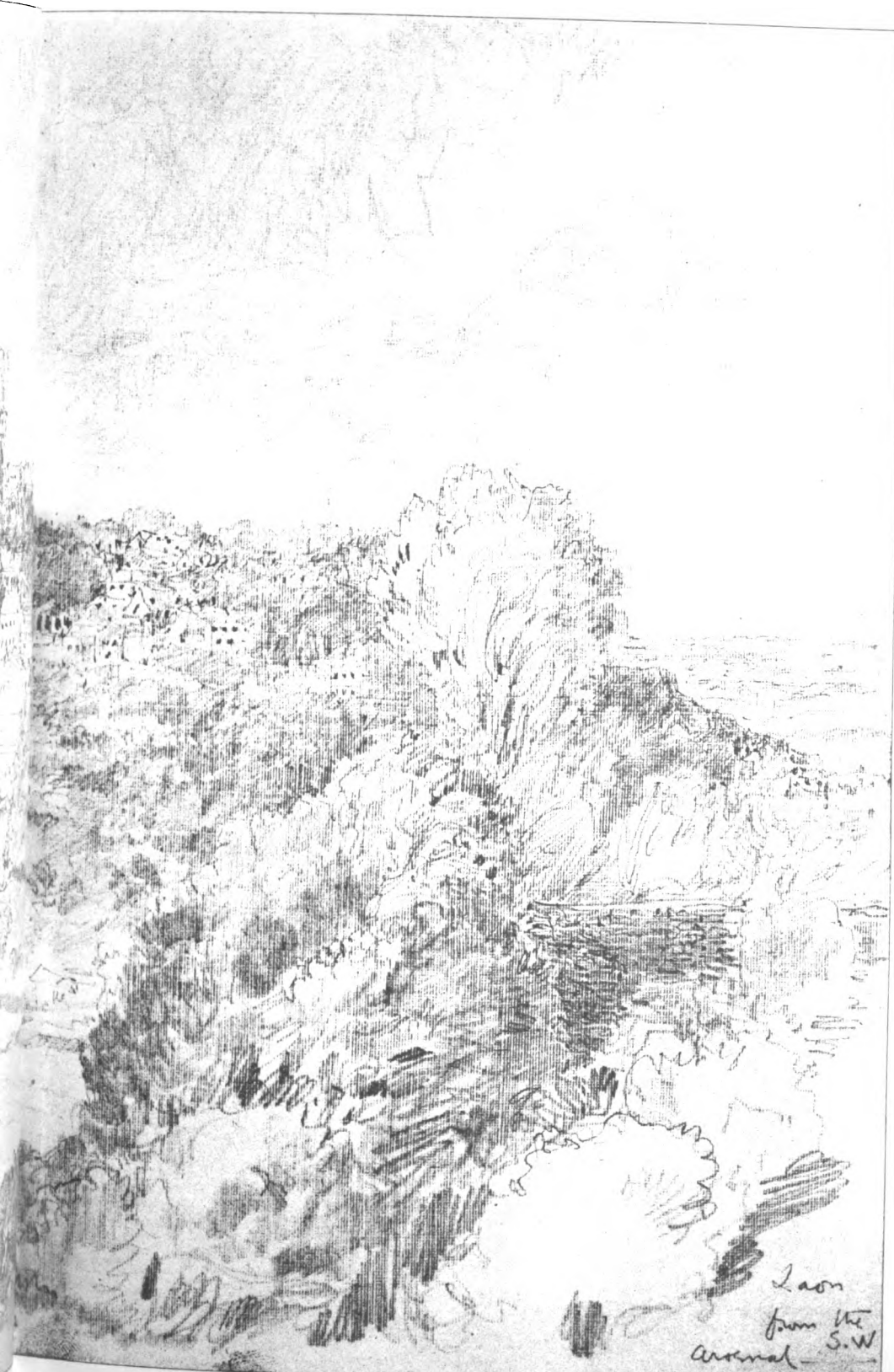
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Reginald. Blomfield. 1905.

LAON. FROM THE ARSENAL.
By REGINALD BLUMFIELD.

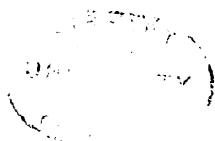
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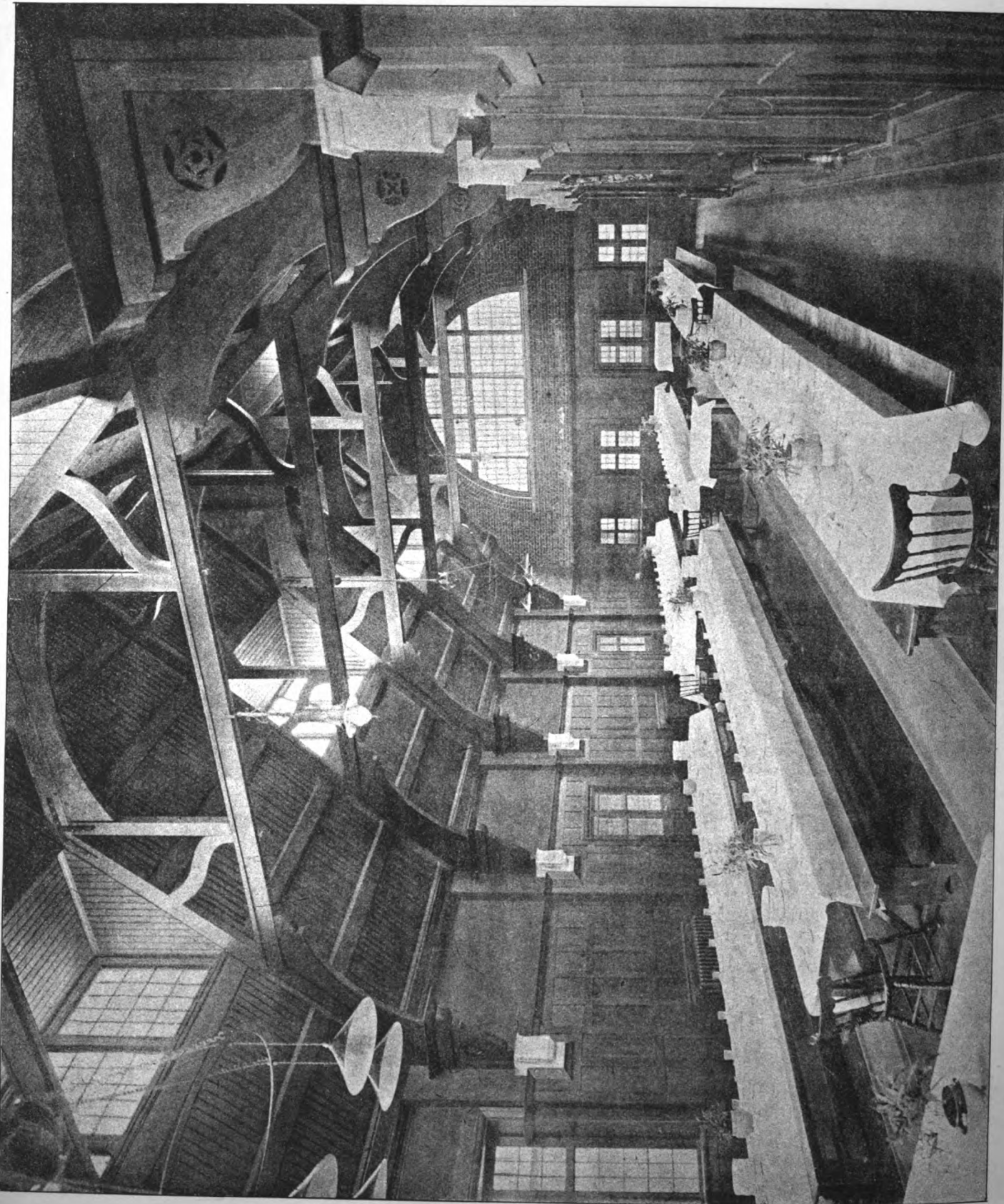
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THE ARSENAL.
BLOMFIELD, A.R.A.

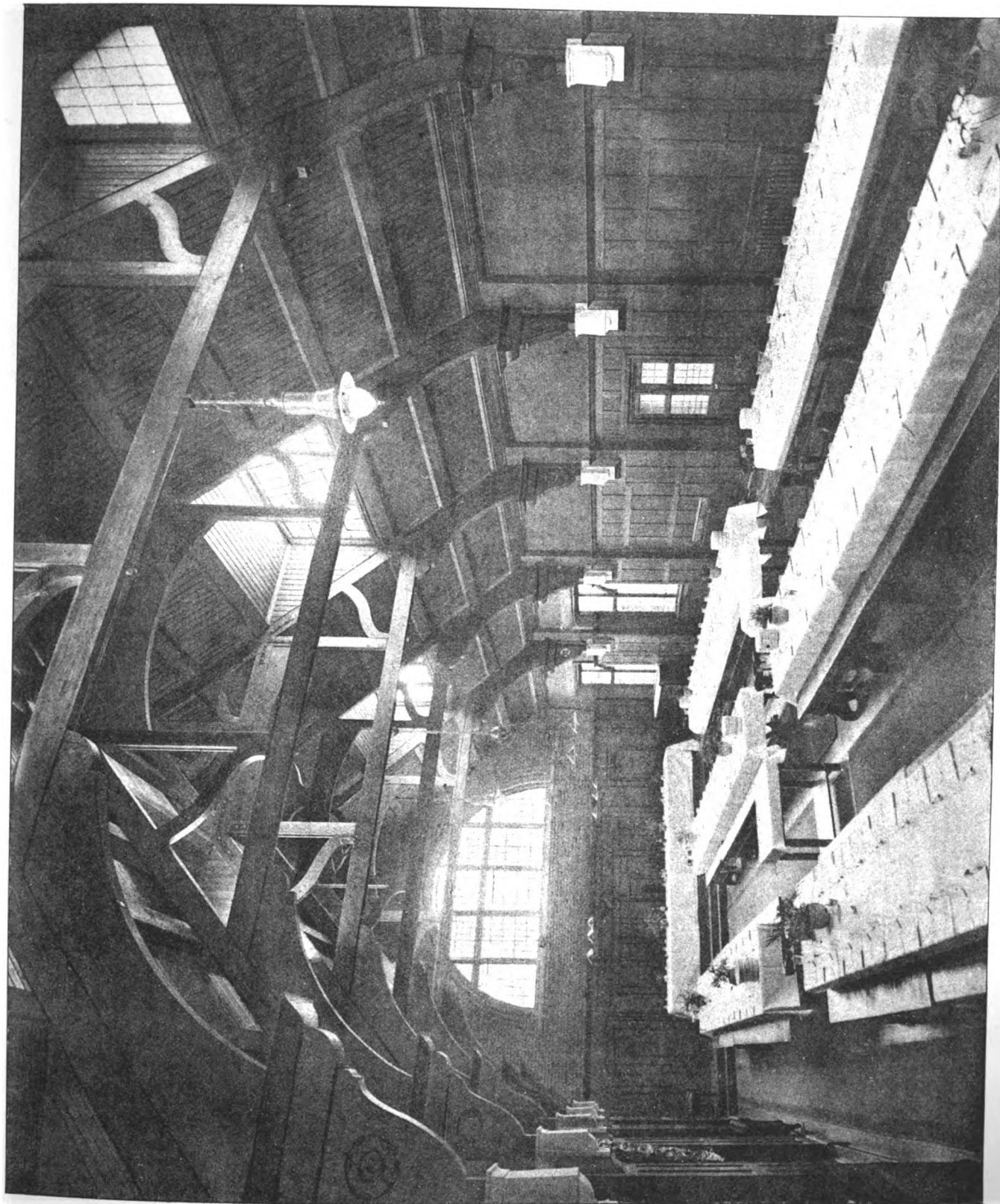


The Architect, Decr 28th 1906.



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ST. JOHN'S COLLEGE, BATTERSEA: THE NEW DINING HALL.
A. H. RYAN-TENISON, F.R.I.B.A., Architect.



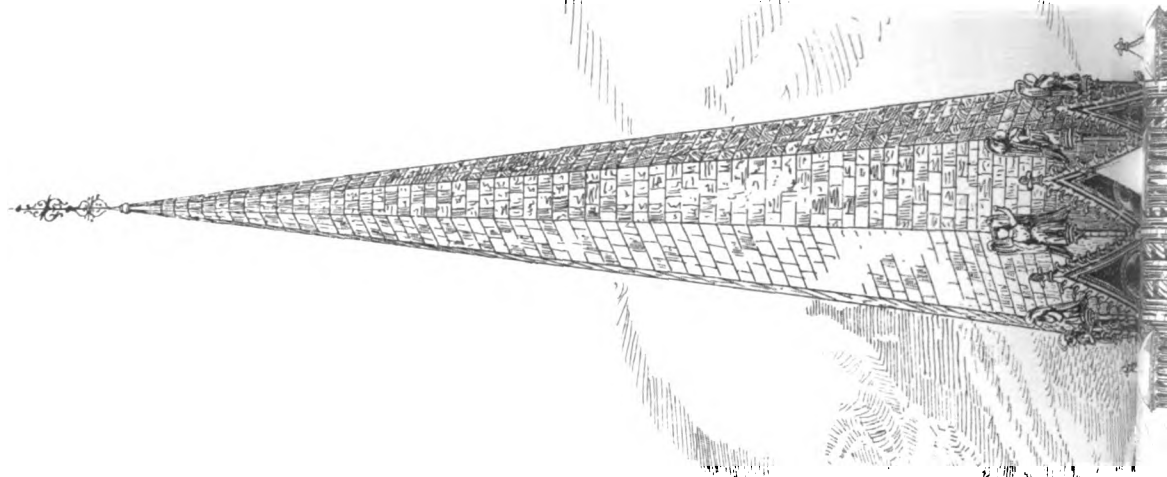
ST. JOHN'S COLLEGE, BATTERSEA: THE NEW DINING HALL.

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The Architect, Decr 28th 1906.

A PROPOSED LONDON CHURCH.
WILLIAM A. BURR M.S.A. ARCHITECT.



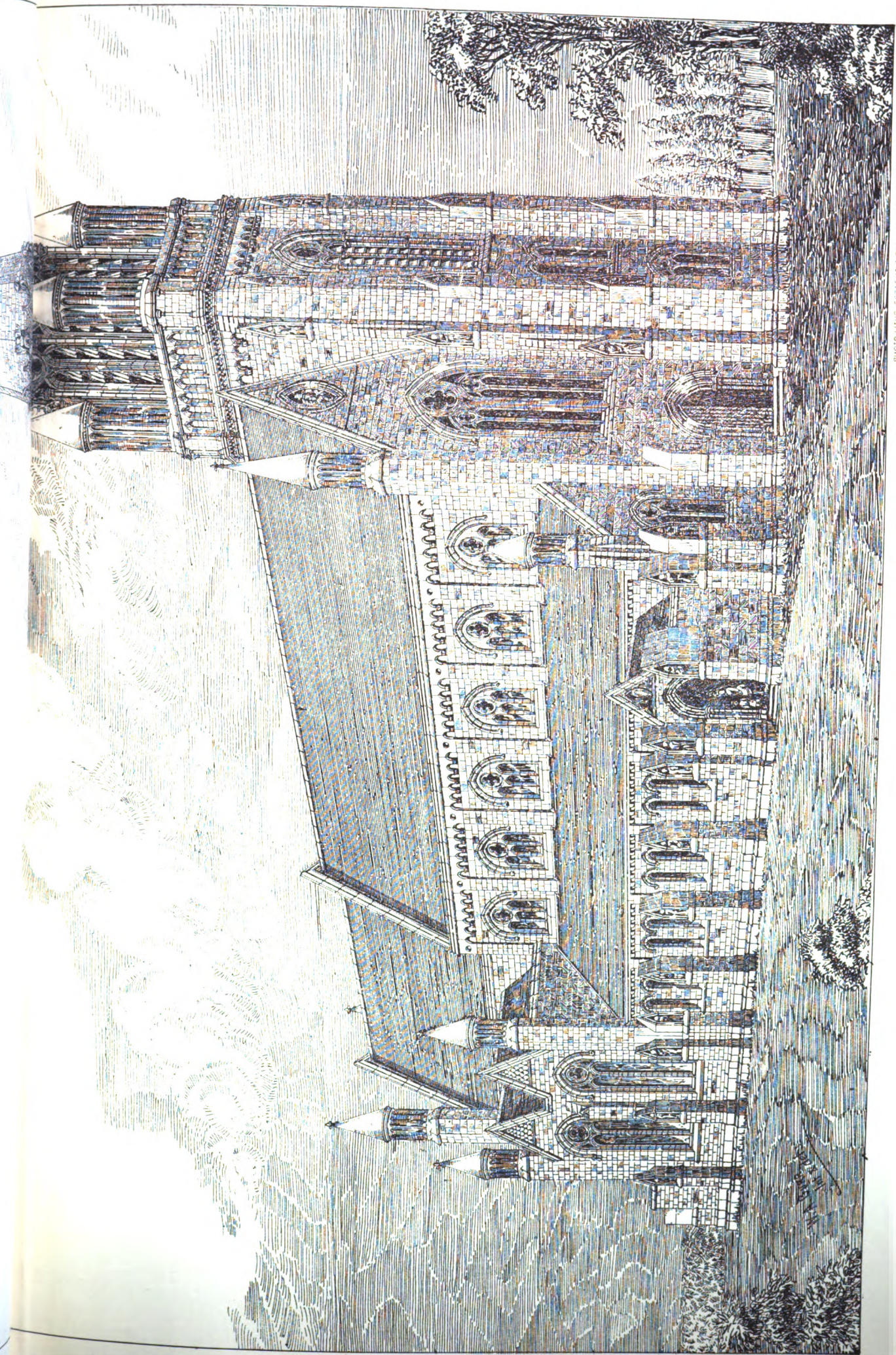
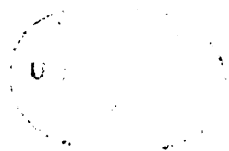


PHOTO LITHO. SHAW & CO. 143 EAST MADISON STREET, CHICAGO, ILL.



PAIR OF SEMI-DETACHED HOUSES AT BECKENHAM
FOR G. E. THOMSON ESQ^{RE}
WILLIAM A. BURR M.S.A. ARCHITECT.
65 CHANCERY LANE W.C.



HOUSES, ELMERS END, KENT.

IT is proposed to erect these semi-detached houses in Gwydor Road, Elmers End, Kent, for Mr. G. E. THOMSON. The lower portion will be in bright red brick; the upper portion rough-cast. The roofs tiled and woodwork painted white, except the barge-boards and front entrance doors, which will be finished dark green. The drawings have been prepared by Mr. WILLIAM A. BURR, M.S.A., architect, 65 Chancery Lane, W.C.

LEWISHAM AND LEE.

By W. F. POTTER.

LEWISHAM, called in ancient deeds Levesham, derives its name from its situation, Leves or Leswes in Saxon signifying pastures and ham a home or village. It was given with its appendages of Greenwich and Combe by Elthruda, niece to King Alfred the Great, to the abbey of St. Peter at Ghent, to which Lewisham then became a cell or alien priory, which grant is said to have been confirmed by King Edgar in the year 964, and by King Edward the Confessor in 1044, with the addition of many privileges and immunities.

In Domesday Book this manor is thus described, under the title of the possessions of the Abbot of Ghent:—"The land of St. Peter of Ghent. In Greenwich hundred. The Abbot of Ghent holds Levesham of the king, and he held it of King Edward the Confessor, and it then was and now is taxed at two sulings. The arable land is 14 carucates. In demesne there are 2 carucates and 50 villeins, with 9 borderers, having seventeen carucates. There are three servants and eleven mills, with the rent of the socmen [inferior tenants who held cottages and land by service of country work or hard labour]. The whole amounting to 8*l.* and 12*s.* Of the profit of the haven 40*s.* There are 30 acres of meadow. Of wood, pannage sufficient for 50 hogs. The whole manor in the time of King Edward was worth 16*l.*, and afterwards 12*l.*, and now 30*l.*"

William I., commonly called the Conqueror, and several of his successors confirmed this manor and its appendages to the above abbey, with which they remained till the suppression of the alien priories throughout England by the statute of the second year of King Henry V., A.D. 1414, when they became vested in the Crown, and were the next year settled by the king on his newly-founded house or Carthusian Priory of

Bethlehem, of or near Shene (now called Richmond). Notwithstanding which King Henry VIII. found means to secure the surrender of them, *i.e.* the manor and rectory and advowson of the vicarage of Lewisham, and annexed them to the Crown in his twenty-third year. After which this king on September 5, in his twenty-ninth year, granted the stewardship of this manor, with others in the neighbourhood, to Richard Long, one of the esquires of his body, for life, with the yearly income of 7*l.* 6*s.* 8*d.* and all profits and emoluments belonging to it. On his death King Edward VI., in his first year, by his letters patent, July 17, 1547, granted the above office to Sir Thomas Speke, knight, for life, with sundry fees and emoluments therein mentioned; and again on his death, he granted the same on December 24, in his fifth year, to Sir Thomas Darcy, K.G., and Lord Darcy, of Chiche, for life, with the same emoluments as in the former cases.

John, Earl of Warwick, eldest son of the Duke of Northumberland (who was beheaded by Queen Mary), afterwards possessed this manor, on whose attainder it escheated to the Crown, from whence it was in the fifth year of Queen Elizabeth granted to his brother, Sir Ambrose Dudley, who had been restored in blood by Queen Mary, and on December 25 in the fourth year of Queen Elizabeth had been created Baron Lisle, and the next day Earl of Warwick. He soon after exchanged it for other lands with that queen, and she in 1575 granted this manor and rectory for forty years to Sir Nicholas Stoddard, of Mottingham, which term expiring in 1605, King James I. granted another lease of the same for forty years more to Sir Francis Knolles, knight. He being a person very zealous for the Reformation was much esteemed by Queen Elizabeth on that account, so much so that in the first year of her reign he was made one of her privy councillors, and shortly after that vice-chamberlain of her household, next captain of her guard, afterwards treasurer

of her household, and lastly K.G. He married Catherine, daughter of William Carie, Esq., and had issue by her (who died in 1568, and was buried in Westminster Abbey) several children, of whom William, the eldest surviving son, was in the first year of King James I. created a baron by the title of Lord Knolles of Grays, in the county of Oxford, and within a short time after K.G., and in the fourteenth year of that reign he was raised to the dignity of a viscount by the title of Viscount Wallingford, and in the second year of King Charles I. he was created Earl of Banbury. King James, after granting the above-mentioned lease, granted the fee simple of this manor and rectory to John Ramsey, Earl of Holderness. It afterwards came into the hands of the Legge family, whose present representative is the Earl of Dartmouth. He is the present lord of the manor and proprietor. His eldest son is Viscount Lewisham.

Lewisham consists of one long main street nearly two miles in length, situated on the east side of the river Ravensbourne. It was during the occupancy of the Dudleys that Queen Elizabeth is said to have visited it, but the inhabitants did not pay her that homage to which she considered she was entitled, and on leaving it one morning very early, and finding no display of flags or banners or any one to greet her, she lost her temper and described the place as "Long, lanky, lousy, lazy Lewisham," and it has frequently borne this royal title of the town of five L's ever since. I can find no proof of this tradition, but I must say it is not at all unlike a saying of "Good Queen Bess."

Catford is a manor in the parish of Lewisham, and was anciently the inheritance of a family of the name of Abel, who dwelt at Heringhill in Erith; one of whom, John Abel, had a charter of freewarren for him and his heirs, for his lands here at Lewisham and in Hatcham and Camberwell, in the twenty-third year of King Edward I., A.D. 1294.

Soon after this it came into the possession of Anthony Beke, Bishop of Durham, at whose death it came to the Crown. Edward III. granted it to Sir William de Montacute, knight, and his wife Katherine in tail with remainder to the king, as a reward for his having apprehended Roger Mortimer at Nottingham, and other special services; and he obtained the next year a charter of confirmation for the freewarren in his manor of Catford. This manor afterwards became part of the possessions of the newly-founded chantry or college of St. Lawrence Poultny in London, most probably by the sale of it to Sir John Poultny, knight. The manor of Catford remained in the possession of this college till its suppression in the reign of King Edward VI. It afterwards came into the possession of the Dukes of Montague.

Sydenham was formerly called Cypenham, and first became celebrated in 1681 through a treatise published that year in London by Dr. John Peter, physician, and another was published in 1699 by Dr. Allen, both giving accounts of some springs of medicinal purging water. These springs were at the foot of Sydenham hill, and are described as being about twelve in number.

Lewisham Church is dedicated to St. Mary. It was from earliest accounts an appendage to the manor of Lewisham, and as such was given by Elthrua, King Alfred's niece, to the Benedictine Abbey of Ghent, in Flanders, which was confirmed by several of our kings. In the year 1774 Lewisham Church, requiring great repairs to support it, and becoming too small to accommodate the numerous inhabitants of the parish, a resolution was taken by the then parishioners to apply to Parliament for power to rebuild it. Accordingly an Act was passed that year to enable them to do so, in pursuance of which the old church was pulled down, and a new one was erected on the same spot. It was almost entirely destroyed by fire on Christmas Day, 1830, since when it has been repaired at the expense of the inhabitants. It will accommodate 1,200 persons, and has a square tower at the west end and a portico on the south side, supported by four Corinthian columns.

Lewisham Priory.—On the grant of the manor of Lewisham and its appendages to St. Peter's Abbey at Ghent, in Flanders, by Princess Elthrua, King Alfred's niece, the abbot and convent built a mansion here, afterwards called the Priory of Lewisham, under the government of one who had the title of Prior, and being thus connected with St. Peter's Abbey, it was esteemed a Benedictine cell or alien priory to it. This, as already said, was suppressed in the second year of King Henry V., A.D. 1414. And, as also stated, this was again finally

suppressed at the dissolution of all monasteries by King Henry VIII. in his twenty-third year.

Mr. John Thackeray, of Lewisham Priory (a mansion near the south extremity of the village), has erected a neat range of buildings comprising six almshouses, nearly adjoining the priory, and has endowed them with 10*l.* and 1 ton of coals per annum to each.

Colfe's Almshouses.—Abraham Colfe, vicar of Lewisham, who died December 5, 1657, founded during his lifetime two free schools, one for teaching youth English, and the other for teaching them Latin, the oversight and government of which he committed to the Company of the Leathersellers of London. He likewise founded an almshouse in this parish, and in the sixteenth year of King Charles II. an Act was passed for settling the charitable gift of Rev. Abraham Colfe, clerk, for erecting and endowing two free schools and an almshouse at Lewisham in Kent. This freehold school is now commonly called the Blackheath school, and maintains "a good reputation [says Hasted] for learning and the education of youth."

Margaret, first wife of Jasper Valentine and afterwards of Abraham Colfe, left an annual gift to the poor of this parish. She died, and was buried in Lewisham Church, March 15, 1642.

Ladywell, situated a quarter of a mile west from the church, was a chalybeate spring formerly much recommended. It took its name from our lady St. Mary, the patron saint of the church.

Brockley, a village one mile west of Lewisham, was formerly haunted by a famous highwayman called Brockley Jack, who was caught and hanged on a gallows or gibbet near the roadside inn, his favourite house of call, a very quaint inn which afterwards bore his name, but which has recently been rebuilt.

Outside the Roebuck, another very quaint inn at Lewisham, which has been recently re-erected, there formerly stood the oldest æsculus, or horse-chestnut tree, in England, planted in 1683, and was the parent tree of all those in Bushey Park. Many of the cottages in Lewisham were formerly built entirely of wood, but most of them have since given way to more substantial materials. I had occasion, for instance, a few years ago to take down a small wooden cottage in Peartree Court, Loampit Vale, which had caught fire and was nearly consumed, to rebuild the same in brickwork, exactly 12 feet square, with one room on the ground floor and bedroom over, and w.c. I believe this to be the smallest house in London, and was built complete for the sum of 60*l.* In taking down the old house I was anxious to discover whether there were any antiquities or relics underneath, but all I found was a brass farthing dated 1837, and marked on the reverse "To Hanover," and on the obverse was the head of Queen Victoria.

Respecting Colfe's Almshouses there was a well-founded rumour a short time ago that these old cottages were about to be sold and pulled down, but, owing to the strong opposition of the Society for the Protection of Ancient Buildings, I am pleased to say that the idea has been abandoned. Sydenham has also become famous for its well-known Crystal Palace, erected there since its removal from Hyde Park in 1851, but which is too well known to require a description from me in this paper. Its fine art courts, however, might form the subject of another paper at a future time.

Lee.

In the time of William I. Lee was part of the possessions of Odo, Bishop of Baieux and Earl of Kent, of whom it was held by Walter de Doway. It is thus described in Domesday Book under the general title of the "Bishop's lands":—

"Walter de Doway holds Lee of the Bishop of Baieux. It was taxed at half a suling. The arable land is 4 carucates. In demesne there are 2 carucates and 11 villeins with 2 cottagers having 2 carucates. There are 2 servants and 5 acres of meadow. There is wood for the pannage of 10 hogs. In the time of King Edward the Confessor, and when the Bishop received, it was worth 3 pounds, now 100 shillings. Aluuin held it of the king."

As early as the reign of King Edward I. this place was the residence of an ancient family called Bankwell, which probably acquired that surname from a place in this parish formerly written Bankwells, but now by corruption called Bankers. In the thirty-first of that reign, A.D. 1302, John de Banquel had a grant to him, Cicele, his wife, and their heirs, of freewarren in all their lands in Lee, Lewisham, Bromley and in Brokisham. In the first year of King Edward II. John de Banquel was appointed one of the Barons of the Exchequer, and in the return of John de

Shelving, sheriff of the county, in the sixteenth and part of the seventeenth year of that reign, of all the knights and men-at-arms within it, William de Banquel is mentioned in the second degree. He died in the twentieth year of King Edward III. A.D. 1345.

Lee Church is dedicated to St. Margaret, and was opened March 11, 1841. It is designed in the Florid Gothic style, and consists of nave, chancel, side aisles, with tower and spire. It will accommodate 1,000 persons, and stands on an eminence near Blackheath, on the opposite side of the road to the old church. Among other monuments and memorials in the old church was one in brass to Elizabeth Conkyl, dated 1513, and on the north side of the altar a sumptuous monument, with the figures of a man lying in armour and his wife lying at full length, for Bryan Anslye and Awdry, his wife. On the south side of the altar was a monument, with an effigy in brass, of another man in armour, kneeling at a desk with a book open before him and an inscription in black letter, for Nicholas Ansley, sergeant of the cellar to Queen Elizabeth.

The most eminent person, however, buried here is Dr. Edmund Halley, the celebrated astronomer, who lies buried under a plain tomb in the churchyard. He was born at Haggerstone, November 8, 1656; his father was then a rich soapboiler, of Winchester Street, city of London, though later in life he became in somewhat reduced circumstances. Halley was sent to St. Paul's School, and in 1673 he entered Queen's College, Oxford, as a commoner. Without waiting to take a degree he made a voyage to St. Helena in 1676, and while there, in the following year, he made the first complete observation of the transit of Mercury. In 1678 he returned to England and presented to King Charles II. a planisphere of the southern constellations, including Robur Carolinum, which he added. As a reward the king issued a mandamus to the University of Oxford for him to receive the degree of M.A. In the same year at the age of twenty-two he became a Fellow of the Royal Society. In 1682 he married Mary, daughter of Mr. Tooke, auditor of the Exchequer, and they lived at Islington, and then in Golden Lion Court, Aldersgate Street, City. He acted as assistant secretary to the Royal Society, and from 1685 to January 1, 1693, he audited the "Philosophical Transactions," to which he contributed many papers. In 1696 he was appointed deputy comptroller to the Mint at Chester, and later William III. gave him the command of the war-sloop, the *Paramour Pink*, with which he explored the Atlantic. In the same ship, by command of Queen Anne, he inspected the harbours of the Adriatic, and assisted in fortifying Trieste. He devoted considerable attention to comets, and Peter the Great consulted him as to shipbuilding. In November 1703 he was appointed Savilian professor of geometry at Oxford, where he was created a D.C.L. He was familiar with many languages, and while there translated a work by Apollonius from the Arabic into Latin. On Sir Hans Sloane's resignation in 1713 he became secretary to the Royal Society, and in 1721 was appointed astronomer royal in succession to Flamsteed, who had a very unfriendly feeling towards him. He died on January 4, 1742, and was buried in Lee churchyard as I have stated. He is more popularly known from his paper entitled, "A Discourse tending to prove at what time and place Julius Cæsar made his first descent upon Britain." This appeared in the seventeenth volume of the "Philosophical Transactions," and fixes the first date in English history from this circumstance:—"Cæsar having mentioned the fourth day after his landing, says the night after it was a full moon." This would be August 30, and from this Halley fixes the date of Cæsar's landing at Deal, in Kent, August 26, B.C. 55.

A stratum of shells runs through the parish of Lee, and is about 7 feet thick. A small rivulet takes its rise in this parish, and formerly on sudden rains rose to near 10 feet in height, and after watering the parish flowed into the river Ravensbourne in the adjoining parish of Lewisham. The Ravensbourne takes its rise at Keston near the Roman Camp, where Aulus Plautius, the prætor, awaited the arrival of the Emperor Claudius Cæsar, as mentioned by Dion. The tradition of the origin of the name of the river Ravensbourne is thus described by Hone in his "Table Book":—"When the Roman general encamped here his troops were in great need of water, and none could be found in the vicinity; observing, however, that a raven frequently alighted near the camp, and conjecturing that it was for the purpose of quenching its thirst, he ordered the coming of the bird to be watched for and the spot to be particularly noticed. The result was as anticipated. The raven's resort was a little spring, from which Aulus Plautius derived

water for his Roman legions; and from the circumstance of its discovery the spring was called the Ravensbourne, or brook." Of course all this is quite hypothetical, but the water was formerly in repute, like other springs around here, for its medicinal virtues, and was used to bathe in.

THE ARCHITECTURE OF SICILY.*

(Concluded from last week.)

The Mosaics.

FERGUSON says, "The north needed acute brilliancy [of colour] as a contrast to external greyness. The south found rest from the glare and glow of noonday in these sombre splendours. Thus Christianity, both of the south and of the north, decked her shrines with colour. With the Greeks colour, though used in architecture, was severely subordinated to a calculated harmony with actual nature; it did not, as in a Christian church, create a world beyond the world, a paradise of supersensual ecstasy, but remained within the limits of the known" ("History of Architecture"). Whatever our ecclesiastical views of the wisdom of the Emperor Leo III.'s iconoclastic decree in the eighth century, as artists we cannot but rejoice that the Western Church retained her full freedom as to the use of colour and form.

The decorators of the late period of the Roman Empire well understood pictorial mosaics in marble, and we have very beautiful examples in Rome of this work, in the apse of S. Prudenziana, executed in the fourth century. The ground was then mostly in blue, very little glass was used and the figures were thoroughly Roman in type. When the seat of empire was transferred to the East in 330 Constantine's liberal patronage of the arts in Constantinople, and particularly of mosaic amongst so artistic a people, soon brought the beautiful art to perfection.

When in 402 Honorius transferred the capital to Ravenna, this town produced the finest mosaics of the earlier period, up to the middle of the sixth century. S. Sophia was also completed in this century. Although some good examples can be seen in Italy, proving its continuity with varying success, and in spite of the set-back resulting from the iconoclastic movement, it was not till the eleventh and twelfth centuries that the great revival came, of which S. Mark's, and a little later those in Sicily, are so eloquent. The earlier mosaic work in S. Mark's, late tenth century, is, however, hard and rigid in detail, compared with that executed in the twelfth century in the same church, and at Torcello and here in Sicily.

In no spot in the world can the principles and methods be more successfully studied than in Sicily, those of S. Sophia being largely hidden from view behind Mohammedan whitewash or destroyed, and much at St. Mark's having been restored out of recognition or having given place to imitations of painters' art.

These decorations of the Palermitan churches represent the zenith of Byzantine mosaic art of the Second Period. Nothing finer had been done before, even at S. Sophia or S. Mark's, Venice. Nothing so fine followed, and the ambition of the Renaissance painters to reproduce their naturalistic art in this permanent form, thus divorcing it from the conventional limitations imposed by the material, was soon to destroy tradition and its practice. It is only in our day emerging into new life by the discovery of its true principles of design, method of fixing, and by the revival of the manufacture of the enamel-glass by such firms as Messrs. Powell, while Sir William Richmond, Messrs. Crane, Anning Bell, Clement Heaton, Spence and others are working on the right lines, and already giving us good work, both internal and external, in spite of many adverse conditions. A school of mosaic workers is thus arising in England which we anticipate will lead the art in Europe, and we may hope that before the Westminster Cathedral mosaics are commenced the empirical stage of the revival will be passed.

These Sicilian mosaics are kept sufficiently distant from the eye to prevent an unpleasant sense of the coarseness of the material and its joints and to blend its irregular lines and surface into a rich and harmonious whole, full of variety and accidental beauty, while the scale of the figures and geometrical ornament is large enough to be read pleasantly by the multitude worshipping in the church. The lighting is arranged with great skill to answer the latter purpose, but is not sufficient to kill the colouring, and the windows, always of plain white glass, are generally in

* A paper read by Mr. W. H. Seth-Smith at the meeting of the Architectural Association on Friday, December 14.

such positions as to secure diffused rather than direct light, and low down to give profundity and richness to the surface above.

The Byzantine style is the architecture best suited to its display of this decoration, since the curved surfaces of its domical vaults produce the maximum effect in gradation of light and shade, and the greater the width of the building the better is the effect. This explains the supremacy of S. Sophia at Constantinople. Mr. Anning Bell contends that the stiffness of drawing is not archaic, but the expression of the material, and says, moreover, that play of facial expression and momentary gesture are out of court, and that such subjects as depend on these are unsuitable. The characters should be types and the incidents symbolic. Mosaic can be magnificent and splendid, but not humorous. A row of Popes is meant not for likenesses of individuals, but to impress the spectator with the continuity and power of the Papacy.

The method of execution employed in Sicily and elsewhere in Mediæval times was as follows:—A coat of fine lime mortar was spread on the wall, upon which, when fresh, the picture was broadly painted in fresco in the proper colours. The painter was immediately followed by the mosaicist with the cubes, which were embedded in the soft mortar and pressed to an even surface.

Here and in the interior of S. Mark's, Venice, the decorations enjoy the necessary freedom from rivalry with architectural features, such as mouldings and stone enrichments, which disconnect the scheme and look poor and mechanical in juxtaposition, unless the carving is of very special delicacy to harmonise, as it does fairly well, for instance, in S. Vitale at Ravenna, and in the atrium of S. Mark's, and as it does not at St. Paul's, London. In these Sicilian Norman churches the mosaics cover the entire wall surfaces, domes and vaults, and even the angles of the archivolt are all rounded off to carry it to the soffits of the arcades. The ground is nearly all of gold, not the hot yellow gold of modern mosaics, but low-toned, soft, rich, never flashing, full of play of colour from pale lemon to rich orange (according to its lighting), and the decorative designs are bright in tones that do not give the effect of patches of dark on a light ground. The palette used is a very limited one, greys and grey-blue, violets, soft greens, madders, with scanty use of silver, dark reds and russets. In fact, nature's scheme of colour at her most beautiful and restful season of winter, a scheme deliberately adopted and perfectly adapted to the heat and glare of the climate. The size of the cubes averages nearly an inch square for the larger surfaces and about three-eighths of an inch for faces, hands, &c. The Mediæval method of cutting up the cakes of enamel-glass with chisel-like hammers produced the great irregularity in the cubes which, with their corresponding variety of joint and surface, gives such subtle charm to old work, compared to the modern machine-cut cubes. It is obvious such a material must impose limitations on the drawing and texture.

Much valuable and practical information on ancient and modern mosaics will be found in three papers by Messrs. Harrison Townsend, Anning Bell and Clement Heaton, in the "Journal of the Royal Institute of British Architects" for March and November 1901, and April 1902, besides, of course, the larger standard works.

The cathedrals of Messina and Cefalu are both nearly contemporary with the Cappella Palatina, both having been commenced by King Roger about 1130. Of the former only the general plan and the mosaics of the three apses remain substantially as they originally were. The basilican plan has the usual characteristics of the Norman Sicilian cathedrals. Saracenic influence is shown in the slightly horseshoe form of the nave arches.

Cefalu.

Cefalu is a church of great interest. Here is the south Italian porch in three vaulted bays between two angle towers. The nave arcades are high-stilted on columns of polished red granite, with white marble bases and varied capitals, many from older buildings. The clerestory, as at the Cappella Palatina, has a single-pointed window over each arch. The transept projects beyond the aisle walls; the central bay was domed, though now ceiled by wood beneath. From the east wall of this transept open three very deep tribunes, the central one covered by groined vaults, and each ending in an apse as usual. The Lombardic open arcaded gallery on three sides of the transept, and just beneath the vault with small round arches, is the only example of this feature in Sicily. The most striking

feature of the church is the very lofty choir opening into the nave. There is nothing like it south of the Alps.

I reproduce a measured plan and elevation of the apsidal end of this church from Mr. George Hubbard's paper read before the Society of Antiquaries, and published in "Archæologia," vol. lvi. He has established the date of commencement as being 1132, and of the completion of the nave roof as 1160. He also suggests the interesting theory that the occasion of the marriage of the daughter of our Henry II. to William the Good, of Palermo, gives the clue to the origin of the earliest pointed arches in England, namely, those of Trinity Chapel and Becket's crown in Canterbury Cathedral, then just commencing. The church possesses some very fine cloisters, which he well describes.

The painter Mr. Wallace Rimington thus writes of the interior:—"The whole body of the church being white, the eye is led up to the choir. Once there it remains there, and dwells with intense satisfaction on the glorious wealth of colour with which the chancel is enriched by mosaics. These are, on the whole, the most impressive of any I have seen in Italy. The harmonies of colour are mainly in violet and brown madder, accentuated with low-toned green and grey. The apse is entirely dark, except for one small glazed window which brings a small quantity of high light into contrast with the principal dark of the church, and taking the eye at once to its central interest. In its vault, and just where the play of reflected light is at its best, is a great dominant half figure of Christ, quiet, dignified and splendid in subdued colour. Its effect at the end of the church is most impressive. Our Lord is raising the right hand in the act of benediction—still the same Lord that looked down upon the generations who knelt in this great church all through the Middle Ages. It is difficult to believe that any one of that multitude could have entered the church without having gained some better idea of the love and majesty of the divine Master from this noble mosaic."

Palermo and Monreale Cathedrals.

An interval of nearly fifty years seems to have elapsed between the building of the churches already described and the two great cathedrals of Palermo and Monreale, the only additional examples of the splendour of Norman church architecture in Sicily. These were built under King Roger's successors, William the Bad and William the Good. Palermo had a previous cathedral, begun in 1109 on the ruins of a Saracen mosque. A year or two after the accession of William the Bad, Walter of the Mill (amusingly Italianised as Offamilio) became archbishop, and rebuilt the cathedral, leaving, however, some eastern parts of the old church. It was finished in 1185, and was doubtless one of the most beautiful in Sicily. The eighteenth-century transformation has, alas! left little or nothing except the general ground plan, and not all of that, a new east end having been built within the old. The plan is similar to Cefalu, without western porch and towers. The three tribunes are, however, here connected by a broad arched opening, forming them into a sort of second transept. The nave arcades were of pointed arches over four slender columns set in a square, and joined by their bases and abaci into a singularly beautiful pier, and above the arcade the clerestory was pierced by three-light pointed windows divided by columnar mullions. The ceiling was of wood decorated with gold and colour, and the whole interior was magnificently enriched with precious marbles and mosaics. The four slender towers, one at each angle of the church, are a unique feature, and although picturesque in general form they are unsatisfactory in detail, especially in the multiplication of coarse string-courses running under each sill and springing of each arcade. The main angles are all shafted. Some of the stages had their surfaces inlaid presumably with black and white patterns in marble and asphaltum in Saracenic patterns, the incision now only remaining, and curious superficial Saracenic parapets occur over some of the string-courses and dog's-tooth ornament below them. The circular angle turrets commence about half-way up. All this splendour remained till 1781, when the royal architect, Fuga, in spite of the strenuous remonstrance of the Palermitan architects, ruthlessly destroyed it. The frigid silence of the Palladian style reigns within, simple indeed and dignified, but lifeless as the century in which it flourished.

The cathedral of Monreale externally resembles that of Cefalu, with flanking towers at the west end and a deep porch in three bays. The southern tower has a low pyramidal spire. The external face of the south aisle shows a range of pointed windows surrounded by thin bands of mosaics, and united by broader flush arches

enclosing circular patterns with horizontal bands. A frieze of inlay runs beneath the cornice. The clerestory is absolutely plain with an arched corbel table under the eaves. In the east end the characteristic external decoration of the style is even more lavishly displayed than in the apses of the cathedral of Palermo, and is certainly one of the most striking compositions in Italy. The entire surface is covered by a series of interlacing arcades of pointed arches. The upper stages are covered with geometrical inlay of marble and asphaltum, and the walls are further enriched by horizontal bands and circles of the same character. There are few exteriors in Europe possessing a surface decoration of equal richness.

Before passing to the interior something more should be said as to the bronze doors.

The art of casting in bronze had been a lost art in Italy for several centuries, but was revived by the Greek artists in the eleventh and twelfth centuries, the earliest examples of bronze doors being those at Amalfi and Atrani, of the last half of the tenth century, and between 1066 and 1087 seven churches in Italy were thus furnished from the Byzantine capital. In most the treatment was large panels with various designs, generally simple, all executed in niello, with incised lines filled in with silver, &c., the frame of the panels being more or less decorated. The bronze was in comparatively thin plates on a framework of solid oak. The eastern inspiration was caught in time by the Italian workmen, the earliest being executed in Italy by Roger of Amalfi for the chapel of Bohemund about 1120. As subjects became more ambitious niello decoration gave way to reliefs cast on the plate. In 1160 Barisanus made a magnificent pair of doors for Trani Cathedral, and somewhat later for the cathedrals of Ravello and Monreale; the panels in all three are almost identical in subject and design, and are of prodigious variety, sacred and profane.

In addition to Barisanus's pair in the north doorway, Monreale possesses magnificent bronze doors in the west or principal entrance by Bonanno, the maker of the great doors of the Pisa Cathedral, and the architect of the campanile there. Though the two makers are almost exactly contemporary, the work of the Pisan architect is archaic in style—the panels without mouldings; the sculpture of the panels is in very high relief and spirited in character. The work of Barisanus is more harmonious; the foliage, though rigidly conventionalised, is appropriate to its enclosing bands and carefully subordinated to the figure sculpture of the panels.

The interior is more fully windowed than the Cappella Palatina, and its decorations are of surpassing magnificence. The scheme, both in subject and in general colour, is precisely that of the Cappella Palatina, but the scale of the building, and its breadth of treatment immensely enhance the effect. The walls throughout are here again lined to a height of 22 feet with narrow vertical slabs of Cipollino grey and white marble framed in borders of Cosmati work, and with a Moorish frieze in the same material. All the smaller surfaces, including the jambs of the windows, the bull-nosed angles, horizontal and arch bands and the soffits of the arches, are of semi-geometric patterns, and the whole of the walls and apses are covered with pictorial mosaics, the subjects being scenes from the Old and New Testaments in horizontal ranges, divided by bands. The whole semi-dome of the central apse is occupied, as at Cefalu, by a gigantic half-length figure of Christ, which dominates the whole scheme.

The beautiful carved caps of the nave arcade anticipate the best Renaissance capitals, but are not so suitable to the style as those of Ravenna, for instance, as supports to the heavy stilt-blocks from which the stilted pointed arches spring. Low-toned red lines mark apparent archivolt to the arcade, the band beneath the clerestory windows and the arches being treated with semi-geometric Byzantine patterns of green-greys and soft russets and madders with a small amount of white. In the lower range figure subjects are grouped into the spandrels of the arcade and the gold ground is well massed round them. The figure subjects between the windows are similarly treated, while the white guilloche in a continuous band just beneath the roof is filled with busts in white, indigo-grey and a little red and madder brown. Generally speaking, the greys predominate in the figures, producing, broadly speaking, with the gold ground a palpitating surface of yellow and grey, than which nothing is more beautiful. The greens and blues are very grey and the reds and browns also of a neutral tint and in small quantities to prevent a hot effect where so much yellow exists. These greys are splendidly

focussed at the east end by the indigo mantle of the colossal figure of the Christ. This mantle is thrown over a tunic of gold and madder red, the highest light being the linen wrapped about the neck and throwing up the head finely, the face being very pale and surrounded by dark hair and beard.

In these days of the universal knowledge of the Bible it is difficult to imagine the educational value to the illiterate multitude of this complete pictorial record of the evolution of revealed truth culminating and centred in this fine figure of Our Lord.

The pavement of the nave is not so rich in line or colour, but only serves more effectively to concentrate the attention on the principal decorations, but that of the chancel more than atones for the plainness of its approach.

Little is left of the conventual buildings except the cloister, which was perhaps, in its best state in respect of its mosaic and sculpture, the finest in Italy. Each alternate pair of the coupled columns have plain shafts, the others being decorated with mosaics in vertical flutes or spirals or chevrons. The capitals are infinitely varied, and wonderfully designed and carved. At the angles of the cloister the columns are in groups of four and the shafts covered with reliefs of beautiful design rather Byzantine in character, while the capitals are still more elaborate. The arch heads are, like every other portion of this cloister, of extreme richness. The inner arch moulding, however, is the one inharmonious note, stopping abruptly, as it does, overhanging the abaci of the caps. This is evidently one of those errors which it is difficult to account for, as there is no evidence that this feature was not contemporaneous. A similar fault is to be seen in the cloisters of Cefalu. The lavatory of the monks is a most graceful feature of this beautiful cloister, and a gem of art. These triumphs of ecclesiastical architecture were the work of Saracen builders, assisted by Byzantine, Italian and Norman craftsmen.

With the Norman work of the eleventh and twelfth centuries the development of architecture in the southern provinces of Italy comes to an end. In the great Gothic movement of north Italy, in the greater Renaissance movement which followed it, the south had no part. It was anticipated in Italy.

Of the remaining Palermitan churches, S. Francesco, 1302, and the contemporary S. Agostino are as to date Gothic churches with many Norman details, and are worthy of more attention did time permit. Then there is the late sixteenth-century church of S. Maria della Catena, of which I give a photograph of the front and a pencil sketch of the beautiful late Gothic interior. Here the columns of nave are of Cipollino, black and white veined, red and a grey marble, and all polished. The carved caps and bases are all white marble touched with a little gold, with good effect; the surbases are of hard limestone. The walls internally are faced with rich brown sandstone varied with yellow and grey. The effect of the three-centred ribs to the barrel vault of the aisles is exceedingly pleasing. The windows are all small and have no tracery. Grey marble bands follow the line of the arcade in the pavement, the remainder being squares of about 18 inches of greyish Sicilian marble. The triumphal arch finds its abutment in similar arches across the transept.

Renaissance.

Something might also be said of the Renaissance churches with which the town abounds, and of the Rococo inlay decoration in marbles of many kinds, the whole producing a sense of ostentatious wealth and of riotous imagination totally at variance with the solemnity and dignity of public worship.

Domestic and Civil Architecture of the Norman Period.

Up to this time the only domestic architecture in Europe, with very rare exceptions, has been that of the military castles. But in Sicily the examples of the luxurious Arabs were too attractive, and the arts which had been so lavishly employed in the Church were turned to account in beautifying and softening the domestic life. Palermo became a second Cordova, with palaces, villas and pleasure pavilions standing in parks and gardens, with fountains and statues. Only the Torre della Nisfa remains of the royal palace, containing a large hall which still bears witness to the interior luxury of the king's house. Even as early as the first quarter of the twelfth century the walls and the groined vault were all adorned with mosaics.

The Saracenic characteristics of the baths at Cefala (about 20 miles south of Palermo), are, with slight modifications,

those of all the Norman civil buildings in Palermo. The earliest were two pleasure palaces built by King Roger about 1120 for use in summer and winter respectively. Of La Fava, the winter villa, little remains excepting the interesting little chapel. The palace stood within grounds planted with citrons, oranges and palms, and the whole enclosed within a great moat in which floated the gilded gondolas of the king and ladies of his court. The summer palace, known as Minenio, was two miles west of the town.

The more familiar examples of this Norman-Saracenic style are the two palaces built by William the Good and William the Bad, the Ziza and the Cuba, in which the Normans adopted the Saracenic domestic architecture and the kindred arts, especially that of formal landscape gardening and the use of water.

The Ziza, built of ashlar brown sandstone with close joints, measures 115 by 62 feet and is 80 feet high. There are three nearly equal storeys marked by small string-courses. The central arch of the principal front is 30 feet high, and the inner order is carried on coupled jambs of fine marble. In the lower half of each arch was originally a coupled pointed window with a smaller window between the arch heads, and the wall was crowned by a parapet the divisions of which were filled by Cuphic inscriptions, and enclosed, as in the baths of Cefalà, between two horizontal bands of Byzantine carving. The central arch leads through a vaulted vestibule into a hall about 22 feet square, with a deep recess on each of the three sides. These recesses are covered by elaborate Saracenic vaults, as at the Alcazar at Seville and the Alhambra at Granada, and their walls were faced with mosaics and plates of marble. These decorations remain in part. The central hall and vestibule have the height of two storeys. The space on the sides of the building is divided into apartments communicating with each other by ample staircases. The palace stood in the midst of pleasure gardens. Opposite the main entrance was a fishpond surrounded by a square pavilion, which has now disappeared like that of the Cuba, which still remains. The Arabic inscription on the parapet of the Cuba gave the date of the building as 1182. The planning of this royal villa appears to have closely resembled that of the Ziza. Of the various pavilions adorning the grounds La Cubola only remains.

A curious hiatus in the art of Sicily is the almost entire absence of architectural wrought-ironwork of any merit, ancient or modern. The best I saw was in the screens between the chapels and the nave in the cathedral of Ortigia (Syracuse). This is the more curious considering how beautiful is the ironwork used to adorn the axle-trees of the carts in many of the towns, notably in Palermo (where they are also profusely decorated in colour) and in Taormina.

The architecture of the Normans in Sicily covers a period of little more than half a century. Yet in that time it had exhibited a logical consistency and a wonderful union of strength and grace. Strictly speaking, the style had no development. No architecture ever expressed more fully and clearly the peculiar character of its age and people. The strength of the Norman, the fineness of the Greek, the luxury and grace of the Arabian were exhibited not more conspicuously in the social and political fabric than in the churches and palaces the Williams left to their unworthy posterity.

Weary as we all are of the battle for the supremacy of the styles and of theories for the development of a twentieth-century manner of work, may there not, however, be fresh food for reflection in the cosmopolitan tolerance and studied collaboration which within fifty years resulted in the creation of the unique and lovely architecture which has been our theme to-night? And since we have been so recently bade to "think Imperially," does not our empire contain all the elements, if intelligently organised and sympathetically handled, for the production of something at least equally admirable? At the present moment an English architect is executing a commission in our richest eastern dependency which appears to offer a unique opportunity for combining the scientific genius of Europe with the splendour of Oriental taste in form and colour, in commemorating the reign of the best monarch of the leading empire of the world. It ought to rival, if not excel, the Taj Mahal.

Mr. R. PHENÈ SPIERS, in proposing a vote of thanks to the author for his paper, said there were many present who had a closer acquaintance with the subject than he had, though he must have seen Sicily before they did, since it was in May 1864 that he spent a visit there. There were many points however in the paper which he himself could

substantiate. Mr. Seth-Smith appeared to be doubtful regarding the Eremiti church, and had been astonished when he was told by the guides that it was originally built as a mosque. Some time ago, said Mr. Spiers, he came to the conclusion that although one of the walls belonged to a mosque, the church itself was built for Christian use. He had, too, in his possession a drawing showing the actual church and the original mosque. In conclusion Mr. Spiers thought there was much more to be learnt in Sicily by the architectural student than in other parts of Italy; the position of the temples was magnificent, and they were of extraordinary interest and beauty. The paper had been so carefully prepared and admirably illustrated that he derived great pleasure in recognising scenes he visited forty-two years ago.

Mr. RONALD P. JONES seconded the vote of thanks, and asked why the paper had not dwelt upon the Grecian temples in Sicily; they certainly merited attention, and he believed that even the approach to the Acropolis at Athens could not have been finer than the approach to the temples at Girgenti. The paper, in referring to these remains, had mentioned their adornment by some coating which had been coloured. The material used was limestone, which only followed the lines of the architectural stonework underneath; the limestone had received the polish of natural marble, and it was quite erroneous to describe the material as plaster. The temple at Segesta was never finished, and it therefore provided a grand example of how Greek temples were constructed, besides being the finest instance of magnificent effect obtained by the simplest forms.

Mr. GEORGE HUBBARD, F.S.A., said that though he had not visited Sicily as long ago as Mr. Phenè Spiers in 1864, he had, however, perhaps spent more time there, for he stopped nine months in the island during the year 1884. He thanked Mr. Seth-Smith for his most excellent paper, which so aptly dealt with the peculiarly complex period in the development of architecture in Sicily, and for having thrown upon the screen some drawings of Cefalù Cathedral which he (Mr. Hubbard) made many years ago. In this Norman cathedral of Cefalù Mr. Hubbard considered that the earliest example could be found of the pointed arch in a purely Norman building. Sicily was conquered by the Normans in the latter quarter of the eleventh century. The conquerors were familiar with the pointed arch of the Sicilian Saracens, and they adopted it when building Cefalù Cathedral. The cathedral of Cefalù was begun in 1132, and the pointed arch was used throughout, a full generation before it was adopted in any other Roman church in Europe. In the year 1170 Henry II. offered the hand of one of his daughters to William the Good of Sicily. It was not, however, till 1176 that the little Plantagenet princess, then in her twelfth year, was sent to Sicily. The wedding took place in the following year amidst unexampled rejoicings. An architect from Henry's court would no doubt accompany the ecclesiastics and other dignitaries who joined the ceremony. But, apart from historic occasions such as this, and another less auspicious which occurred in the following reign, when Richard I. captured Messina, there were plenty of facilities for English and continental architects to become acquainted with the work of their brethren in Sicily. At this date, although some few pillars of the work at Canterbury had already been raised in their places, not a single arch had yet been turned, the whole of the upper portion having been executed between 1177 and 1180. This work at Canterbury is perhaps the earliest pointed Gothic to which an exact date may be assigned. It therefore seemed probable to Mr. Hubbard that Cefalù may have had a direct influence upon the introduction of the pointed arch in subsequent Gothic work. Cefalù was built by the first Norman king in Sicily, King Roger, and the subjection of the conquered race is typified, not without its pathos, by the four kneeling Saracens supporting the sarcophagus of King Roger, as was shown by Mr. Seth-Smith in one of the many and excellent slides.

Mr. SETH-SMITH, in his reply, said he felt when preparing his paper there would be only sufficient time to deal with one period in Sicily, though there was no part of his tour in the island which gave him greater pleasure than the study of the Classical work.

The Local Government Board have informed the Sheffield Board of Guardians that their architect describes the hospital administrat block as unnecessarily costly, and designed and furnished in a style that is incongruous and inconsistent with its purpose.

THE STORY OF THE SYNAGOGUE.*

THE story of the synagogue is practically the story of the Jewish people from the Babylonian captivity through successive eras in their history in the East and West, with the alternate light and shade, to the nineteenth century of civil and religious liberty in nearly every land. Such a survey would hardly be complete without a detailed study of the rise and growth of the synagogue in the Orient, its gradual spread as the Jews began to colonise outside of Palestine even before the conquest of Jerusalem by Titus, its appearance in Egypt, Asia Minor and Italy, and then in Central Europe and Spain. A careful inquiry, too, would investigate the influence of climate and conditions on synagogue architecture. How much of this was original and how much borrowed, consciously or not? Did its development run parallel with the mosque and church, adopting features from both? Or did it escape wholly foreign influences and develop along its own lines? What, further, was the origin of the synagogue's interior arrangement and what principles underlay its entire construction.

The original synagogue is traced in legend to King Jehoiachin of Judah, who, a captive in Babylonia, founded such a place of assembly in the district of Nehardea. Certainly places of worship of some character must have been established in the land of the captivity, and the institution was probably transplanted to Palestine on the return. Ezra is expressly mentioned (Neh. viii.) as calling the people to prayer and instruction, he himself reading the Law, as he and the heads of the community stand upon a wooden platform in the centre of the assembled worshippers. The intellectual character of the synagogue, which was not for prayers only, was thus early emphasised.

The spread of the synagogue was rapid, even before the final downfall of the temple. It must have been a public necessity, to infer from references in the Talmud to 480 synagogues in Jerusalem which were required for the host of foreign Jews who visited the temple when its sacrificial service was in full swing. Thus in the shadow of the larger house were synagogues of the Alexandrians, Libertines, Cyrenians, Elymaeans and Asiatics. In Egypt, where there lived according to Philo nearly a million Jews, was a famous synagogue, the Basilica, in Alexandria, one of the wonders of its age. Many are the allusions in the New Testament to synagogues in Damascus, Antioch, Athens, Corinth and elsewhere, outside the limits of Palestine, and to Nazareth and Capernaum upon its soil. In the reign of Augustus Caesar Rome had many synagogues, which led to the conversion of some men and women of prominence, as the Romans of both sexes found pleasure in visiting the places of worship, even if in later years the Jew and his festivals became the sport of the satirists. When the Christians of Rome in after centuries burnt down a synagogue and Maximus, the usurper, commanded the Roman Senate to rebuild it at the expense of the State, he was termed in derision a Jew by Ambrosius of Milan. Gradually to the east and the west and the isles of the sea the synagogue spread, and whether by the running stream or seashore, to admit of ablutions, in crowded cities or in forest or deserted village far distant from the track of the caravan, it resisted every attack and became the people's stronghold.

As was the custom among Christian and Mohammedan, the synagogue was often built close to the tombs of famous rabbis or ascribed to them as founders. The celebrated Petachia in his travels, towards the end of the twelfth century, tells of seeing at Nisibis two synagogues erected by Ezra the Scribe, and at Bagdad three, including the one which tradition refers to Daniel. At Tiberias he visited the synagogue founded by Joshua, and at Damascus the four reared by Elieser ben Asariah, a rabbi of the first Christian century. Petachia was no Munchausen, but gave the story as he was told. Alexandria has a so-called Elijah synagogue, which derives its name from the legend that Elijah dwelt for a time on the spot. Into its neighbouring houses weak and ailing Jews and Mohammedans are piously borne in the fond hope that Elijah, who, among other traditional qualities, restores to health, may heal their wounds and infirmities. You can still be shown at Tiberias Rabbi Meir's synagogue, and near Safet the synagogue ascribed to the illustrious Simon ben Jochai.

The list of famous synagogues, while not lengthy, includes some of historic interest. It begins with the basilica of Alexandria, which fell when the prosperous

Jewish community vanished in a sudden whirlwind of persecution (about 110 of the common era). To paraphrase the description in the Talmud, he who never beheld it never saw the majesty of Israel. It was like a basilica, colonnade within colonnade, crowded often with a host of people twice as large as departed with Moses from Egypt. There, too, could be seen golden chairs inlaid with precious stones corresponding in number with the seventy elders of the Sanhedrim, the cost of each seat being estimated at twenty-five million golden denarii. On an elevation of wood in the centre stood the choir leader. Each guild—for the different arts and trades had their separate guilds before the practice arose in the German Mediæval towns, with which it is usually associated—had its own place, so that a stranger might recognise his own trade and join his comrades. The responses of the vast congregation had to be directed by a flag signal—so immense was the edifice.

One is tempted to dwell at length on the varied fortunes of the synagogue and the legends that twine around the old structures, but a subject of wider interest must be considered—its architecture. One might infer from popular impressions of Jewish exclusiveness that the synagogue had its special form of architecture from which a departure was heresy. The fact is there is no distinctly Jewish architecture—it is eclectic and varies with the environment. In Jerusalem an old synagogue has the appearance of a mosque. The interior of the Romanesque synagogue of Regensburg, which centuries ago fell a prey to the flames, had the lines of the cathedral of Spire. The St. Petersburg synagogue has unmistakably the characteristic exterior of a Russian Greek church. Perhaps the Gothic and Moorish in varied modifications are seen most frequently, but although the arch, the dome and the minaret are often presented, the steeple and the belfry are absent. Perhaps the synagogue is hospitable enough to adopt these in the future.

The synagogue ruins in Galilee, dating from 150 to 300 of the common era, are of Roman character in their masonry, moulding and ornamentation—proving how early current styles were adopted. Toledo's famous synagogue, changed into a church in 1405, and known as Santa Maria la Blanca, is built after the most approved Moorish-Spanish design. Its plan is that of a basilica, the ground floor tiled, being an oblong square about 90 by 65 feet, divided into five naves or aisles and subdivided by four rows of octagonal pillars, nine in each row. Horseshoe arches of peculiar Moorish pattern rise from these columns. Over the arches, whose spandrels are carved into elegant rose-patterns, is placed a second arcade, ornamented with pure Byzantine work, appearing like stone-lace. A third series of stalactite archlets rests upon double pillarets, crowned by an elaborate frieze reaching to the roof. This roof, though of wood, has the durability of rock, and, black with age, still show traces of gold ornamentation. The edifice was used as a Magdalen Asylum in 1550, and on the French invasion in 1792 was appropriated for military barracks.

The latest synagogues, built on the broad places of the chief cities and no longer hidden in the narrow Ghetto, represent all styles of architecture. The Classic, the Renaissance, the Byzantine, the Romanesque, with a blending of the Gothic and the Moorish, can be found in all directions. The new synagogues in Szegedin and Temesvar; in Berlin, Strasburg and Cologne; in Florence, Rome and Turin; with similar edifices in Budapest, Breslau, Glogau, Hanover, Königsberg, Munich, Paris, Vienna and Warsaw, show freedom and beauty in their construction. The same variety of style is illustrated in American synagogues and temples.

A word only in this connection as to the interior arrangement that reproduces in certain features the lines of the older tabernacle, which itself suggested interior arrangements in Solomon's Temple. In the centre of the main floor is usually an elevated platform from which the prayers are read. Directly facing the entrance from the vestibule, which is generally at the western end, so that the synagogue may face the east, is the Ark, or receptacle for the scrolls of the Law or Pentateuch, before which is hung a curtain. In the old synagogues there was either a latticed gallery or a special room for women worshippers. In many of the later synagogues, reading desk and pulpit are combined before the Ark, while in reformed American congregations family pews have been introduced, thus doing away with the Oriental feature of the women's gallery. It can readily be seen how Ark, curtain, gallery and columns lend themselves to splendid and unique ornamentation. Although the plastic art has re-

* From an illustrated article by Mr. Abram S. Isaacs in the *Architectural Record* (New York).

ceived little encouragement, carved wood and rich marbles are generally employed, onyx, gold and mosaics being used with fine effect. In the Orient many a synagogue whose exterior is sombre and uninviting has magnificent interior furnishings and decorations. The Italian synagogues, in particular, in a land where artistic genius is almost universal, are remarkable for the costly embroidered curtains and architectural beauty of the Ark, in whose enrichment a generous rivalry is exhibited. In this respect a synagogue appears like a votive shrine, and elaborate gifts, often women's exquisite handiwork, are treasured from generation to generation until they acquire a venerable age, to become a powerful object-lesson to the young, and to the old worshipper matters for pious contemplation.

SELSEY IN SUSSEX.

A LECTURE on "Selsey: Episcopal, Manorial and Parochial," was given at the Chichester Institute by the Rev. J. Cavis-Brown, M.A., rector and vicar of Selsey. He began by relating his disappointment when appointed rector in 1902 at finding no parish records except the registers (the earliest of which was missing) and the tithe map. However, he almost immediately discovered the National School trust deeds, which had been lost for over sixty years, and gradually diligent search in Selsey, Chichester, London and elsewhere had brought to light many other documents relating to Selsey, several of which had now been restored to the parish. The bulk of the records, however, had been lost for ever through the carelessness and ignorance of their custodians. There should be written large on all parish books what was inscribed in the Rotherfield parish account book, "February 26, 1509. To remain in the church and never to be taken home to the churchwarden's house." It should also be forbidden to keep parish documents in the parsonage house, except in a proper fireproof safe. The lecturer, according to the *Sussex Daily News*, then dealt fully with the interesting geological features of Selsey and Bracklesham Bay, showing sectional maps, views of fossils, erratic blocks, early coins, &c. He next told the story of the Saxon settlement A.D. 477, and of the coming of St. Wilfrid, and the founding of the bishopric of Selsey, A.D. 680, and showed the land grant of Oslac, Duke of the South Saxons, in the year 780, with its confirmation by Offa, king of Mercia. The lecturer himself had been the means of finding this charter in 1891 in the cathedral, after it had been lost since the time of Dean Hayley, that is, about 190 years. There were twenty-one bishops of Selsey before the see was moved to Chichester in 1075, and Bernardi's portraits of these with a portrait in their midst of the present Bishop of Chichester, the ninety-second from St. Wilfrid, excited much interest.

The Selsey cathedral was now probably under the sea, more than a mile from the shore, and its only remains were the font, several coffin slabs, and old worked stones in the parish church, besides the ancient sculptures in the south choir aisle and the long chest under the north-west tower of Chichester Cathedral. The Domesday record of Selsey, in 1086, was explained and reasons given for believing that the fleet of William the Conqueror, after the battle of Hastings, had come either to Selsey or Chichester Harbour, or to both, during the advance on London. A most interesting map of the island of Selsey in 1672 was presented on the lantern screen. This showed all the ancient common fields with tenants' arable strips and surrounding common pasture in the marsh, the lord's manor-house, park and demesne, the tidal water mill, the parish church and rectory house, the haven, making Selsey a complete island, the ferry and other features of an early manor. On this map the coast-lines in 1820 and 1905 had been marked, so that the loss of land from sea encroachment from 1672 could be exactly calculated at any point. The sea seemed to have advanced about 6 feet and washed away 3 acres yearly.

The lord of the paramount manor from A.D. 680 had been the bishop, by whose generosity there were also three prebendal sub-manors and the quasi-manor of Medmeney. From the first year of Queen Elizabeth until Charles I. the manor was vested in the Crown, and came into the Morley family (of Halnaker) in 1635. Its descent thence was carried through the families of Elson, Walter, Glanville, Peachey (Barons Selsey) and others to the present time. The different kinds of tenancies and the curious prevailing custom of "Borough English" were fully explained, and the story of the various attempts to reclaim the harbour, completed about 1875, was told. Numerous facsimiles of stewards' accounts, court rolls, parish registers and other

records from the thirteenth to the nineteenth centuries were shown. Views also of the old parish church, which was taken down and rebuilt stone by stone nearer the village in 1866, and of the new church, the old and new rectory houses, the manor-house, the windmill, Bible Christian chapel, &c., made much more interesting a lecture full of valuable history and quaint details. Lists of rectors, vicars, curates and prebendaries were taken back to the thirteenth century, and a nearly complete list of churchwardens had been made from 1530 to 1906. Documents were also presented showing the important part the churchwardens played in the parish until quite recent years. The lecturer finally announced that he proposed to publish next year a "History of Selsey," illustrated with most of the pictures shown that evening.

GENERAL.

The Restoration Committee of Peterborough Cathedral are issuing an appeal for funds to complete the work of restoring the fabric, undertaken in 1883, when the central tower threatened to collapse. Since then nearly 100,000l. has been raised.

Mr. Edward A. Hoffer, architect, 36 All Saints Green, Norwich, has composed and published a march for Christmas which he has called "Alpha and Omega."

Mr. Francis F. Fox, M.I.C.E., has written a letter on behalf of the Government Railway Department of Switzerland to contradict once and for all the disparaging statements which from time to time appear as to the danger and failure of the Simplon tunnel. Mr. Fox will read a paper on the tunnel before the Institute of Civil Engineers on January 8.

Amongst the Wills proved last week was that of Mr. Robert Alexander Bryden, architect, Glasgow, who left 27,551l.; and of Mr. John Thomas Micklethwaite, F.S.A., of 1 Victoria Street and 27 St. George's Square, Westminster, who left 12,265l.

The Edinburgh University authorities state that a gift had been made to the department of engineering by Messrs. D. & C. Stevenson, civil engineers, Edinburgh, of a bust of Robert Stevenson, engineer.

Among the Discoveries in the course of the excavations and renewals at Winchester, the workmen found a yard measure made of boxwood in perfect preservation, with the inches, half-inches and quarter-inches marked, and at the end the figures 36. Tested by the existing yard this old one is slightly shorter; perhaps the wood has shrunk during the long internment. It is difficult to give the age of the yard. Bishop Langton's chantry was finished before his death (1500), and presumably a craftsman forgot his rule, which was buried accidentally.

Sir Andrew Noble, the new laird of Ardkinglas, proposes to carry out the work of restoration on the old castle of Dunderave, near the head of Loch Fyne, in such a way as to arrest the progress of decay, which is slowly but surely reducing this Highland keep to a state of complete ruin. This ancient stronghold was built in 1596, and was the seat of the MacNaughtons, formerly one of the most powerful clans in Argyleshire.

The Antiquarian Committee of Cambridge University recommend that they be authorised to hire an old malting-house at Newnham for a period of five years, in which to store some of the collections under their charge. The need for a new museum of ethnology and archæology is, indeed, becoming pressing. The University has assigned a site for such a building, and a building fund has been started by Baron von Hügel, curator of the museum, but until that fund be very considerably augmented the University will be compelled to store away many of its treasures in a building inaccessible to students and quite unworthy of the treasures it contains.

Mr. Francis Howard has been elected honorary secretary of the International Society of Sculptors, Painters and Gravers, in succession to Mr. T. Stirling Lee.

A Baldacchino supported by eight columns has been set up in the Westminster Cathedral. A new altar consisting of a single block of Cornish granite has also been introduced.

The Hexham Abbey Restoration Committee have accepted the tender of Messrs. Holloway & Co., of London, for the erection of the new nave. The architect's estimate was 22,000l.

Mr. Stanley Selwyn, architect and surveyor, Reigate, has opened offices at 4 Adam Street, Adelphi, W.C.

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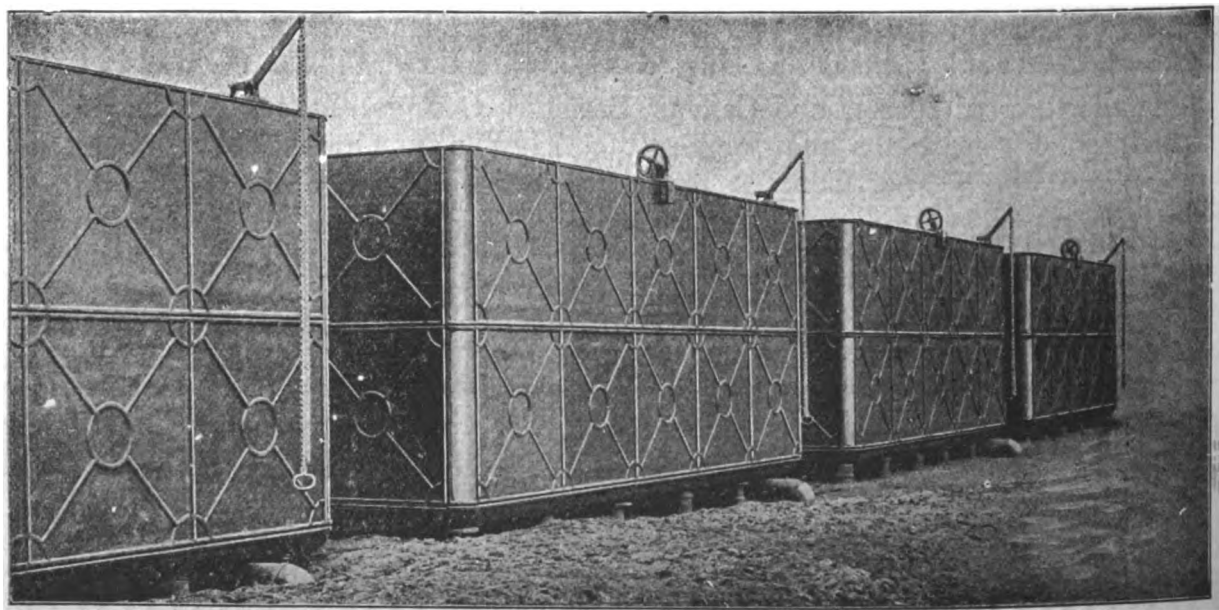
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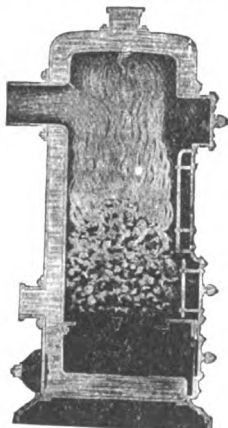
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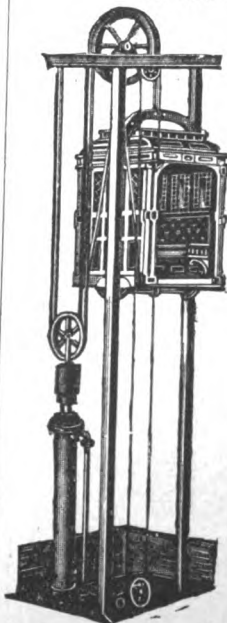
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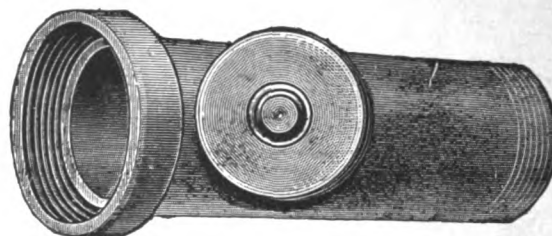
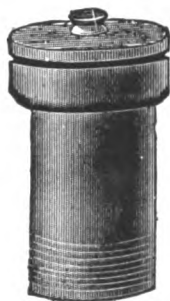
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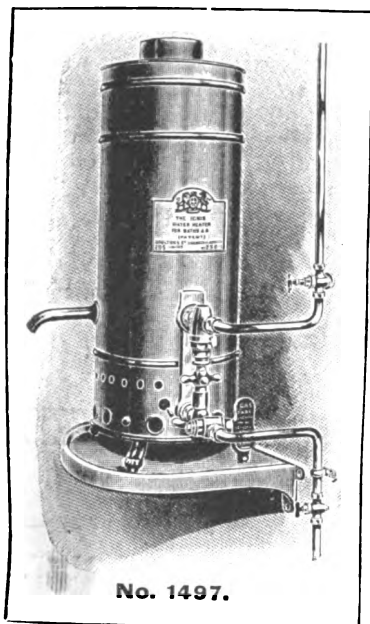
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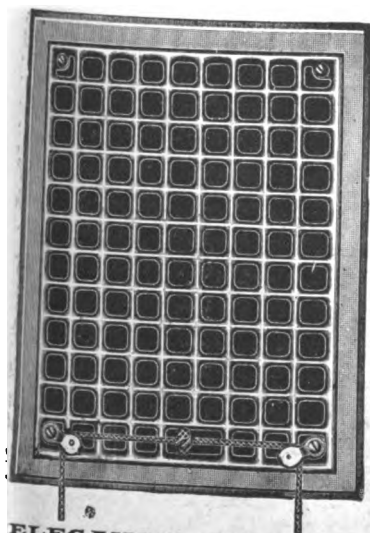
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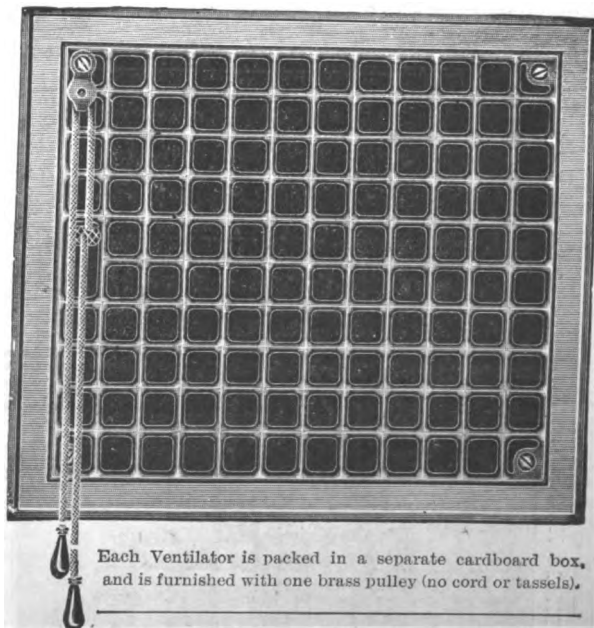
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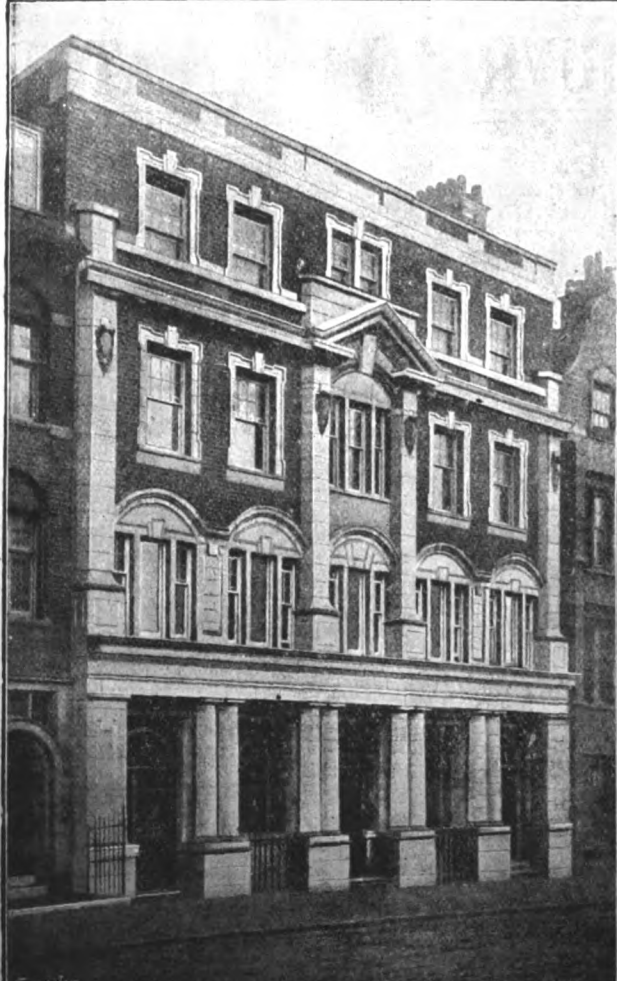
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FRIDAY, JULY 6, 1906.

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NOTICE TO ADVERTISERS.

Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further

answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

TENDERS, ETC.

** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

DOLGELLEY.—July 14.—The Dolgelley Urban District Council invite the terms of engineers for preparation of a scheme for sewage disposal, &c. The fee for each heading must be stated separately, and must include for all out-of-pocket expenses incurred in visiting the district, and otherwise in connection with the preparation of the scheme and the carrying-out of the works. The Council do not bind themselves to accept any of the terms offered. Mr. Richard Barnett, clerk, Queen's Square, Dolgelley.

OLD TRAFFORD.—July 10.—For a new institution for the Board of Management of Henshaw's blind asylum. Premiums of 100l., 50l. and 25l. The competition will be restricted to practising members of the Manchester Society of Architects and others practising in that city. Mr. J. Holden will act as assessor. Apply for particulars before July 10 (with a deposit of 1l. 1s.) to Mr. J. R. Burne, 1 St. Peter's Square, Manchester.

CONTRACTS OPEN.

BATLEY.—July 9.—For house and stable in Knowls Street. Mr. John H. Brearley, architect, Commercial Street, Batley.

BATLEY.—July 11.—For the erection of villa residence at Mount Pleasant. Messrs. Walter Hanstock & Son, architects, Batley.

BATLEY.—July 14.—For all trades required in the extension of the Batley and district hospital. Messrs. Walter Hanstock & Son, architects, Batley.

BECKENHAM.—July 16.—For the erection of extensions to and the modernisation of the existing boys, girls and infants' departments of the public elementary schools, Bromley Road. Deposit 5l. Mr. John A. Angell, surveyor.

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BEDHAMPTON.—July 16.—For sundry small works of ventilation, conversion of privies to water-closets, new offices and drains and new iron boundary fences to the Bedhampton Council school, Hants. Deposit 1*l.* 1*s.* Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

BELFAST.—July 19.—For the erection of a dwelling-house near Cultra railway station. Deposit 1*l.* 1*s.* Messrs. Graeme-Watt & Tulloch, architects, 77A Victoria Street, Belfast.

BRADFORD.—July 7.—For the erection of mechanics and tinner's workshop in Frederick Street and Eastbrook Lane. Messrs. T. C. Hope & Son, architects, 23 Bank Street, Bradford.

BRIDGEND.—July 7.—For the erection of a store-room at the cottage homes, for the Guardians. Mr. P. J. Thomas, architect, Bridgend.

CAMBORNE.—July 7.—For proposed alterations and additions to the Rosewarne House, Camborne, Cornwall. Mr. Sampson Hill, architect to the committee, Green Lane, Redruth.

CLECKHEATON.—July 16.—For the erection of a four-storey mill and offices at Prospect Mill. Messrs. Howorth & Howorth, architects, surveyors, &c., Old Bank Chambers, Cleckheaton.

CROYDON.—July 10.—For the erection of a school for 1,200 children in Davidson Road. Names before June 20. Deposit 1*l.* 1*s.* The Education Office, Katharine Street, Croydon.

DENMEAD.—July 16.—For sundry small works of additional window to classroom, ventilation, external and internal repairs, and internal painting to the Denmead Council School, Hants. Deposit 1*l.* 1*s.* Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

DEWSBURY.—July 12.—For the erection of a head post office. Deposit 1*l.* 1*s.* H.M. Office of Works, &c., Storey's Gate, S.W.

DURHAM.—July 10.—For alterations to buildings connected with Johnstone technical school. Mr. W. Rushworth, architect, Shirehall, Durham.

ECCLES.—July 7.—For the erection of the Carnegie public library in Church Street. Deposit 2*l.* 2*s.* Messrs.

Potts, Son & Hennings, architects, 34 Victoria Buildings, Victoria Street, Manchester.

EDINBURGH.—July 9.—For brick, joiner, plumber and slater's work in erection of new firewood factory buildings, Craighleith Poorhouse, Comely Bank. Mr. R. M. Cameron, architect to the Parish Council, 53 Great King Street, Edinburgh.

EXETER.—July 10.—For alterations and additions to 4 and 8 Higher Summerlands, for the Guardians. Deposit 1*l.* 1*s.* Mr. R. M. Challice, architect and surveyor to the Council, 14 Bedford Circus, Exeter.

GRATELY.—July 9.—For sundry small works of external and internal repairs, gravelling, lavatory accommodation, rebuilding, lighting, ventilation and new offices to the Grately Council school, Hants. Deposit 1*l.* 1*s.* Mr. W. J. Taylor, county surveyor, the Castle, Winchester.

GREAT DUNHAM.—July 13.—For the enlargement of the Great Dunham school, Norfolk. Deposit 1*l.* 1*s.* The Secretary, Norfolk Education Committee, 57 London Street, Norwich.

HALIFAX.—July 7.—For setting two Cornish boilers, &c., at the workhouse, Gibbet Street. Mr. W. Clement Williams, architect, 29 Southgate, Halifax.

HALIFAX.—July 14.—For the mason, carpenter and joiner, plasterer and slater, plumber and glazier's work in erection of a villa at Holywell Green. Messrs. Chas. F. L. Horsfall & Son, architects and surveyors, Lord Street Chambers.

HITCHAM.—July 12.—For the erection upon land at Hitcham, Slough, of a house for the sewage works superintendent, for the Eton Rural District Council. The Office of the Engineer, 160 High Street, Slough.

HOUNSLOW.—July 11.—For carrying-out alterations and improvements at the Isleworth Public Hall. Deposit 1*l.* 1*s.* The Surveyor to the Council, Council House, Hounslow.

IRELAND.—July 10.—For the erection of an operation room at the infirmary of the Tullamore workhouse. The Board-room, Tullamore Workhouse.

IRELAND.—July 10.—For the erection of a side chapel and sacristies, &c., in connection with St. Colman's cathedral, Queenstown. Deposit 3*l.* 3*s.* Messrs. Ashlin & Coleman, architects, 7 Dawson Street, Dublin.

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KING'S HEATH.—July 25.—For the erection of six homes for epileptics and other works on the Monyhull Hall estate, near King's Heath, Birmingham. Apply to Mr. R. J. Curtis, clerk to the joint committee, Guildhall Buildings, Birmingham, and deposit 25/ before June 30.

LEEDS.—July 20.—For the construction of four filter-beds, clear-water tank, meter-house, the making of roads, laying of pipes and drains, &c., in connection therewith at the site of their new filter-beds, Otley Road, Headingley, Leeds, for the waterworks committee. Deposit 5/ Mr. Chas. G. Henzell, M.I.C.E., waterworks engineer, Municipal Buildings, Leeds.

LONDON.—July 10.—For erecting two public elementary schools, one to accommodate 836 children on the Lawn Lane site, South Lambeth Road, S.W., and the other to accommodate 804 children on the Franciscan Road site, Tooting Graveney, S.W., for the London County Council. Deposit 5/ in each case. The Education Offices (Architect's Department), Victoria Embankment, W.C.

LONDON.—July 11.—For alterations in connection with two wards at the South-Western fever hospital, Landor Road, Stockwell, S.W., for the Metropolitan Asylums Board. Deposit 1/. Messrs. T. W. Aldwinckle & Son, architects, 20 Denman Street, London Bridge, S.E.

LONDON.—July 12.—For the construction of an underground convenience at Kennington Gate. Deposit 1/ 1s. Mr. Henry Edwards, C.E., borough engineer, 346 Kennington Road, S.E.

LONDON.—July 14.—For the construction of an underground convenience adjoining Uxbridge Road and within Kensington Gardens. Deposit 1/. Mr. E. B. B. Newton, borough surveyor, Town Hall, Paddington.

LONDON.—July 16.—For the erection of new school, Drayton Green, West Ealing. Deposit 5/ 5s. Mr. Charles Jones, borough engineer, Town Hall, Ealing, W.

LONDON.—July 17.—For certain works in alterations and additions to the Brettenham Road school, together with the

annual cleansing and repairs at the Brettenham Road and Croyland Road schools, Edmonton. Applications by July 2. Mr. Henry W. Dobb, architect, Town Hall, Lower Edmonton.

LONDON.—July 17.—For the erection of a dwelling-house at No. 80 Upper Thames Street, E.C., for the Corporation of London. Deposit 3/ 3s. The City Engineer, Guildhall, E.C.

LONDON.—July 26.—For the erection of a central library building in Mare Street, Hackney. Deposit 1/ 1s. Mr. H. A. Crouch, architect, 12 Gray's Inn Square, W.C.

LUDDENDEN FOOT.—July 7.—For rebuilding a four-storeyed mill at Cooper House Mills, Luddenden Foot, near Halifax. Mr. W. Clement Williams, architect, 29 Southgate, Halifax.

MANCHESTER.—July 14.—For the erection of a manager's house at the Withington sewage works, Chorlton-cum-Hardy, for the rivers committee. The Secretary of the Rivers Department, Town Hall, Manchester.

MORESBY.—For the erection of stables and byres at High Common Gate farm, Moresby, near Whitehaven. Mr. J. S. Stout, architect, 36 Lowther Street, Whitehaven.

NEWCASTLE-ON-TYNE.—July 11.—For the work of re-modelling and extending the Mason Dinnington (mixed) Council school, situate near Newcastle-on-Tyne; also for the erection of a new infant Council school to accommodate 150 scholars. Deposit 2/ 2s. Applications, by June 28, to Mr. C. Williams, secretary to the education committee, Pearl Buildings, Newcastle-on-Tyne.

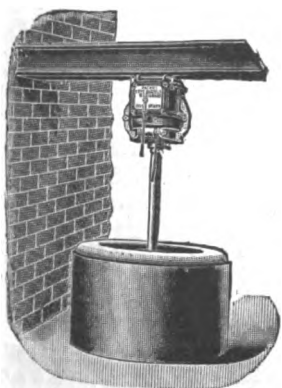
NEW MILLS.—July 13.—For the erection of a board-room at the workhouse. Mr. A. Walker, clerk, Spring Bank, New Mills.

ORSETT.—For alterations to West Thurrock and Purfleet Council schools. Mr. Christopher M. Shiner, architect, 6, 7 and 8 Crutched Friars, London, E.C.

OWSLEBURY.—July 9.—For the erection of offices and other small works at the Owslebury Council school, Hants. Deposit 1/ 1s. Mr. W. J. Taylor, county surveyor, the Castle, Winchester.

ROCHE.—July 14.—For the erection of a stable, piggery and wain house at Tregoss farm, in the parish of Roche, Cornwall. The Farmhouse at Tregoss.

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SCILLY BANKS.—July 14.—For the erection and completion of two dwelling-houses at Scilly Banks, near Whitehaven. Mr. Wm. Carmichael, architect, Parton, near Whitehaven.

SCOTLAND.—July 7.—For the construction of a timber meat-larder at Bangour village asylum, for the Edinburgh District Lunacy Board. Mr. Hippolyte J. Blanc, R.S.A., architect, 25 Rutland Square, Edinburgh.

SEASCALE.—July 11.—For the erection of two houses at Seascale, Cumberland. Mr. A. Huddart, architect, 9 Lowther Street, Whitehaven.

SLOUGH.—July 12.—For the erection of house for superintendent of sewage works, from plans by engineer. Mr. R. H. Barrett, clerk, Slough.

STRETTON.—July 7.—For alterations and improvements to Stretton Council school, near Burton, Staffordshire. Deposit 1*l.* 1*s.* Mr. Graham Balfour, director of education, Stafford.

TRURO.—July 7.—For alterations and additions to the Bella Vista College. Mr. Sampson Hill, architect to the County Education Committee, Green Lane, Redruth.

WALES.—July 7.—For schoolroom in connection with the Siloam Baptist chapel, Killay, near Swansea. Mr. Charles S. Thomas, architect and surveyor, Wind Street, Swansea.

WALES.—July 7.—For the conversion of Old Bethany chapel, Edward Street, Swansea, into a warehouse. Deposit 1*l.* 1*s.* Mr. Charles T. Ruthven, architect, Bank Chambers, Heathfield Street, Swansea.

WALES.—July 7.—For the erection of a block of three dwelling-houses on Kemys Fawr estate, Sebastopol, near Pontypool. Messrs. Fisher & Sons, architects, Club Chambers, Pontypool.

WALES.—July 11.—For the following works for the Glamorgan County Council, viz.—(1) Building a mixed and infants' school at Kingsbridge, Gorseinon, near Swansea; (2) building offices and heating-chamber and converting existing privies into water-closets, laying drains, &c., at

Panteg Council school, near Ystalyfera; (3) building cloak-rooms and heating chamber and various alterations at Dunvant Council school, near Swansea; (4) building a heating chamber at Gendros infants' school, Swansea; (5) heating the following Council schools with the low-pressure hot-water system:—Port Talbot Central, Panteg, Gendros (infants'), Coedffranc (girls'), Glais (near Clydach), Tynewydd (Ogmore Vale), and Miskin village; (6) cleaning and painting at other Council schools. Glamorgan County Offices, Westgate Street, Cardiff.

WALES.—July 17.—For reseating, &c., St. Athan Calvinistic Methodist chapel. Rev. D. Wynn Rees, Llancadle, near Cardiff.

WALES.—July 17.—For reseating, &c., Penmark Calvinistic Methodist chapel. Rev. D. Wynn Rees, The Manse, Llancadle, near Cardiff.

WALES.—July 23.—For the erection of (1) public offices; (2) stables and cartshed, together with boundary walls, for the Risca Urban District Council, Mon. Deposit 2*l.* 2*s.* Mr. A. J. Dardis, surveyor, Council Offices, Risca.

WAREHAM.—July 12.—For repairs and alterations at the workhouse. Mr. W. W. Fookes, architect and surveyor, Wareham, Dorset.

WEMBLEY.—July 17.—For the construction of 'about 50 yards lineal of concrete revetment wall with iron palisade fencing. Mr. Cecil R. W. Chapman, the surveyor, Public Offices, Wembley.

WESTON-SUPER-MARE.—July 10.—For making alterations and additions to the matron's house at the statutory hospital, and also for the erection of a three-stall stable at the rear of the fire station in Oxford Street. Mr. Hugh Nettleton, surveyor, Town Hall, Weston-super-Mare.

WOLVERHAMPTON.—July 11.—For structural alterations at two manual instruction centres and the erection of new centres at the rear of the higher grade school, New Hampton Road, Wolverhampton. Deposit 1*l.* Mr. T. H. Fleeming, architect to the committee, 10 Queen Square, Wolverhampton.

WORKINGTON.—July 7.—For alterations and additions to the Wesleyan mission hall, Westfield. Messrs. W. G. Scott & Co., architects, 2 Park Lane, Workington.

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TENDERS.

BRIGHTON.

For the erection of two pairs of farm labourers' cottages adjoining Warren Farm school. Mr. E. WRIGHT, architect.

Brown & Sons	£1,395	0	0
Penfold	1,347	0	0
Sattin & Evershed	1,325	0	0
Hockley & Co.	1,290	0	0
Duke	1,222	0	0
Oliver	1,129	13	0
Saunders Bros.	1,099	0	0
J. & W. SIMMONDS, Brighton (accepted)	1,089	0	0

CHELTENHAM.

For the erection of school buildings to accommodate 1,100 children. Messrs. CHATTERS & SMITHSON, architects, Cheltenham.

Broad, Ltd.	£16,580	0	0
Saunders & Sons	16,474	0	0
Stephens, Bastow & Co.	15,758	0	0
Davies & Sons	15,231	0	0
Pattison & Son, Ltd.	14,999	0	0
Lindsay & Sons	14,990	0	0
Pilatt	14,619	0	0
Cox & Sons	14,570	0	0
Holliday & Greenwood	14,377	0	0
Parnell & Sons	14,364	0	0
Skemp	14,199	0	0
Byard & Son	13,883	0	0
Jones	13,850	0	0
Channon & Son	13,849	0	0
Hopkins	13,750	0	0
Estcourt & Sons	13,600	0	0
Collins & Godfrey	13,586	0	0
Billings & Sons	13,574	0	0
Dallow & Sons	13,344	0	0
Norman	13,258	0	0
Cuthbert	13,130	0	0
Davies	12,988	0	0
Crane, Ltd.	12,974	0	0
WRIGHT, Leicester (accepted)	12,900	0	0

DOWNE.

For the erection of a new school to accommodate 120 children at Downe, near Bromley, Kent, for the Kent education committee. Mr. WILFRID H. ROBINSON, architect, 44 Bedford Row, London, W.C.

Chapman	£2,547	14	0
Owen & Sons	2,250	0	0
Smith	2,208	3	1
Philpot	2,185	0	0
Selby	2,134	0	0
Crosley & Son	2,080	0	0
Patman & Fotheringham, Ltd.	2,023	0	0
Treasure Bros.	1,950	10	0
Hyde	1,944	0	0
Nightingale	1,936	0	0
Zealey	1,922	15	6
J. & E. Bowyer	1,893	0	0
Hall & Jacobs	1,887	15	0
Avard	1,884	0	0
Fryer & Co.	1,881	0	0
Holt & Son	1,880	0	0
Knight	1,879	0	0
Tong	1,850	0	0
Page & Sons	1,848	0	0
Thomas & Edge	1,834	0	0
Blay	1,826	0	0
Skinner	1,808	0	0
Wallis	1,788	0	0
Davison	1,675	0	0
Podger & Son, Bromley (provisionally accepted)	1,670	0	0

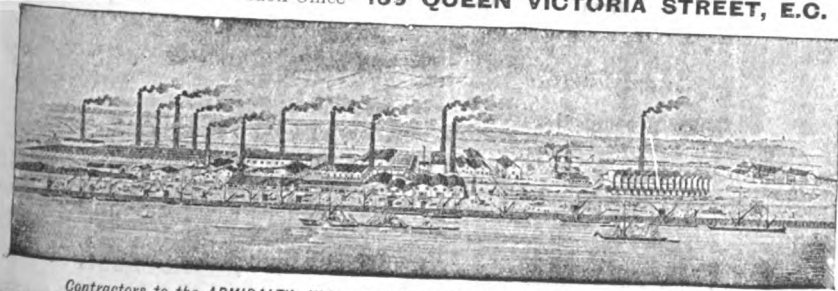
FALMOUTH.

For the erection of girls' school. Mr. S. HILL, architect, Redruth.

Bond	£4,200	0	0
Odgers	2,920	0	0
Williams & Co.	2,863	0	0
Abell	2,800	0	0
Rickard	2,676	0	0
Trehane & Son	2,669	0	0
Hodge & Mitchell	2,548	0	0
BENNETT, Bodmin (accepted)	2,516	0	0

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FENTON.

For sewage-disposal works, for the Urban District Council.

Quantities by Mr. S. A. GOODALL, surveyor.

The British Electric Equipment Co., Ltd.	£34,778	3	8
Moffat	24,056	2	9
Rutter	24,000	0	0
Godwin	23,898	0	0
Johnson Brothers	23,876	0	0
Mackay & Son	23,432	6	0
Buckley	23,313	10	7
Dawson, Ltd.	23,288	2	0
Braithwaite & Co.	23,021	12	9
Ball & Robinson	22,910	0	0
J. & J. Warner	22,288	0	0
Mitchell & Son	22,150	0	0
Cunliffe	22,050	0	0
Freeman & Sons	21,738	0	0
Bentley	21,589	6	6
Barke	21,501	0	0
Holloway	21,450	0	0
Yoxall	21,200	0	0
Laing & Son	21,138	0	0
Bennion	21,125	0	0
Tomlinson	20,850	0	0
Sanders & Torrance	19,950	0	0
Wilton, jun.	19,800	0	0
Owens	19,799	0	0
BAGNALL, Fenton (accepted)	19,746	0	0

FISHGUARD.

For the erection of Baptist chapel. Messrs. G. MORGAN & SONS, architects, Carmarthen.

Harris & Eveston	£1,861	0	0
Roberts	1,614	0	0
Thomas	1,597	0	0
Davies, George & Thomas	1,595	2	0
Williams & Howell	1,570	10	6
Morgan & Sons	1,470	0	0
THOMAS, Letterstone (accepted)	1,394	0	0

GUILDFORD.

For surface-water drainage works at the Charlotteville and Guildford Park estates. Mr. C. G. MASON, borough engineer.

Edwards & Co.	£2,822	12	6
Osenton	2,805	13	0
Wheeler	2,758	11	4
Pearce	2,693	6	4
E. & E. Iles	2,654	17	5
Free & Sons	2,638	0	0
Bell & Sons	2,628	2	0
Douglas	2,595	0	0
Smith & Co.	2,514	1	0
Rayner	2,430	3	5
Rutter	2,429	2	4
Turner	2,398	5	5
Grounds & Newton	2,264	3	0
Osman	2,260	0	0
Streeter & Co.	2,224	3	0
James & Hebburn	2,215	0	0
May	2,210	0	0
Franks	2,201	5	8
JACKSON, Plaistow (accepted)	2,176	10	8

HOLYWELL.

For alterations and extensions to Intermediate school. Mr. SAMUEL EVANS, architect, Mold.

Edwards	£2,750	0	0
Evans	2,357	11	0
Sibeon Bros.	2,239	0	0
Spencer	2,179	0	0
Wright & Sons	2,082	0	0
Mayers & Son	2,079	0	0
Wood & Co.	2,070	0	0
Lloyd	2,050	0	0
Jones	2,040	0	0
R. Williams	1,997	0	0
P. WILLIAMS, Overton, Ellesmere (accepted)	1,776	13	10

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HAWKINGE.

For enlargement to Council school. Mr. ANDREW BROMLEY, architect, Folkestone.

Gosby	£924	10	6
Horton	827	0	0
Denne & Son	815	0	0
Howland	798	0	0
Wallis & Sons	794	0	0
Castle & Son	788	0	0
Hayward & Paramor	769	0	0
Sturpy Building Co.	756	0	0
Binfield	732	0	0
WEBSTER, Folkestone (accepted)	725	0	0

HORSFORTH.

For extension of Springfield convalescent home. Messrs. W. A. HOBSON & Co., architects, Leeds.

Accepted tenders.

Simpkiss, builder	£2,603	11	6
Verity & Sons, joiner	1,271	7	9
Hemsley & Son, plumber	695	12	6
Laycock & Son, plasterer	421	6	10
Roylance & Horsman, painter	198	1	0
Atkinson & Son, Ltd., slater	132	0	0

HYTHE.

For erection of Council school to accommodate 250 infants. Mr. A. BROMLEY, architect, Folkestone.

Baker & Co.	£2,765	10	0
Godwin	2,657	0	0
Binfield	2,649	0	0
Smith & Son	2,575	0	0
Avard	2,559	0	0
Hayward & Paramor	2,549	0	0
Webster	2,546	0	0
Browning	2,511	0	0
Jenner	2,500	0	0
Denne & Son	2,488	0	0
Parsons	2,480	0	0
Gosby	2,477	7	0
Howland	2,450	0	0
Lewis & Sons	2,450	0	0
Castle & Son	2,399	0	0
Grigg	2,380	0	0

KEMPSTON.

For carrying-out contracts for the Kempston Urban District Council:—(a) Provision, delivery, laying and jointing in the rural district of Bedford of about 550 tons of cast-iron pipes (principally 7-inch and 8-inch) and for the construction of certain auxiliary works; and (b) supply, delivery, laying and jointing of about 5 miles 325 yards of 7-inch, 6-inch, 4-inch and 3-inch cast-iron socket pipes, with appendages, including all necessary sluice and air valves, hydrants and other works, for the water supply of the urban district of Kempston, Mr. G. F. DEACON and Messrs. BEESLEY, SON & NICHOLS, engineers, Westminster.

	Contract A.	Contract B.
Marland	£10,805 5 4	£5,247 2 0
Hay & Co.	6,900 0 0	4,487 0 0
Jewell	6,524 6 3	3,349 12 6
Dickson	—	3,326 17 10
Jackson	6,187 7 3	2,793 18 0
Meredith	6,184 16 7	3,114 9 6
Trimmer	6,126 0 0	3,739 0 0
Jenkins & Son	5,946 0 0	2,747 3 8
Wallis & Co.	5,833 0 0	3,296 0 0
Powell	—	3,269 11 0
Wilmott	5,813 13 8	3,458 0 0
Johnson Bros.	5,804 5 0	3,036 0 0
Moffett	5,736 9 7	3,198 11 6
Moran & Son	5,700 0 0	3,588 0 0
Nunn	5,692 12 0	3,225 2 0
Patrick	5,611 0 0	2,876 0 0
Smart	5,499 17 3	3,498 0 0
Jones & Son	5,485 3 4	3,162 10 0
Mitchell & Son	5,471 0 0	3,315 0 0
Thurman	5,459 9 0	3,149 0 0
Jackson	5,428 6 9	—
Tomlinson	5,408 5 4	2,799 0 0
Smith & Co.	5,379 8 0	3,186 8 0
Dobson	5,295 13 5	2,900 2 11
Streeter & Co.	5,259 10 2	3,026 11 8
Hodgson & Son	5,239 12 10	3,080 13 0
Tabor	5,173 3 9	3,390 5 0
Brebner & Co.	5,170 0 6	2,779 10 0

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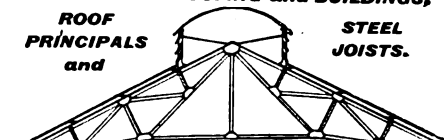
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KEMPSTON—continued.

Holliday & Greenwood	£5,146	0	0	£3,233	0	0
Ray	5,057	17	7	2,842	17	0
Kemp Bros.	4,974	0	0	2,925	0	0
Crawford	4,950	19	4	2,800	0	0
Davies, Ball & Co.	4,924	4	3	3,132	12	2
ASHLEY, Mansfield (accepted)*	4,855	18	3	*2,688	4	0
DEAN, LTD., 436 Birkbeck Bank Chambers, W.C. (accepted)*	*4,820	6	7	2,892	10	6
Collingwood & Co.	—			2,890	8	0
Egan & Son	4,542	11	8	2,946	3	4

LEEDS.

For the erection of two factories. Mr. PERCY ROBINSON, architect and surveyor, Leeds.

Accepted tenders.

Dews & Co., brickwork and mason	£1,410	0	0
Trickett & Son, carpenter and joiner	750	0	0
Bagshaw & Son, ironfounder	719	0	0
Lindley, plumber	224	0	0
Atkinson & Son, slater	60	0	0
Coates & Sons, painter	55	0	0

LITHERLAND.

For the erection of elementary school.

Thornton & Sons	£13,979	0	0
Johnson	13,820	0	0
Hughes & Stirling	13,360	0	0
Travis & Wevill	13,290	0	0
Desoer	13,161	0	0
Merritt	12,990	0	0
Spencer	12,975	0	0
Fowler	12,960	0	0
Greene & Co.	12,820	0	0
Tinline	12,802	0	0
Paterson & Son	12,777	0	0
Parker & Son	12,696	0	0
J. & E. Rimmer	12,610	0	0
Webster	12,445	0	0
Wearing & Sons	12,398	0	0

LITHERLAND—continued.

Graham & Sons	£12,397	0	0
Hall & Son	12,327	0	0
J. & G. Chappell	12,270	0	0
Costain & Sons	12,097	0	0
Kelly	11,970	0	0
MUSKER, Bootle (accepted)	11,878	0	0

LONDON.

For supply of three suction grids and three delivery grids, with valves, at the Crossness pumping station.

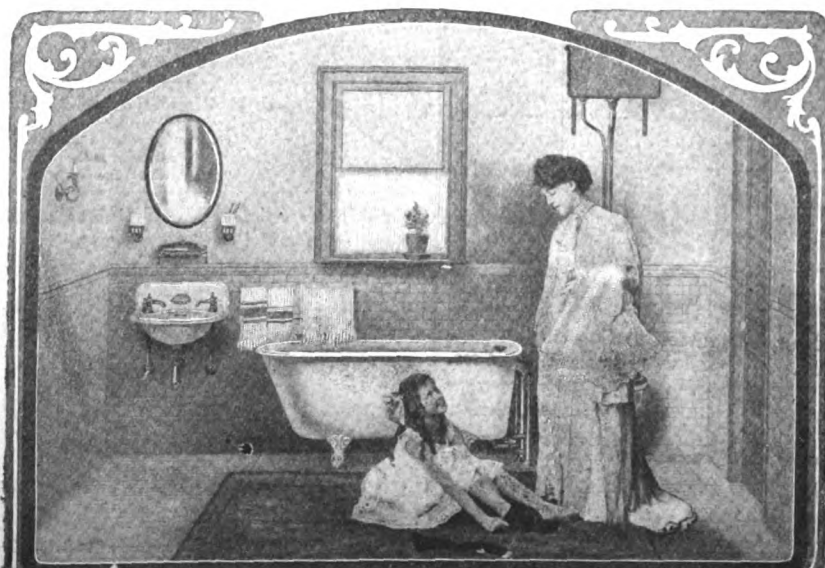
Thames Ironworks, & Co.	£315	6	0
Hathorn, Davey & Co.	295	0	0
Fleming & Ferguson	280	0	0
Yates & Thom	279	0	0
Hunter & English	275	0	0
Clayton, Goodfellow & Co., Blackburn (recommended)	200	0	0

For the adaptation for park purposes of mansion and stable at Springfield Park and the erection of conveniences.

Patman & Fotheringham	£1,080	0	0
Grover & Son	1,058	0	0
Clemens	1,010	0	0
Martin, Wells & Co.	979	0	0
Jackson & Co.	939	0	0
Stevens & Sons	928	0	0
J. & C. Bowyer	887	0	0
Barrett & Power, Hackney (recommended)	600	0	0

For the erection of sorting office, Palmer's Green.

Paterson	£1,813	5	6
Martin, Wells & Co.	1,800	0	0
Gathercole Bros.	1,700	0	0
J. & W. Drake	1,690	0	0
Matlock & Parsons	1,679	0	0
Perry & Co.	1,661	0	0
Ansell	1,650	0	0
F. & S. Foster	1,598	0	0
Pollard & Brand	1,580	0	0
Nightingale	1,573	0	0
Barker & Co.	1,487	0	0
Shepherd & Co.	1,484	0	0
EDWARDS & MEDWAY (accepted)	1,481	0	0



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LONDON—continued.

For construction of road at Child's Hill. Mr. FRANK SELBY, surveyor, 44 Chancery Lane. Quantities by Messrs. NORTHCROFT, NEIGHBOUR & NICHOLSON.

Soan	£6,226	13	6
Wimpey	4,561	0	0
Rogers & Co.	4,556	0	0
Wheeldon	4,476	0	0
Ford	4,447	0	0
Ballard	4,377	0	0
Neave & Son	4,233	0	0
Dickson	4,221	0	0
Kirk & Randall	4,144	0	0
Mowlem & Co.	4,143	0	0
Jackson	4,095	8	8
Killingback & Co.	3,707	0	0
Boyer	3,689	0	0
Freeman	3,666	0	0
Porter	3,638	2	0
Iles	3,645	0	0
Jackson	3,588	0	0
Adams	3,540	0	0
Woodham & Sons	3,495	0	0
J. & W. Drake	3,364	0	0

For pulling-down and rebuilding 7 Dering Street, W. Mr. H. KENNARD, architect, 23 Devereux Court, W.C.

Stevens	£1,769	0	0
Kearley	1,714	0	0
Holliday & Greenwood	1,677	0	0
Sabey & Son	1,634	0	0
Roome & Co.	1,614	0	0
Minter	1,594	0	0
Neal	1,589	0	0
Carmichael	1,587	0	0
SHEPHERD & Co. (accepted)	1,515	0	0

For repainting and repairing the exterior and interior of the Horniman museum.

Tingley	£278	0	0
J. & C. Bowyer	195	0	0
Sharpington	177	0	0
Mitchell & Son, Dulwich Village (recommended)	151	10	0

LONDON—continued.

For the construction of roads and sewers on the Hanger Hill estate, Ealing, for Major Wood, D.S.O. Messrs. WALTON & LEE, surveyors, 10 Mount Street, Grosvenor Square.

WOODHAM & SONS, Catford, S.E. (accepted) . £4,390 3 2

For the erection of villas at Church Lane, Finchley. Messrs. HOMER & LUCAS, architects, 35 Bucklersbury, E.C.

GODDEN (accepted) £7,507 10 0

For sewerage at road-making works at Hendon. Mr. S. SLATER GRIMLEY, engineer.

Accepted tenders.

O. T. Gibbons, Leytonstone, for Finchley Road Sewer, £1,955; Finchley Road surface-water drain, £1,750; Golder's Hill Road sewer, £340; Hermitage Lane surface-water drain, £115; Ebenezer Road, £367; Ebenezer Mews, £446.

For repainting interior of cottages, piermaster's house and bungalow at the Barking outfall works.

Measor & Son	£198	15	0
Symes	193	0	0
Bull	188	8	8
Harris	187	4	3
Stokes & Sons	179	0	0
PROCTOR & SON, Plumstead (accepted)	172	0	0

MALPAS.

For alterations and additions to the Burwardsley school.

Allen	£1,500	0	0
Mayers & Son	1,110	0	0
Wright & Sons	1,100	0	0
Matthews	1,078	0	0
Huxley	1,020	0	0
Parker	980	0	0
WRIGHT (accepted)	944	0	0
Marshall & Co.	915	0	0

MIDDLESBROUGH.

For extending the cemetery.

J. PEARSON, Stainton (accepted) . . . £3,041 0 0

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For the erection of school for 250 scholars. Mr. E. FISHER, architect, 19 Buckingham Street, Strand.	
Martin & Sons	£3,769 0 0
Godwin	3,732 2 11
Kersley	3,435 4 6
Crosby & Co.	3,410 4 6
Watson	3,394 0 0
Harris & Son	3,376 7 0
Payne & Co.	3,270 0 0
Faulks	3,219 16 7
Spear & King	3,210 0 0
Gibson	3,204 0 0
Hughes	3,190 0 0
Fitt	3,075 0 0
Martin, Wells & Co.	3,049 0 0
Batten Bros.	2,980 0 0
C. W. Cox & Sons, Maidenhead (accepted)	2,937 0 0

MALDON.

For the erection of secondary school and pupil teachers' centre. Mr. P. M. BEAUMONT, architect, Maldon.	
Bennett	£7,999 0 0
Bliss	7,675 0 0
Smith & Son	7,555 0 0
Everett & Sons	7,474 0 0
Elvy & Son	7,425 0 0
Roper	7,400 0 0
Holt & Sons	7,375 0 0
Wallis & Sons	7,329 0 0
Saunders	7,329 0 0
Coulson & Lofts	7,300 0 0
Thurman	7,299 0 0
W. & B. H. Davey	7,294 0 0
Shanks	7,213 0 0
Myall & Upson	7,180 0 0
McKay	7,180 0 0
Deaves	7,110 0 0
Potter & Son	7,100 0 0
Grimwood & Son	6,998 0 0
Mason & Son	6,899 0 0
Moss & Co.	6,720 0 0
Rayner	6,675 0 0
PARREN & SON, Earith, Hunts (accepted)	6,500 0 0

NOTTINGHAM.

For the erection of house, Mapperley Park. Messrs. CALVERT & GLEAVE, architects.	
HOPEWELL & SON (accepted)	£1,380 0 0

PEMBERTON.

For the erection of the Carnegie library. Messrs. J. B. & W. THORNLEY, architects, Wigan.	
France	£4,525 0 0
Dickinson	4,320 0 0
Waterworth & Bickerstaffe	4,268 0 0
T. & H. Houghton	4,224 0 0
Thompson & Brierly	4,200 0 0
Howard & Sons	4,190 16 3
Ablett	4,122 0 0
WILSON & Co. (accepted)	4,048 0 0

POOLE.

For the erection of store. Mr. F. BATH, architect, Salisbury.	
McManus	£2,325 0 0
Peirson & Co.	2,137 0 0
Hadley & Sons	2,132 0 0
Deacon & Son	2,100 0 0
A. & J. Main & Co.	2,065 2 3
F. Smith & Co.	2,049 0 0
Blakeley & Co.	1,998 0 0
Redpath, Brown & Co.	1,991 0 0
Braby & Co.	1,989 13 5
Sampson & Sons	1,972 0 0
Somerville & Co.	1,953 0 0
Thompson & Co.	1,950 0 0
Jukes, Coulson, Stokes & Co.	1,940 0 0
Colborne	1,939 13 0
Crane	1,935 0 0
Norton Bros. & Co.	1,900 0 0
Vincent & Folland	1,886 12 0
Dorset Ironfoundry Co.	1,868 9 9
Besant & Co.	1,834 0 0
Burt & Vick	1,799 0 0
Glover & Sons	1,738 12 4
Kirk & Randall	1,720 0 0
Wirewove Roofing Co.	1,672 0 0
WOOD BROS., Forest Gate, E. (accepted)	1,400 0 0



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RIPON.

For the erection of a gas-holder.

NEWTON, CHAMBERS & Co, LTD., Sheffield
(accepted) £1,146 0 0

SCOTLAND.

For the lifting and relaying of about 3½ miles of the first Lintrathen main in the Valley of Strathmore, for the Dundee Town Council.

STEWART & Co, Glasgow (accepted) £16,000 0 0

For the erection of two villas at Kirriemuir.

Accepted tenders.

Mrs. Anderson's.

Adamson, mason.

Hay, joiner.

Brand, slater.

Thoms, plasterer.

Milne & Son, plumber.

Rev. R. M. Buchanan's.

Watson, mason.

Ogilvy, joiner.

Milne & Son, plumber.

Mills, plasterer.

Brand, slater.

For additions to the new hotel, Kingussie. Mr. A. CATANACH, architect, Kingussie.

Accepted tenders.

Ferguson & Co, Newtonmore, mason.

Hay & Sime, Perth, carpenter.

R. & L. Macpherson, Kingussie, plasterer.

Dunbar & Macpherson, Kingussie, painter.

SEVENOAKS.

For the removal of the cooker and the building of a cook-house, &c. (the bricks to be supplied by the Board), and also for the raising of a chimney-shaft at the workhouse.

Bentley	£256	0	0
Durtnell & Sons	245	0	0
Banks	219	0	0
Smith	198	0	0
Wallis	197	0	0
CANFIELD, Sundridge (accepted)	157	10	0

ON Wednesday a fatal boiler explosion took place at the ironworks of Messrs. Penn & Son, Cradley Heath.

A SERIOUS outbreak of fire occurred early on Thursday morning on the premises in Gray's Inn Road of Messrs. S. Trenner & Son, the well-known shop-fitters.

THE foundation-stone of the church of St. Paul, Leyton, was laid on Saturday last by Mr. Robert Barclay. The church, which is to seat 500, will now cost 5,000*l.*, but it is hoped to complete it later by the addition of a handsome tower according to the original scheme, at a cost of 9,000*l.*

A MEETING was held at Toynbee Hall, London, on Tuesday, when Mr. Imre Kiralfy advocated his scheme for the erection of a museum and library on the site of the Shadwell Fish Market. Mr. Kiralfy also suggested the pulling down of a street of houses and erecting a general market with a large block of workmen's dwellings. This would be a great improvement to the district.

THE Society of Arts' conversazione in the beautiful gardens of the Royal Botanic Society, Regent's Park, on Tuesday last was well attended. The reception by Sir Owen Roberts, chairman, and the other members of the Council was held at the entrance to the conservatory, and a capital selection of music was performed by the bands of the Royal Artillery and the Scots Guards. There were also two performances of selections from pastoral plays, besides a concert and entertainment by Mr. Kirwan's Idyllic Players, and altogether a very enjoyable evening was spent.

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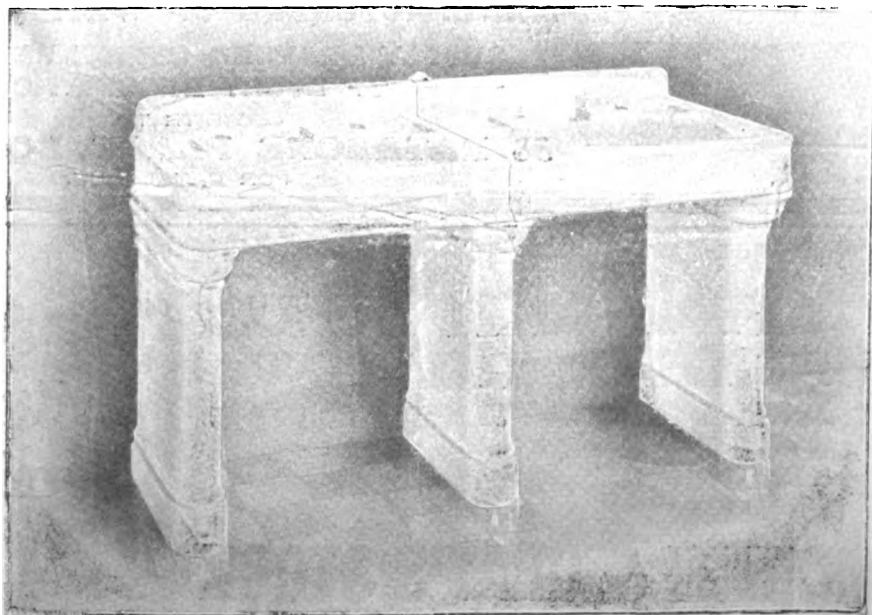


Fig. 905.—THE "CARLTON."

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TRADE NOTES.

MESSRS. MEASURES BROS., constructional engineers, of London and Croydon, announce an interim dividend at the rate of 5 per cent. per annum.

WE have received from the Globe-Wernicke Company, Ltd., a copy of their list, No. 7, of office furniture and time and labour-saving appliances, which are so requisite in all up-to-date offices.

THE electric wiring and electric motors for the new Liverpool Cotton Exchange have been entrusted to the Northern Electrical and Ventilating Company, of Stanley Street, Liverpool.

MESSRS. ROBERT BOYLE & SON have issued another of their leaflets, which relates to the natural ventilation of churches, a subject which affects a great many people in town and country.

MESSRS. CLAYTON, SON & Co., of Hunslet, Leeds, have been awarded by the Imperial Continental Gas Association an order for two gasometers, each of a capacity of 2,500,000 cubic feet, for their new works at Hoboken, Antwerp. The value of the contract is 34,000*l*.

MESSRS. GEO. NEWNES, LTD., announce that in order not to detract from the value of their "Technological and Scientific Dictionary," they will issue a fourteenth part instead of completing in thirteen issues as previously announced.

THE Fireproof Company, Ltd., have brought out an ingenious and efficient damp-course of dovetailed steel which is produced in sheets 5 feet long, with 3-inch plain ends for lap-joints. It can be supplied in widths from 4½ inches to 36 inches. When laid in cement it forms an impenetrable barrier to damp.

MESSRS. HEINRICH, WINBY & Co., constructors of tall chimney-stacks and boiler plants, have received an order to construct a shaft and carry out boiler setting work for Messrs. Umney & Peckett. The new work is in connection with the machinery (Messrs. Easton & Bessemer) being installed at Messrs. Watney, Coombe, Reid & Co.'s Mortlake Brewery.

THE Continuous Rail Joint Company of Great Britain, Ltd., have just received orders from the India Office for a large quantity of their patent continuous rail joints (350 tons) for the Indian State railways. The company have also in hand the manufacture of continuous rail joints for the London County Council, Birmingham Corporation, Gosport, and large orders from the contractors, Messrs. J. G. White & Co., Ltd., for use on their extensive railway and tramway work at Para, Bombay, Lacroze and Monte Video.

NEW CATALOGUE.

It could be said to anyone who sought after the works of Messrs. S. W. Francis & Co., Ltd., "Circumspice!" England is a nation of shopkeepers, and shops which are of importance are protected by the steel-revolving shutters, the collapsible and extending gates, the wrought-iron sliding doors and other inventions which come from the great works in the Gray's Inn Road. Their manufactures, however, are not confined to shops. They are used in palaces and mansions of the nobility, in markets, tramcar depots, schools, institutes, stables, and, in fact, in every class of building where a protection that will be at once strong, effective, light and economical is desired. The catalogue will suggest some of the applications, and the testimonials appended to it demonstrate what architects have been thinking of their inventions during half a century. It is well to add that architects' designs are carried out.

WE have been requested to announce that Mr. Arthur G. Cross, F.S.I., has removed his offices to Caxton House, Tothill Street, Westminster, where all communications should be addressed.

DURING the past week there has been the usual daily report of outbreaks of fire. Possibly the worst at the time of writing is that which occurred at Banbridge, co. Down, where the extensive bacon-curing factory of Messrs. Alexander & Bennett was destroyed, with serious damage to two other business establishments adjoining.

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BUILDING AND BUILDERS.

It has been decided to rebuild and enlarge the Ramsgate General Hospital and Seamen's Infirmary.

THE Bournemouth Corporation have at last decided on the erection of new municipal buildings at a cost of 100,000*l.*

THE Rochdale Board of Guardians have decided to utilise men from the tramp ward in the construction of a new reservoir.

At the Brentwood (Essex) asylum it has been decided to spend the sum of 12,500*l.* on alterations, principally to the kitchens.

MESSRS. GREENHAIGH & BROCKBANK, architects, of South-end-on-Sea, have been appointed architects by the Rochford Guardians for the enlargement of the present workhouse.

A PRIVATE syndicate contemplate carrying out, with the permission of the Urban Council, extensive improvements at the shore of Leigh-on-Sea, Essex, including the erection of a pier.

IN Oxford Street, Manchester, it is proposed to erect a new hospital for women. Preliminary plans have been prepared by Mr. John Ely, architect, of 32 King Street, West Manchester.

THE baths committee of the Manchester Corporation have instructed the surveyor to prepare specifications and quantities for the immediate erection of baths at Bradford. Sanction has been obtained for a loan of 13,175*l.*

THE Sutton Coldfield education committee have decided that tenders for the erection of a school in Victoria Road should be invited from builders within 12 miles of the site. Some of the members favoured an amendment by which the work would be confined to builders within the borough.

THE Carpenters' Company recently organised an essay competition in reference to the adaptation of land for afforestation. The two prize essays by Mr. Leslie G. Wood, F.S.I., and Mr. Percival T. Maw, P.A.S.I., have now been published in book form for the company by Laughton & Co., Ltd.

SIR ALFRED JONES has acquired Hinderton Hall, and the surrounding estate of 300 acres, which he intends to open for building purposes. The estate will, it is understood, be practically cut up into various lots suitable for the

erection of residences at a rental of 80*l.* to 90*l.* a year, and the locality will be brought within 40 minutes of Liverpool by the establishment of a motor-bus service to Rock Ferry, there connecting with the Mersey railway.

THE Maidstone Urban District Council have decided:—

(1) That the plans committee should be instructed in future to allow a builder to place a 4½-inch wall against an adjoining building where the owners of the respective properties were unable to agree to make the existing wall a party wall, providing such existing wall had been constructed in accordance with the by-laws, and that a circular should be sent to each builder in the borough to this effect; (2) that no alteration to the by-laws should be made with reference to the carrying up of party walls through the roofs of buildings.

THE public works committee of the Cardiff Corporation have unanimously resolved that the borough engineer be asked to prepare a report showing the number of building inspectors employed by the department, the nature of the work, the number of visits to each new building and at what stage such visits were made, particularly as to the mode of inspection and testing of drains and the number of houses inspected by each inspector during the last twelve months.

THE Foundation Company, New York, has been awarded the contract for the foundations for the new Trinity building. When completed this will be the largest office building in the world. The foundations for the entire building will be of solid concrete installed by pneumatic caissons carried down to bed rock an average of 86 feet below the Broadway curb. Under the new portion of the building there will be 89 such caissons, and in the foundations of the section already completed there are 52 caissons, making a total of 141 for the entire building.

A BUILDING is in course of erection near the South Camber at Devonport Dockyard to accommodate large buoys while under examination and repair. The building is the first of its kind erected. Steel and iron only have been used except in the roof, which is slated and wood-lined. The framework consists of steel angle-bars, resting on a cement foundation. To these are secured the corrugated sheets which form the sides, and to still further stiffen the

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walls against wind-pressure additional X-shaped stays are added. The principal dimensions of the building are:—Extreme length, 125 feet; breadth, 50 feet; height to level of roof, 45 feet. The building is traversed by an electric overhead crane.

THE foundation-stones of the South Norwood Congregational church were laid on Wednesday, July 4. The present contract, which embraces the church, accommodating about 635 persons, also the tower up to the belfry stage, together with vestries, cloak-rooms, &c., amounts to 4,090*l.*, and has been let to Messrs. Walter Lawrence & Son, of Waltham Cross. The building is being faced with best sandfaced red bricks, all the dressings being of Bath stone. The design is in Late Gothic, freely treated. The architects are Messrs. George Baines & Son, 5 Clement's Inn, Strand, London, W.C. A large future school is arranged for as part of the scheme.

At a recent meeting of the Cheltenham education committee tenders for the proposed new school in Gloucester Road were considered. Twenty-four had been received, the lowest being that of Mr. Charles Wright, of Leicester, at 12,900*l.*, and the highest, a Malvern firm, at 16,580*l.* A letter was read from the Cheltenham building trades joint committee urging the authority, for the sake of the unemployed carpenters and joiners in the town, to reject the lowest tender in favour of a local one at between 600*l.* and 700*l.* more. This view was supported by one of the members, who moved as an amendment that the matter be referred back to the sites and buildings sub-committee. Eventually Mr. Wright's tender was accepted by sixteen to four.

THE Chief Justice of Cape Colony has delivered judgment in a case brought by the Orange Zicht Estate Company against the Capetown Town Council, questioning the Council's right to prevent the plaintiffs from selling a strip of land in the vicinity of the city springs for building purposes, it being alleged by the Council that the buildings on the land in question would lead to the pollution of the springs. His Lordship thought that the danger of pollution was infinitesimal, and ordered that if the Council did not approve of the plans within a month after submission, the plaintiff company would be at liberty to proceed with the

subdivision of the property in such a manner as if consent had been given. The Council would bear the costs of the action.

THE Glasgow Master Wrights' Association held a special general meeting in the Building Trades Exchange, Mr. David Dick, president, in the chair. It was reported by the secretary (Mr. Ramsay) that, as arranged at the close of the joiners' dispute last year, a conciliation board, consisting of representatives from the operatives and from the Association, had been constituted, and that the working by-laws for next year had now been revised and adjusted by the Board. The principal alterations in the by-laws are a definite delimitation of the Glasgow boundary, a reduction of the working hours in winter, workmen to walk two miles in their own time to the job at which they are employed instead of one as at present, and the signing of the working by-laws to take place at July 1 instead of April 15. The wages are to remain as at present, viz. 9*½*d. per hour.

A DEPUTATION recently waited upon the Sheffield health committee in connection with the Yorkshire and North Midland Cottage Exhibition, and asked that a portion of the Wincobank estate should be set apart for the exhibition which it is proposed to hold in the summer of 1907. A meeting was subsequently held in the Cutlers' Hall, at which there were present representatives of the Architects, Surveyors and Builders' Associations. The conditions of the competition were fully discussed, and the secretary was instructed to forward the resolutions to the health committee for their consideration. The chief idea is that there shall be a competition for the laying-out of the land, and that the exhibition should comprise three classes of cottages, and that the maximum price of the cottages should be 175*l.*, 200*l.* and 225*l.* per house, with not more than twelve houses to the acre.

IT has been at last decided not to remove the St. George's Hospital, but directly funds permit to rebuild on the present site. The cost is estimated at 350,000*l.* When the work is carried out it will be under the supervision of Mr. H. Percy Adams, F.R.I.B.A., 28 Woburn Place, London, W.C.

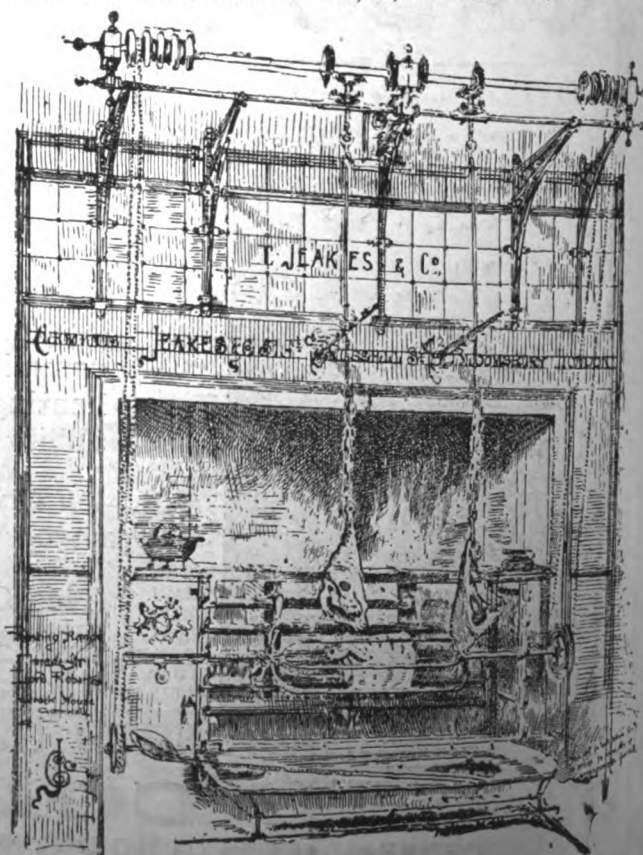
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ELECTRIC NOTES.

AFTER several weeks' consideration of the London County Council Electric Supply Bill the select committee of the House of Commons announced that they had come to the unanimous conclusion, after careful consideration of the evidence, that the preamble had not been proved.

THE representatives of the Institution of Electrical Engineers and kindred societies now touring Great Britain spent Monday and Tuesday in Glasgow. On Monday evening Lord Kelvin was presented, on behalf of the Italian section, with two magnificent portfolios of old drawings of mathematical and mechanical subjects by the great Italian master, Leonardo da Vinci. The presentation was made by Señor Guido Semenza.

THE light railway constructed by the Midland Railway to connect Ashby and intervening townships with Burton-on-Trent was opened on the 2nd inst. The line is 11½ miles in length, 1½ of which is situated within the borough of Burton, the latter having been constructed by the municipal Corporation for the Midland Company's use. It is electrically worked from overhead wires, the power station being situated at Swadlincote, the centre of the system. The cost of construction, inclusive of the purchase of lands, is estimated at 150,000/.

THE York electricity committee have had under consideration the report by Mr. Hutchinson, consulting and mechanical engineer, Hull, in reference to the electricity works, in which he commented upon the undesirability of continuing the use of water from the Foss for the boilers at the works, on account of its excessive amount of scale-forming matter and the consequent liability of the tubes becoming choked up unless it was treated before being pumped into the boilers. The city electrical engineer advised the provision of a water-softening and filtering apparatus to purify the river water. The committee recommend the Council to provide such apparatus at an estimated cost of 300/.

MR. GEORGES MONTEFIORE-LEVI, a native of London, of 35 Rue de la Science, Brussels, formerly a member of the Belgian Senate and president of the Association of Engineers, widely known for his munificent charities, has left his Tournai ceramic ware to the Belgian Government to

form a special collection to be known as the "Madame Hortense Montefiore-Levi" collection in the Museum; also 300,000 francs to the Association of Electrical Engineers of the E.T.M. Institute, to be applied as to one-half for the awarding of a prize every three years for the best original work presented relating to scientific advancement and to progress in the technical application of electricity; and as to the other half, for the creation each year of bursaries of 150 francs each to assist students, and the balance to be applied for travelling scholarships for the Montefiore Institution.

THE American Consul, writing from Roubaix, France, tells of a new invention for firing torpedoes, the work of Jean Denissel, established until recently as an electric engineer at that place. He says:—"Two years ago Dr. Brauly succeeded in utilising electric waves to explode torpedoes and fougades at a distance, also to light incandescent or arc lights and to set electric and steam motors in motion. Armed with the knowledge of Dr. Brauly's discovery, and keeping in mind its disadvantages, Mr. Denissel has succeeded in producing an apparatus for receiving electric waves that is highly sensitive and of great precision, a machine that works underground and in water, at a long distance from the transmitter of electric waves, without mast or post. This machine may be manufactured for about 2/, is easy to transport and not capable of being put out of order. It is a cube and weighs about 7 lbs. Mr. Denissel's discovery rests upon the application of a connector of his own invention. This connector does away with the relay necessary to posts for the reception of wireless telegraphy and tele-mechanism now in use. It is described as of capital importance, as a torpedo may be exploded under any vessel or under a column of men from a distance of several miles."

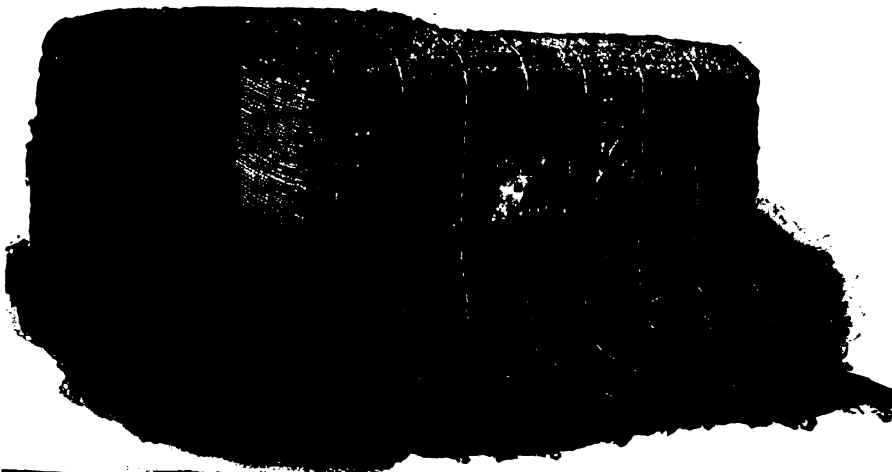
MESSRS. CLAYTON, SON & CO., LTD., Leeds, have been awarded by the Leeds Corporation waterworks committee the contract for the first portion of the welded-steel aqueduct twelve miles long from Kettlesing Tunnel to the Ure Valley. The amount of the contract is nearly 70,000/. The work will be completed in two years.

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THE Governors of the Brighton Hospital for Women intend to erect a new maternity hospital in Hove, on a site which has been presented to them. The project will cost 10,000*l.*

THE Lewisham Borough Council has under consideration a scheme for erecting workmen's dwellings on $4\frac{1}{2}$ acres of land at Lee. The total estimated capital charge will be 29,130*l.*

FOR the Swadlincote new library competition Mr. Thomas Cooper, of Birmingham, was appointed assessor, and he has given his award, placing Mr. Macpherson, of Derby, first; Messrs. Walton & Thomas, Tamworth, second, and Mr. Cooper, Leicester, third.

THE Lambeth Council have declined to introduce a 30*s.* minimum weekly wage for its employes, on the ground that it would be creating a privileged class of workers, and that hundreds of ratepayers doing similar work earn less than 30*s.* a week.

FOR the convenience of travellers to Belgium by the Harwich route the Great Eastern Railway Company have just placed on the Antwerp express train from Liverpool Street Station dining and breakfast cars in which *table d'hôte* dinner and other refreshments are served on the down journey and *table d'hôte* breakfast on the up journey.

THE Leeds City Council have been informed that it is absolutely necessary to increase the rates 3*d.* in the pound, making them in all 7*s.* 5*d.* During the next five years an increased expenditure caused by sewage and other schemes to the extent of 227,935*l.*, or an additional 45,407*l.* per year, will have to be met.

MONTÉ VIDEO has been selected as the seat of the third Latin-American Medical Congress, which is to meet from January 13 to 20, 1907, under the auspices of the Government of the Republic. In connection with the Congress there will be a hygienic exhibition, and manufacturers of apparatus of hygienic application are invited to exhibit and compete.

ST. ANNES Urban Council approved on Monday plans for the new King Edward VII. college, which is to be erected on a site of 32 acres by the Governors of Lytham

Charity. The cost is 22,000*l.*, and the building will mean a further expenditure of 30,000*l.* The building is planned with a view to future extensions, and will provide accommodation for 240 day boys and 30 boarders.

THE Mersey and Irwell joint committee have decided that unless a scheme is adopted before July 30 legal proceedings will be taken against the Gorton Urban District Council. It was also decided to take a similar course with regard to the George Street works of the Prestwich Urban District Council.

THE Council of the Institution of Mechanical Engineers have appointed their president, Mr. Edward P. Martin, as one of the representatives of that Institution upon the main committee of the Engineering Standards Committee, in place of Mr. E. Windsor Richards, past president of the Institution of Mechanical Engineers, who has retired.

AN inquiry has been held on behalf of the Local Government Board into an application by the Coventry Corporation for permission to borrow the sum of 13,973*l.* for the purpose of works of street improvement and surface-water drainage. The town clerk, referring to the application for 11,744*l.*, said the proposal was one to supplement what the Council had already done in paving footpaths with concrete slabs.

THE solicitors to Mr. W. Horton, of Colwyn Bay, have taken up the award of Mr. Wood in the arbitration between Mr. Horton and the Colwyn Bay Council. The umpire has awarded 800*l.* to Mr. Horton for easement and damages for the pipe line laid through his estate at Rhos-on-Sea, and 700*l.* for consequential damages to his estate by reason of the outfall being near it, provided he be legally entitled to such damages in respect of consequential damage. Mr. Horton claimed 8,000*l.*

A CENTRAL conference of the Engineering Employers' Federation and the Amalgamated Society of Engineers is to be held for the purpose of considering amendments to the terms of settlement adopted after the great strike of 1897. There are three suggested amendments. One is that the Federation shall recommend the preferential employment of society men. Another seeks to limit the number of apprentices, and a third asks that the maximum overtime shall be twenty hours per man per month, instead of forty hours, as at present.

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A PUBLIC meeting was held at Manchester when it was decided to establish a co-partnership, under the title "Manchester Tenants, Ltd.," to be registered under the Industrial and Provident Acts. The capital will be issued in 100 shares, and tenants must possess five shares, paid in instalments. Five per cent interest out of profits will be paid, and on the first 100 shares an extra 2½ per cent is to be paid. The basis of the rents will be 6½ per cent on the cost.

THE cleaning and lighting committee of Edinburgh Town Council on Monday approved of a recommendation by a sub-committee that the remaining flat-flame gas lamps should be replaced with 2½ cubic feet inverted incandescent lamps, which should also be substituted for other incandescent lamps in the city. It is expected that the conversion, when carried through, will effect a saving of from 1,100*l.* to 1,200*l.* per annum. It was also agreed to recommend that 16 of the 120 electric lamps authorised by the Town Council should be erected at Portobello, continuing the present line to Joppa.

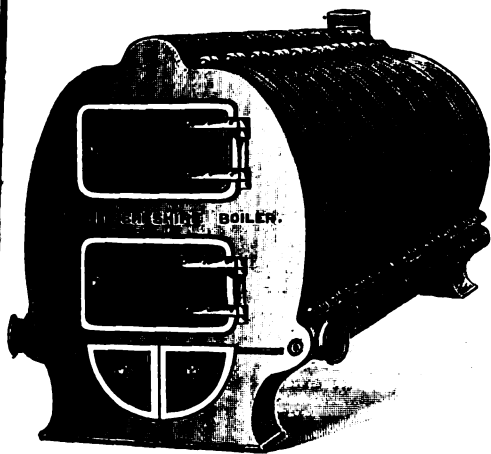
ACCORDING to the *South Wales Daily News* of the 29th ult. it was announced on the Iron Exchange, Birmingham, on the previous day, "that agents of American firms are negotiating for the supplies of immense quantities of structural steel in the English markets, and that contracts have been effected with one leading Yorkshire house for 6,000 tons for prompt shipment. In some cases the Americans have been offering to take the whole product of certain firms for three and six months. The activity in the English steel trade is, however, preventing the offers being accepted, as manufacturers are looking forward to more remunerative prices in the ensuing quarter."

ON Sunday evening, as the result of an inspection owing to a fall of some of the brickwork lining the roof of the Box tunnel (two miles long), on the Great Western Railway near Bath, about three-quarters of a mile from the Box end, Mr. Baughan, the permanent way inspector, ordered the immediate closing of the tunnel to all traffic. There is 300 feet of earth or rock above the roof, and falls of earth had already taken place intermittently. Twenty minutes after the inspector had ordered the tunnel to be closed 600

tons of material fell from the roof, covering both lines. It brought down the electric wires specially provided to give alarm in such cases. These rang in the cabins at each end of the tunnel. The position is serious. It is estimated that it will take two or three days to clear the debris.

A LABOUR member (Mr. John Ward) asked the Home Secretary last week in the House of Commons whether his attention had been called to the generally low standard of sanitation prevailing, and the complete want of proper shelters for workmen in cement factories throughout the country; whether he had power under the Factory Acts to cause such factories to be properly inspected, and, if not, whether he proposed to introduce legislation dealing with the subject. Mr. Gladstone (Home Secretary), in reply, said:—"I am not aware that the standard of sanitation in cement works generally is low. Cement works are, of course, dusty, and the maintenance of cleanliness is not easy. I will call for special reports on the subject. As regards inspection, the inspectors have the same power under the Factory Acts in regard to cement works as they have in regard to other classes of factories and workshops. I have no reason to suppose that these are insufficient in the case of cement works."

THE British Association of Waterworks Engineers will hold their annual meeting at Scarborough on Thursday, Friday and Saturday, July 12, 13 and 14, under the presidency of Mr. William Millhouse, Assoc.M.Inst.C.E., water engineer to the Corporation. The following papers have been offered for reading and discussion:—(1) "The Geology of North-East Yorkshire in Relation to the Water Supply of the District," by C. Fox-Strangways, F.G.S.; (2) "Rural Water Supplies," by J. Mitchell Wilson, M.D., county medical officer, East Yorkshire; (3) "Water Supply in a Dairy District," by William Phelps. Note.—Papers Nos. 2 and 3 will be discussed together. (4) "The Parsons Turbine," by F. G. Holden, B.A., Assoc.M.Inst.C.E., resident electrical engineer, Scarborough; (5) "Various Causes of Waste of Water, and Methods of Prevention," by Ralph Blakiston; (6) "Tropical Waters and their Purification," by H. G. Foster-Barham, Assoc.M.Inst.C.E., F.G.S.; (7) "The Laying of a Submerged Water Main under the River Ouse," by W. H. Humphreys, water engineer, York.



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A CONFERENCE has been held in Aberdeen between the monumental branch of the United Operative Masons and Granite Cutters' Union and the Aberdeen Granite Association on the subjects of the removal of surface machines outside the sheds, the blowing of dust with air-pipes, and the general question of shed accommodation. The representatives of the branch, in the course of their statement, explained that the whole three topics all centred round the general point of the prohibition of dust; that three-fourths of the mortality in the branch was due to lung trouble, and that the mortality in the monumental branch from this cause was higher than the mortality in the building branch. The representatives of the Association undertook to advise the directors to make a recommendation on the subject of the removal of the surface-cutter, where practicable, outside the sheds, and to suggest to the directors that a positive prohibition should be issued in regard to blowing dust with air-pipes. As to the shed question, the representatives of the Association stated that it was difficult even in normal times to suggest a standard of accommodation per man which would apply in all classes of work, but it was recognised that it was not profitable for an employer not to give his men sufficient room in which to work freely. The representatives of the branch accepted the general assurance as to the last point.

THE UNION JACK CLUB.

A GRAND evening concert in aid of the building funds of the above club, under the patronage of Her Gracious Majesty the Queen, will be given at the Queen's Hall, Langham Place, on Wednesday, July 11, at 8.30. A splendid list of artistes has been engaged, including Miss Janotha (court pianist to H.I.M. the German Emperor), assisted by the band of the Royal Engineers. A concert of this class is bound to be a success, and those who desire to obtain tickets should take the precaution of making early application.

THE LABOUR PROBLEM.*

MUCH has been said of late about the unemployed, and although the reasons for lack of employment do not come directly under our notice as an Institution, yet the question of labour is one that concerns each one of us.

When estimating the cost of an installation, two problems confront the heating engineer:—(1) The cost of the material; (2) the cost of the labour fixing the material. It is not difficult to ascertain the former, but the same cannot be said of the latter. The practice with some is to add a percentage of the cost of the material for the labour, and with others to work out the cost of the labour separately for each item. I believe in the latter, because the results obtained are more accurate than if the former method was adopted, and at the same time the actual labour on the job may be checked with the estimate. If the labour on a job is costing more than it should, the time to find it out is whilst the work is in progress, and by having the cost of the labour of the preceding week accurately made up by the following Monday or Tuesday and carefully checking it against the amount included in the estimate, item by item, a very close watch can be kept on the men's work.

There are probably few here that have not at some time or other been astounded at the results of tenders for general engineering work, when all the competitors have to quote on the same basis. A complete set of plans and a hard-and-fast specification are furnished to each competitor, and yet when the result is announced the lowest price is often 30 per cent. or 40 per cent. less than the highest price, and in some cases is less than the actual prime cost of the work. There is something radically wrong in this state of things, which can only be due to one or both of the following reasons:—(1) Under-estimation. (2) The ideas of a fair profit must vary considerably among the competitors. I will deal with the latter first.

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* A paper read before the Institution of Heating and Ventilating Engineers by F. S. Russell.

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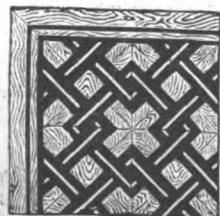
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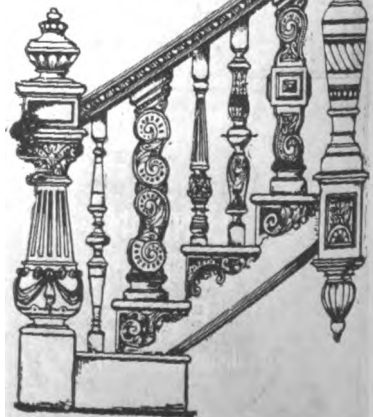
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execute, and I venture to say that there is no client so unreasonable as to be unwilling to pay a fair profit. Any one who willingly gives a cost-price quotation for any work inflicts a gross injustice on himself as well as on the other competitors, who are put to considerable expense in preparing the estimate. The plea of advertisement does not justify such an action; as price nowadays governs practically every contract, and I fail to see what is gained by doing work at cost price. In my opinion it is the duty of each one of us to quote for good honest work, and at the same time include a fair profit on the transaction.

Now for the first reason, viz. under-estimation. If this occurs the mistake will probably be found in the labour side of the estimate, and the question then arises, Has the amount included for labour been put too low, or does the actual labour on the work cost more than it should do? If the figure has been put too low, the remedy is not far to seek; if, however, the loss incurred is due to time wasted by the men, the remedy is not so easily found, and we are at once confronted with the question, How are we to obtain fair value for the wages we pay our workmen? As a matter of course, we all employ the most competent men we can find, and when commencing a job furnish the leading hand with every particular, keep him well supplied with material, and last, but by no means least, good tools. Bad tools waste more money than their own worth in a few days. Assuming, then, that our fitters have every facility placed at their disposal for erecting the work, how is it that some installations are completed far more quickly and better than others of an exactly similar character? There are many men who year in and year out work honestly and to the best of their ability. Trust placed in them is not abused, and it is a pleasure to set them to work, knowing that time and material will not be wasted and the work will be well done. Such men are a credit to themselves and reflect credit on their employers.

Unfortunately, all men are not of this stamp. Some have very good intentions, but are extremely careless. Overcaulking a joint can be attributed to nothing else than carelessness. How a man can blissfully ram six yarns into a 2-inch caulked joint is a mystery to me. Waste, rubbish and, in one case to my knowledge, a scaffold pole are left inside pipes, and when the time comes for testing

considerable expense is often incurred before the stoppage is traced and put right. How are such men to be dealt with?

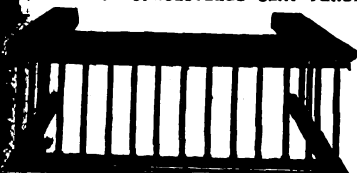
To charge them with the cost of their carelessness is out of the question, and anything in the nature of gentle advice is not often effective. Drink, I believe, is responsible for more trouble with workmen than anything else. Personally, I am a teetotaler, and would like to see everybody else of a similar disposition. The temptation to men who are partial to drink must be very great when they are away on country jobs. However small the village in which they are quartered there is invariably a very convenient public-house to which frequent adjournments are made, with the inevitable results which, unfortunately, are only too familiar. Insults to clients, architects and clerk of works, waste of time and bad work, damage to decorations in the building, with a sequel in the form of a bill from the general contractor for redecoration.

Not long since my firm sent a fitter whom we considered trustworthy, and who had been in our employ for several years, to explain the working of an apparatus he had just erected to the stoker who had been appointed. Before going to the place he went into a public-house and had sufficient liquor to make him light-headed. On reaching the boiler-house he explained to the stoker with an air of bravado that he would show him how to get the apparatus hot quickly. He filled the boiler with wood and very soon had a roaring fire going, on to which he kept piling more wood until the apparatus began to boil. One of the occupants of the building sent down word that the pipes near him were making a noise. Immediately the man raked the fire out on to the floor, and as the boiler-room was at the bottom of a staircase, smoke ascended and began pouring out of a window. A passer-by seeing this immediately pulled the fire-alarm, and in a very few minutes fire-engines and escapes were on the scene, whilst the man was in the boiler-room gloating over the heap of smouldering embers. The humour of this incident was not apparent until we had pacified our clients.

We relieved ourselves of that man's services, and shortly after he was engaged by another well-known firm of heating engineers in London, who sent him to work at a school which was building near my home, and I saw him one morning

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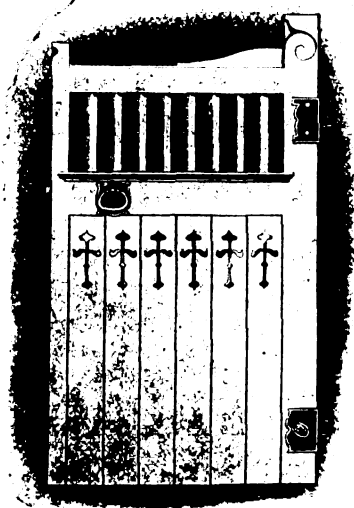
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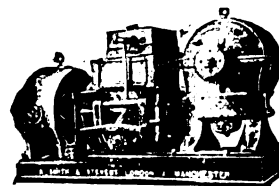
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going to work about 9.30 and stopping at the public-house nearest the station on his way to the school. There is a man working for my firm now who is an excellent fitter, but he will occasionally drink in working hours. I have repeatedly warned him and had friendly chats with him about it, and he always admits the truth of my remarks, but he still continues the habit. I believe there are only two alternatives for such a man—either get him to sign the pledge or dismiss him. We do not wish to dismiss him as he is a good man, and good men are scarce, and he has a large family entirely dependent upon him.

Wilful deceit is a strong accusation to bring against any man, but not too strong for men who charge for time during which they have not worked. We were recently struck by the unfailing punctuality of our men according to the time sheets sent in by them. We happened to find out that in one or two cases the men did not arrive at the time stated, so we sent to all our jobs in London and found that several other men were overcharging their time. It does not take much calculation to see that if 150 or 200 men overcharge six or seven hours a week the employer is very soon hundreds of pounds out of pocket. I think that a lesson in the police court for obtaining money under false pretences would not be out of place for such men and would have a very wholesome effect in the future. It is not easy to rise every morning at five o'clock and journey across London in order to get to a job in time, and if a man is sometimes late no complaint need be made, but to charge for such time is little short of theft. We are compelled to trust our men to a very large extent, and in my opinion it is a very miserable business for any man to go to a job like a detective to see if the men are at their work.

Then there are some men who feel it their bounden duty to talk whenever the client or architect arrives at the job. We recently received a message from one of our jobs where there is a hot-water supply boiler which is regularly cleaned twice a year, that they could not get hot water. The man who usually did the work at this building was out of London at the time, so another man was sent. The first thing he did was to look at the boiler and say that "it had not been cleaned for twelve years" (those are his exact words), and as our clients had only just paid for the cleaning they naturally wished to ask a few questions.

The foregoing are a few of the experiences with which we are all familiar, and the problem is how to deal with them. The men are human beings and should be treated as such. Some of them are often away from their homes for months on end living amongst strangers, which is not a desirable state of things from the fitter's point of view. They also may not see things in the same light as we do.

We recently had a man working at a country house in one of the most beautiful spots in Kent, a perfect place in my opinion. When I went down there he told me that it was the most awful place he had ever been in. There were no music-halls, and as soon as he had finished his work he had nothing to do but go to bed.

The old saying is that you can get anything done for love or money. I suppose the ideal way of securing the esteem and co-operation of our men would be by a judicious combination of the two. Unfortunately, so many men quite misunderstand any attempt at kindly or considerate treatment, and classifying it as weakness on the part of the employer, immediately take advantage of it. We must therefore look to the money side of the cure.

The promise of a bonus at the end of the work is a move in the right direction. My firm have recently gone a step further. When a job is starting the leading hand is told the exact amount of time included in the estimate for labour. If he can save on that time he receives a bonus in proportion to the time saved. This certainly does stimulate the men in their efforts to get the work done quickly, but does not deal fully with the problem, as only the leading hand receives any benefit. Perhaps some of you have some successful system of dealing with your men and would not mind passing it on to us.

There is another matter to which I would like to refer and which I commend to the manufacturers for their consideration. Often when testing a job flaws and holes are found in the material, and by the time the apparatus has been emptied and refilled and the defects righted, several pounds are spent, which on small jobs plays havoc with the man's bonus. It is very small comfort to receive a letter from the manufacturer enclosing a credit note for a few shillings, with the remark that everything was thoroughly tested before leaving the foundry. Thus the contractor has to pay for defects for which he is not responsible.

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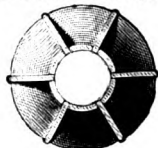
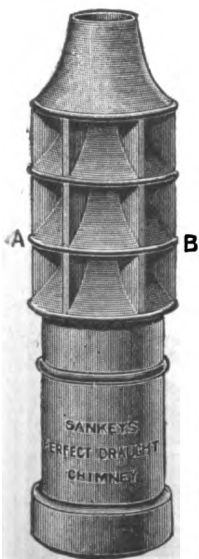
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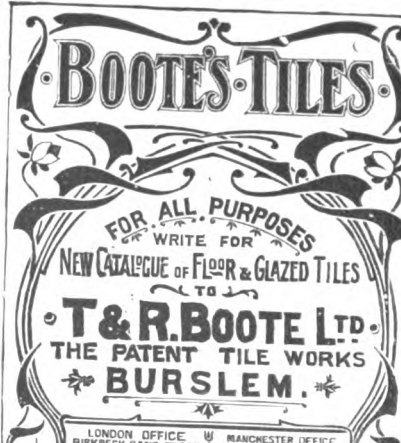
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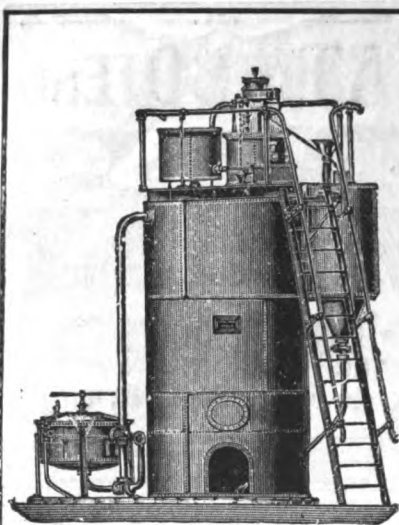
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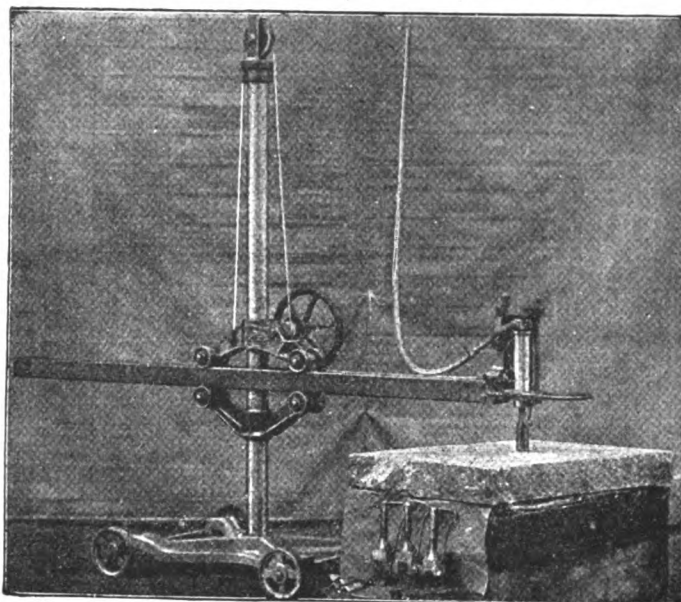
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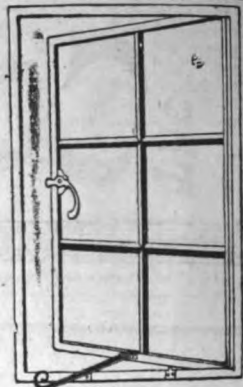
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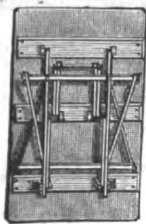
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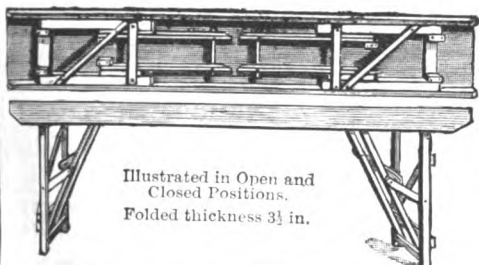
HATHERLEY FOLDING TABLES

Opened and closed in a moment.
Absolutely Unique, Reliable
and Safe.

Can be sat up to with perfect comfort.

The legs fold within the area of the top, without impairing the rigidity of the table in any way.
4 ft. long, 2 ft. 6 in. wide and 2 ft. 9 in. high. Folded thickness 4 inches. Inch top.

Price 12/- Other sizes (with suitable leg action) quoted for.



Illustrated in Open and
Closed Positions.
Folded thickness 3 1/2 in.

HATHERLEY FOLDING TABLES

(With and without folding backs).

Designed to afford Strength,
Compactness and Rigidity. Can
be opened and closed instant-
aneously. Cannot collapse when
in use.

When ordering INSIST ON
TRADE MARK,
"CAJAC."

Beware of Imitations.

Write for Illustrated Booklet, giving full particulars of all HATHERLEY ORIGINALITIES
and name of nearest Agent.

ALLAN JONES & CO. (Dept. A), Hatherley Works, Gloucester.

London Stock Depot: 96 Leonard Street, E.C.

BUILDINGS BOUGHT

To Take Down, in Town or Country.
The full value given and quick despatch
guaranteed by

BLOUNT & SANDFORD
HOUSE-BREAKERS AND CONTRACTORS,
Nos. 53 to 57 Southampton St., Camberwell.
VALUATIONS MADE FOR BUILDERS FREE OF CHARGE.

OLD BUILDINGS BOUGHT

For Demolition. Excavating, Sand, Ballast,
Cartage, &c. Estimates free.

B. GOODMAN,

Contractor and Housebreaker,
68 CAMBRIDGE ROAD, MILE END, E.
Wires, "Homemade, London." Tel. No. 4172 Avenue.

A WARM BATH

IN
10 MINUTES.

PATENT

"Calda" Geyser.

SAFE, EFFICIENT, DURABLE.
ATMOSPHERIC BURNER. NO FLUE REQUIRED.

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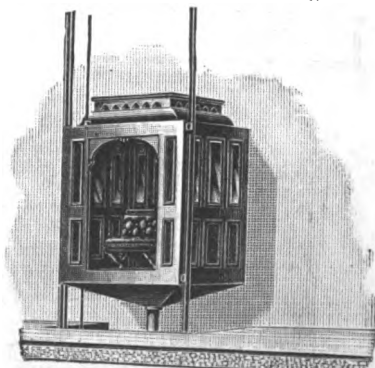
LIFTS and HOISTS.
ELECTRIC, HYDRAULIC,
BELT or HAND-POWER.
PICKERINGS, LIMITED,
STOCKTON-ON-TEES.

LIFT CARS

OF ANY DESCRIPTION
MADE TO ORDER, AND

Passenger Cars

MADE TO ARCHITECTS'
OWN SPECIAL DESIGNS.



ANY WOODWORK FOR LIFTS. TO THE TRADE.
HARDWOOD JOINERY OF ANY DESCRIPTION.

OVER 50 YEARS' EXPERIENCE IN ALL KINDS OF WOODWORK.

ESTIMATES FREE.

J. W. HILL & SON,

Pattern and Model Makers,
CLIFTON WORKS, BELVEDERE, KENT.

The WATER PURIFYING CO.

157 Strand, London, W.C.

Makers of the "AQUARIUS" FILTERS
Celebrated
For the Main Service Supply or for the Cistern.

3rd VENETIAN BLINDS
WRITE FOR CATALOGUE OF
REVOLVING SHUTTERS ETC.
STEVENS BROS CLUMBER ST NOTTINGHAM

VELURE

WHAT WE SAY

VELURE is a perfected JAPAN PAINT, super-
ceding varnish, with remarkable spreading,
elastic, and weather-resisting properties. One
coat equals two of paint and one of varnish, and
wears twice as long. 120 colours. Any shade
matched. Sanitary, washable.
Will not crack, chip, peel, blister, or fade.
SAVES TIME, LABOUR, VARNISH, AND MONEY.

WORTH

ONE GALLON
WILL COVER ABOUT
90 SQUARE YARDS

TRYING

WHAT CUSTOMERS SAY

ONE OR MORE FRESH LETTERS WILL APPEAR EACH TIME.

The Best for Carriages.

Two years ago I painted a phaeton with it a dark
green. It has been exposed to all weathers ever
since, and is as fresh to-day as when it was put
on. It is the best paint I have ever used.

J. SUMMERS,

March 2, 1906. Mellon Udrigle,
Aulbea, N.B.
We have hundreds of Testimonials similar to this.

WRITE FOR PARTICULARS AND PRICES TO
C. CHANCELLOR & CO.
15, CLERKENWELL, ROAD, LONDON, E.C.

STANDS ANY AMOUNT OF EXPOSURE TO FROST
OR SUN, HEAT OR DAMP, WITHOUT CRACK OR BLISTER.

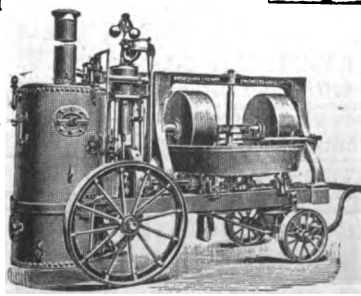
WHEN WRITING NAME THIS PUBLICATION

BARROWS & CO., LTD., BANBURY.

A Large Stock of PORTABLE ENGINES, New and Second-hand 5 to 25 H.P.
New MORTAR MILLS in all Sizes. Plain and on Wheels.
Newly-Designed COMBINED ENGINES, BOILERS, and MORTAR MILLS, Mounted on Rolled Steel
Girder Frame and
High Travelling
Wheels.



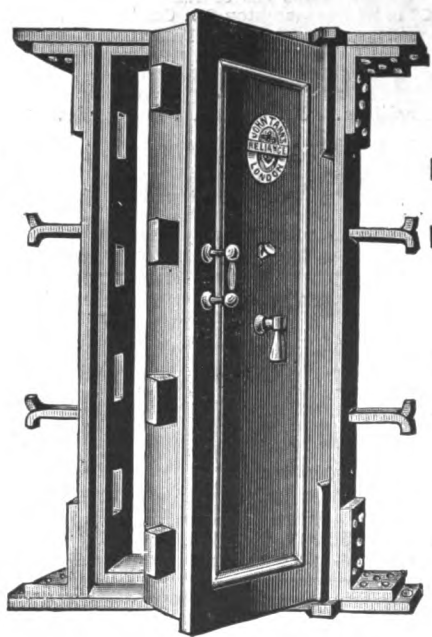
MORTAR-TIP
CARTS. SAW
BENCHES, with
Rising and Falling
Spindle.



Street Sweepers,
Water Vans and
Carts also a
Specialty.

Takes but little space, and is readily removed.

J. TANN'S



STRONG-ROOM AND PARTY-WALL DOORS

"ANCHOR RELIANCE"
BENT STEEL
SAFES

CHEAPEST AND BEST.
ESTIMATES AND LISTS FREE.

NEWGATE STREET,
LONDON.

MOSES M'CULLOCH & CO.,

Cumberland Foundry,
168 GALLOWGATE, GLASGOW.

MAKERS OF ...

Improved Iron Stable Fittings,
Cast-Iron Columns,
Bakers' Scotch Oven-Mountings,
Iron Doors and Shutters,
Lamp Pillars, &c.,

OF A THOROUGHLY
PRACTICAL AND
VERY SUBSTANTIAL
CHARACTER.

JONES & LEACH

MANUFACTURERS OF
HIGH-CLASS SQUARE-CUT
NEWELS, BALUSTERS, &c.

NEWTOWN, NORTH WALES.

Special attention given to Architects' Designs, and prices quoted on application; also for sunk Panel Work, Fluting, Carving, &c.



THE QUORN BOILER.

A new Sectional Boiler of the independent type now largely in use for Heating to
RESIDENCES, PUBLIC BUILDINGS, SCHOOLS, GLASSHOUSES, &c.

Requires no brick-setting. Most economical in fuel.
HEATING POWER 400 FT. TO 3,000 FT. OF 4-INCH PIPE.
Estimates for Complete Heating Installations.

RADIATORS A SPECIALTY.

MESSENGER & CO., LTD.
LOUGHBOROUGH, LEICESTERSHIRE.

LONDON OFFICE: 122 Victoria Street, Westminster, S.W.



For Index of Advertisers, see page x.

STANLEY, Surveying and Drawing Instruments. NOTICE OF REMOVAL

Of the Retail Department, from
GREAT TURNSTILE to
286 HIGH HOLBORN, LONDON, W.C.
Price List post free.

INDIA RUBBER STAMPS

For Heading Note Paper, Marking Linen, Crests, Facsimiles and all business purposes.

MONOGRAMS, 2 letter, 1s.; 3 letter, 2s. Complete, with box, pad, and ink. Postage 3d. extra. Full names, in neat type, 2s. post free. Price Lists free.

JOHN BERKLEY, 8 Livery St., Birmingham.

BARFORD & PERKINS

ENGINEERS,
PETERBOROUGH.

STEAM JACKETED WATER HEATERS



Have great advantages over any other form of Steam Water Heaters or Calorifiers

FOR
HARD
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SEND FOR CATALOGUE
OF

STEAM COOKING, HEATING, AND
LAUNDRY APPARATUS.

Hot & Cold Water Tap INVENTED BY

LORD KELVIN



NO PACKING
NO WASHERS
NO LEAKAGE

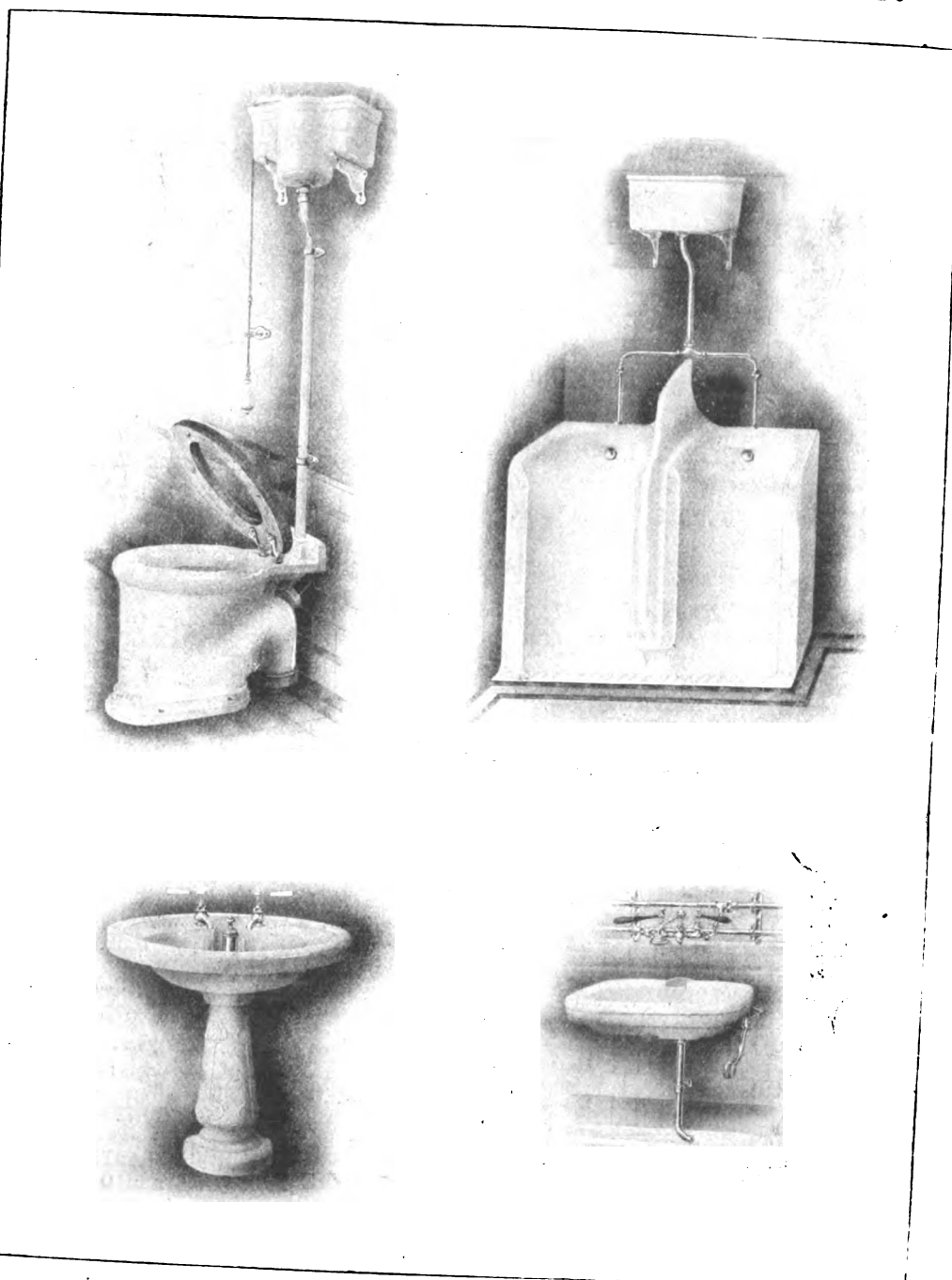
NEW
IMPROVEMENTS
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Sold in many varieties
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PLUMBERS & IRONMONGERS
AND TO THE TRADE ONLY BY THE

**PALATINE ENGINEERING CO.
LIMITED**
10, BLACKSTOCK ST. LIVERPOOL

ROYAL SANITARY CONGRESS, 1906.

Two Medals—Highest Awards.



GEORGE HOWSON & SONS,
Eastwood Sanitary Works,
HANLEY, STAFFS.

London Offices:
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Telegrams, "Howson, Hanley."
Telephone No. 54.



"Safety" Water Elevator Co.

(Or JONET'S Patent WELL GEAR).
104 LEADENHALL ST., LONDON, E.C. Works: Dunstable (BEDS).

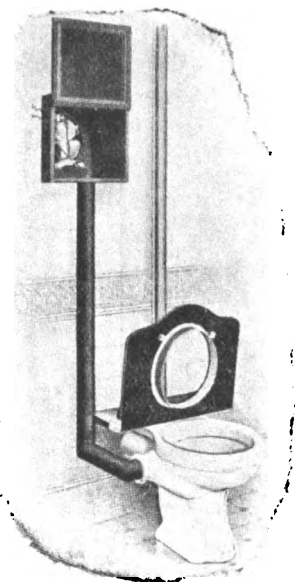
NO MORE OPEN WELLS.
ACCIDENTS.
POLLUTED WELLS.
BROKEN PUMPS.

£7 10s. complete.

Suitable for wells any depth. 10 to 500 feet.

OVER 300 ELEVATORS NOW IN USE IN
ENGLAND AND IRELAND.

Send for Testimonials and full Prospectus.



THE VENTO

Odourless
Arrangement.

FOR THE REMOVAL
OF ALL SMELL
FROM THE W.C.

*The only perfectly Sanitary W.C.
on the Market.*

Vento Limited, 10 Alfred Street, Leeds.

Awarded Bronze Medal Royal Sanitary Congress, 1906.

Smith's Patent Expansion Drain Testing Plugs.

A BOON TO INSPECTORS, ARCHITECTS, &c.

Weight complete 4 lbs., Brass Plates: One Plug expanding to all sizes from 3½ to 6½; sure grip.

Price complete 12/-

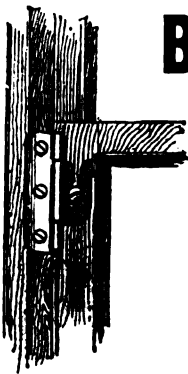
Special Advantages: LIGHTNESS. — NEATNESS. — CHEAPNESS.

The New Gradient Rule & Level (Smith's Patent).

(Just the Tool for every Builder, Joiners, Masons, Paviers, Bricklayers, &c.)

A most useful Tool for innumerable purposes, chiefly for cutting out trenches and setting drains accurately and without the use of lines; also setting Curbs, Paving, Flagging, &c. Can also be used as a square, plumb rule, ordinary level, &c. Made in Polished Hardwoods, Nickel Steel Blade, Brass Mounts. Prices 10/6 and 7/6.

SMITH & CO., Patentees & Manufacturers,
284 SOUTH ROAD, WALKLEY, SHEFFIELD.



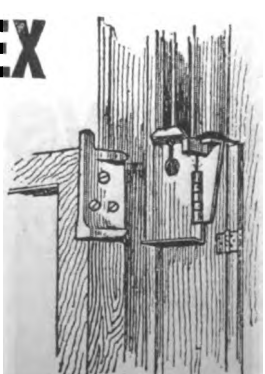
BROWN'S SIMPLEX WINDOW FITTINGS

For opening inwardly ordinary double-hung
Sliding Sash Windows.

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**O'BRIEN, THOMAS & CO., 18 Upper
Thames Street.**

Agents—BROWN & CO., WINDOW REFORMERS,
134 WEST NILE STREET, GLASGOW.



For Index of Advertisers, see page x.

Provincial Newspapers.

The Birmingham Daily Gazette,
The Great Morning Newspaper of
the Midlands.

Celebrated the 150th anniversary of its uninterrupted existence on November 16, 1891. Is now connected by
PRIVATE WIRE with its London Office,
47 Fleet Street, E.C.

The Birmingham Weekly Mercury,

Issued from the same Office,
Is freely acknowledged to be the most readable Paper in
the World.

Offices: 52 & 53 High St., Birmingham.

THE
BRISTOL TIMES & MIRROR

IS THE BEST, LARGEST, AND

Most Widely Circulated Paper

IN THE

WEST OF ENGLAND,

AND

The Recognised Medium

FOR ALL

HIGH-CLASS ADVERTISEMENTS.

BRISTOL: Small Street.

LONDON: 49 FLEET STREET.

THE THREE LEADING PAPERS OF THE WEST.

THE BRISTOL DAILY MERCURY.

ESTABLISHED 1790.

Recognised as the most up-to-date newspaper
and most influential advertising medium in the
West of England.

THE BRISTOL ECHO.

Six Editions Daily, 4d.

Bristol's most largely circulated and most
popular Evening Paper.

The BRISTOL WEEKLY MERCURY

FIRST ISSUED 1715.

Newsiest and best Weekly Newspaper in the
Western Counties. A great Family Organ, and
a most successful advertising medium.

Proprietors—**THE BRISTOL MERCURY, LTD.,**
35 Broad St., BRISTOL; 174 Fleet St., LONDON.

THE DERBYSHIRE COURIER

IS THE

Oldest Newspaper in Derbyshire
(Outside the County Town), and is one of the best

Advertising Mediums.

It is and has been for over Seventy years a recognised organ
for the publication of

COUNTY ADVERTISEMENTS,

and its columns are largely used by

**PUBLIC AUTHORITIES, by RAILWAY
and OTHER COMPANIES,**

And by **AUCTIONEERS and SOLICITORS,**
for announcements requiring wide publicity.

Offices: HIGH STREET, CHESTERFIELD.

THE
STAFFORDSHIRE ADVERTISER.

ESTABLISHED 1795.

**THE PRINCIPAL COUNTY PAPER
IN THE MIDLANDS.**

Advertisers will find it the best medium for
reaching superior class of readers over large
area centred by Staffordshire, fifth county in
population and sixth in wealth.

Published at Stafford every Saturday (price 2d.)
by J. & C. MORT, and to be obtained at Euston
and Principal Bookstalls between London,
Liverpool and Manchester.

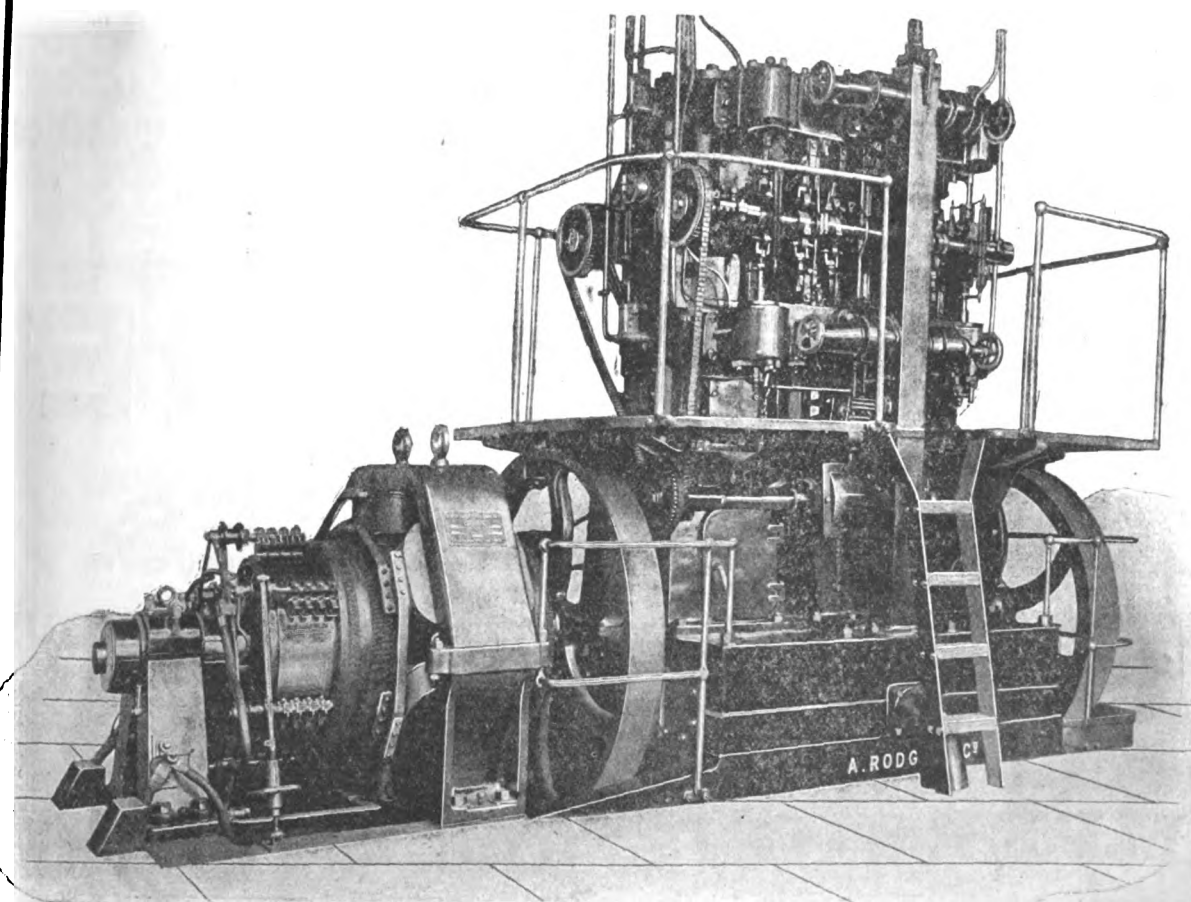
... THE ...

"Rodger-Rowden"

GAS ENGINE

FOR PRODUCER OR FURNACE GAS

FROM 100 B.H.P. UPWARDS.



140 B.H.P. ENGINE DIRECT COUPLED TO DYNAMO.

Complete Installations supplied, including Producer Plants for Anthracite, Coke, or Bituminous Coal.

Sole Makers: A. RODGER & CO.,
St. Helen's Engine Works,
GOVAN, GLASGOW.

CLARIDGE'S PATENT ASPHALTE COMPANY, LTD.**ROOFS, FLOORS, DAMP-PROOFS, RESERVOIRS, &c.**

BLOCKS IMPRESSED

ARCHITECTS and others are recommended to
insert in their SPECIFICATIONS the following—*"To be executed by CLARIDGE'S PATENT ASPHALTE COMPANY, LIMITED, whose Offices
are at VICTORIA EMBANKMENT, W.C."* R. T. WILKINSON, SECRETARY.**C. C. DUNKERLEY & CO., LIMITED, MANCHESTER.**

Channels,

Compound Girders,

Flitches,

Angles and Tees.

LARGE AND VARIED STOCK OF

ROLLED STEEL JOISTS.

Sections 20 in. x 7 in. to 3 in. x 1½ in. Maximum Lengths, 40 ft.

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"AJAX, MANCHESTER."STORE ST., GREAT ANCOATS ST.,
MANCHESTER.Telephone (Trunk, 279
Numbers { Local, 279
.. 3,691

Bars,

Hoops,

Plates,

Sheets.

ESTABLISHED 1841.

**ROBIN HOOD, HOWLEY PARK
AND HARD YORK STONES. . .**For Monumental and
General Building Work.

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SCAPPLED, SAWN, or WORKED
READY FOR FIXING.**PAWSON BROTHERS, Ltd.,**

Robin Hood, Howley Park, Britannia, and Thorpe Quarries,

TELEGRAMS,
"PAWSONS, MORLEY."**MORLEY, YORKSHIRE.**TELEPHONE,
No. 49 MORLEY.

SAMPLES SUBMITTED.

PRICES QUOTED ON APPLICATION.

"VENTURENE"**OPAL WALL TILES.****BRITISH-MADE throughout by BRITISH LABOUR.****Splendid Characteristic Surface.****IMPERVIOUS and STRONG.****In WHITE and ARTISTIC TINTS.****Manufactured by****CHANCE BROS. & Co., Ltd.,****GLASS WORKS, near BIRMINGHAM.****For Index of Advertisers, see page x.**

By His Majesty's  Royal Letters Patent.

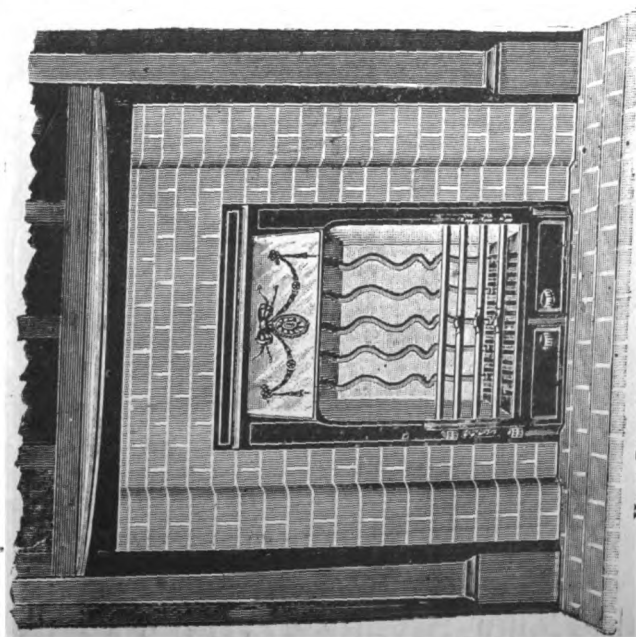
PRIOR'S PATENT

HEAT DISTRIBUTOR

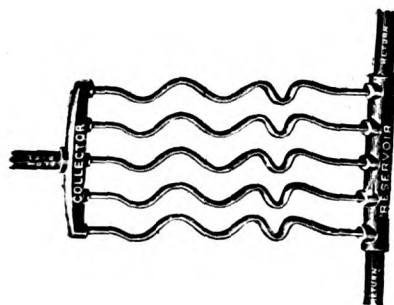
THE HEAT USUALLY LOST UP THE CHIMNEY IS
 CAPTURED BY THE DISTRIBUTOR
 AND USED FOR WARMING BEDROOMS, HALLS, &c.

Royal Sanitary
 Congress, 1906.
 TWO MEDALS.
 Highest Awards for
 Venetian Fire Grate
 and Heat Distributor.

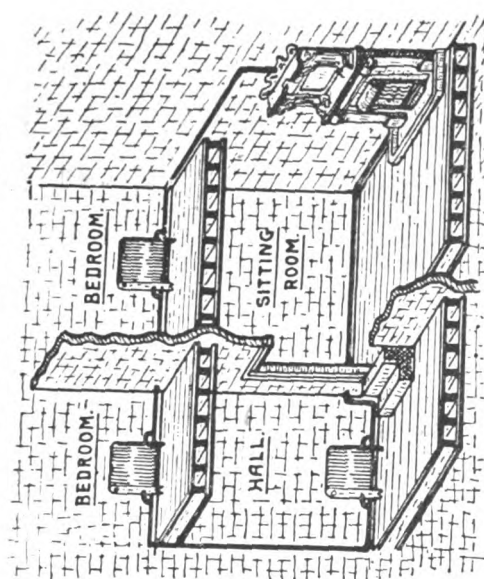
CATALOGUES FREE.



Heat Distributor Fixed in Fire Grate.



This Heat Distributor is fixed
 at the Back of the Fire.



Warming Hall and Two Bedrooms from Sitting Room Fire.

3 Rooms Heated from
 1 Sitting Room Fire.

The NEW METHOD OF HEATING

JAMES D. PRIOR, Empire Works, Holliday Street, BIRMINGHAM.

GLAZED BRICKS

THE LEEDS POTTERY & MIDDLETON FIRECLAY WORKS,
MIDDLETON, LEEDS.

The Middleton Estate and Colliery Co., Ltd., Proprietors.



EVERED & CO^{LD}
27-35 DRURY LANE W.C.
AND AT BIRMINGHAM & SMETHWICK.

**R
&
S**

ART METAL WORKERS S.S.S.
S.S. ARCHITECTURAL WROUGHT IRON WORK.
& BRASS FOUNDRY A SPECIALITY S.S.
GAS OR ELECTRIC LIGHT FITTINGS, GATES,
RAILINGS, GRILLS, VANES & FINIALS, ETC.

THE
Architect and Contract Reporter.

FRIDAY, JULY 13, 1906.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

. Entered in the United States of America as second-class matter. Agents for America, The International News Co., 5 Bream's Buildings, Chancery Lane, London, England, and New York.

**Important Notice to the
Architects and Civil Engineers of Westminster.**

As Westminster has become one of the most important centres of the professions of Architecture and Civil Engineering, arrangements have been made by Messrs. GILBERT WOOD & CO., Ltd., to establish Branch Offices in that district at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. becoming the representatives for all business purposes.

The Birmingham Offices are at 102 COLMORE ROW.

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Melbourne, Sydney, Brisbane, and Perth, Australia; Wellington, Christchurch, and Auckland, New Zealand; Launceston and Hobart, Tasmania.

SOUTH AFRICA—Central News Agency, Ltd.

Telephone No. 4725 Holborn.

NOTICE TO ADVERTISERS.

Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further

answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

TENDERS, ETC.

. As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITION OPEN.

DOLGELLEY.—July 14.—The Dolgelley Urban District Council invite the terms of engineers for preparation of a scheme for sewage disposal, &c. The fee for each heading must be stated separately, and must include for all out-of-pocket expenses incurred in visiting the district, and otherwise in connection with the preparation of the scheme and the carrying-out of the works. The Council do not bind themselves to accept any of the terms offered. Mr. Richard Barnett, clerk, Queen's Square, Dolgelley.

CONTRACTS OPEN.

ANNFIELD PLAIN AND DIPTON.—July 17.—For the erection of two fire-stations (one at Annfield Plain and the other at Dipton), for the Annfield Plain Urban District Council, Durham. Mr. T. J. Trowsdale, surveyor, Council Offices, Annfield Plain.

AWBRIDGE.—July 23.—For repairs, painting, provision of lavatory accommodation, erection of offices, &c., at the Awbridge Council school, Hants. Deposit 17. 1s. Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

BATLEY.—July 14.—For all trades required in the extension of the Batley and district hospital. Messrs. Walter Hanstock & Son, architects, Batley.

BECKENHAM.—July 16.—For the erection of extensions to and the modernisation of the existing boys, girls and infants' departments of the public elementary schools, Bromley Road. Deposit 5/. Mr. John A. Angell, surveyor.

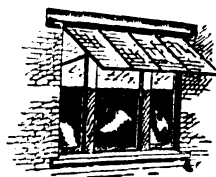
BEDHAMPTON.—July 16.—For sundry small works of ventilation, conversion of privies to water-closets, new offices and drains and new iron boundary fences to the Bedhampton Council school, Hants. Deposit 17. 1s. Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

LUXFER SASH CANOPY SKYLIGHT PAVEMENT PRISMS

Bring in Daylight.

Specialties:—Fire-resisting, Ornamental and Roof Glazings. Dome Lights, Ceiling Lights, Lantern Lights, Floor Lights, Stallboard Lights, &c., &c.

The British Luxfer Prism Synd., Ltd., 16 Hill St., Finsbury, E.C.



BELFAST.—July 19.—For the erection of a dwelling-house near Cultra railway station. Deposit 1*l.* 1*s.* Messrs. Graeme-Watt & Tulloch, architects, 77A Victoria Street, Belfast.

BELFAST.—July 20.—For building and completing a block of warehouses at Franklin Street, Brunswick Street and James Street South. Mr. Henry Seaver, architect, Scottish Temperance Buildings, Belfast.

BEXLEY HEATH.—July 23.—The Bexley Urban District Council invite separate tenders for (1) extension of the existing car-shed to form a paint shop, and (2) erection of a steel structure for a repairing shop. Deposit 10*s.* The Manager's Office, Car-sheds, Bexley Heath, Kent.

BRADFORD.—July 14.—For alterations to house at Westgate Hill. Names to Messrs. Fairbank & Wall, architects, Craven Bank Chambers, Bradford.

BRAISHFIELD.—July 23.—For repairs, painting and provision of lavatory accommodation at Braishfield Council school, Hants. Deposit 1*l.* 1*s.* Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

CLECKHEATON.—July 16.—For the erection of a four-storey mill and offices at Prospect Mill. Messrs. Howorth & Howorth, architects, surveyors, &c., Old Bank Chambers, Cleckheaton.

COSHAM.—July 23.—For erection of buttresses, new fencing, tierods, distemping new urinal and drains at the Cosham infants' council school, Hants. Deposit 1*l.* 1*s.* Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

CULLINGWORTH.—For the various works (mason's, labour only) required in erection of a detached residence, Manywells, Cullingworth, Yorks. Mr. Arthur P. Harrison, architect and surveyor, 18 Cooke Lane, Keighley.

DENMEAD.—July 16.—For sundry small works of additional window to classroom, ventilation, external and internal repairs, and internal painting to the Denmead Council School, Hants. Deposit 1*l.* 1*s.* Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

EDINBURGH.—July 17.—For the mason, carpenter, smith, slater, plumber, plasterer, painter and asphalter's work to be executed in the reconstruction of tenements, Greenside Row. Burgh Engineer, City Chambers, Edinburgh.

FAREHAM.—July 23.—For repairs, external and internal painting, ventilation, &c., at the Fareham Council school, Hants. Deposit 1*l.* 1*s.* Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

FAWLEY.—July 23.—For external painting, alterations to offices, erection of new lavatories and cloak-rooms, drainage, new offices, heating, ventilation, &c., at the Fawley Council school, Hants. Deposit 1*l.* 1*s.* Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

FUNTLEY.—July 23.—For gravelling, enlarging gateway, erection of cloak-rooms and lavatories, drainage, corrugated iron offices, conversion of buildings for coal store, &c., at the Funtley Council school. Deposit 1*l.* 1*s.* Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

GLASGOW.—July 30.—For the construction of a sponge cloth laundry at St. Rollox Stores, for the Caledonian Railway Company. Deposit 2*l.* 2*s.* The Engineer, Buchanan Street station, Glasgow.

HALIFAX.—July 14.—For the mason, carpenter and joiner, plasterer and slater, plumber and glazier's work in erection of a villa at Holywell Green. Messrs. Chas. F. L. Horsfall & Son, architects and surveyors, Lord Street Chambers.

HALIFAX.—July 17.—For the execution of joiners' work required in connection with alterations to shops in the market hall and shop in Piece Hall. Mr. James Lord, borough engineer, Town Hall, Halifax.

HEADS NOOK.—July 16.—For the erection of church rooms at Heads Nook, Carlisle. Mr. J. H. Martindale, architect, Eaglesfield Abbey Rooms, Castle Street, Carlisle.

HEATH TOWN.—July 21.—For the erection of infants' department at Woden Road Council School, Heath Town, Staffordshire. Deposit 1*l.* 1*s.* Mr. Graham Balfour, director of education.

IRELAND.—July 17.—For alterations and additions to the premises, 31 Market Street, Armagh. Mr. H. C. Parkinson, architect, College Street, Armagh.

KING'S HEATH.—July 25.—For the erection of six homes for epileptics and other works on the Monyhull Hall estate, near King's Heath, Birmingham. Apply to Mr. R. J. Curtis, clerk to the joint committee, Guildhall Buildings, Birmingham, and deposit 25*l.* before June 30.

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LEEDS.—July 20.—For the construction of four filter-beds, clear-water tank, meter-house, the making of roads, laying of pipes and drains, &c., in connection therewith at the site of their new filter-beds, Otley Road, Headingley, Leeds, for the waterworks committee. Deposit 5*l*. Mr. Chas. G. Henzell, M.I.C.E., waterworks engineer, Municipal Buildings, Leeds.

LONDON.—July 14.—For the construction of an underground convenience adjoining Uxbridge Road and within Kensington Gardens. Deposit 1*l*. Mr. E. B. B. Newton, borough surveyor, Town Hall, Paddington.

LONDON.—July 16.—For the erection of new school, Drayton Green, West Ealing. Deposit 5*l*. 5*s*. Mr. Charles Jones, borough engineer, Town Hall, Ealing, W.

LONDON.—July 17.—For certain works in alterations and additions to the Brettenham Road school, together with the annual cleansing and repairs at the Brettenham Road and Croyland Road schools, Edmonton. Mr. Henry W. Dobb, architect, Town Hall, Lower Edmonton.

LONDON.—July 17.—For the erection of a dwelling-house at No. 80 Upper Thames Street, E.C., for the Corporation of London. Deposit 3*l*. 3*s*. The City Engineer, Guildhall, E.C.

LONDON.—July 24.—For pulling-down and reconstructing the second portion of the Streatham depôt, Streatham Hill, as a car-shed for electric cars, for the London County Council. The Superintending Architect's Department (Highways Section), 13 Charing Cross, S.W.

LONDON.—July 26.—For the erection of a central library building in Mare Street, Hackney. Deposit 1*l*. 1*s*. Mr. H. A. Crouch, architect, 12 Gray's Inn Square, W.C.

LONDON.—August 1.—For the erection of workshops at their workhouse in the Harrow Road, W., for the Paddington Board of Guardians. Deposit 5*l*. 5*s*. Messrs. Giles, Gough & Trollope, architects, 28 Craven Street, Strand, W.C.

MANCHESTER.—July 14.—For the erection of a manager's house at the Withington sewage works, Chorlton-cum-Hardy, for the rivers committee. The Secretary of the Rivers Department, Town Hall, Manchester.

MAPPLEWELL.—July 24.—For the conversion of offices and asphaltting of part of playground at Mapplewell provided infant school, Yorks. Mr. T. Graham, divisional clerk, Education Office, Obelisk Chambers, Barnsley.

MILTON ABBOTT.—July 17.—For additions and alterations to Milton Abbott Wesleyan chapel, near Tavistock. Mr. Walter Frise, Leigh Ball Cottage, Milton Abbott, Tavistock.

MORLEY.—July 16.—For the joinerwork required in the erection of a corrugated iron shed at the Victoria service reservoir, and for the mason, joiner and slaterwork required in extending the existing buildings at the water-tower, Bruntcliffe Lane. Mr. W. E. Putinan, borough engineer and surveyor, Town Hall, Morley, Yorks.

NEWCASTLE-ON-TYNE.—For St. Jude's new parochial buildings. Mr. A. B. Plummer, diocesan architect, 13 Grey Street, Newcastle-on-Tyne, and at Tynemouth.

PENISTONE.—July 17.—For the following works to be executed during the summer holiday, for the Kirkburton district sub-committee:—Lepton provided school, painting exterior of school; Shelley provided school, replacing opaque glass in windows of infants' department with clear glass, renewing wooden floors of two classrooms, repairs to roofs and flags. Mr. T. R. Bryan, divisional clerk, Education Office, Penistone, Yorks.

PORTCHESTER.—July 23.—For gravelling, erection of offices, ventilation, &c., at the Portchester Council school. Deposit 1*l*. 1*s*. Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

ROCHE.—July 14.—For the erection of a stable, piggery and wain house at Tregoss farm, in the parish of Roche, Cornwall. The Farmhouse at Tregoss.

ST. ANNES-ON-SEA.—July 28.—For the erection of a technical school at St. Annes-on-the Sea, Lancs. Deposit 2*l*. Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

SANDIACRE.—July 16.—For erection of proposed Council school, Sandiacre, Derbyshire, to accommodate about 320 children. Deposit 1*l*. 1*s*. Mr. G. H. Widdows, architect to the committee, St. Mary's Gate, Derby.

SCILLY BANKS.—July 14.—For the erection and completion of two dwelling-houses at Scilly Banks, near White-

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haven. Mr. Wm. Carmichael, architect, Parton, near Whitehaven.

SCOTLAND.—July 14.—For the following works at Lundie House, near Edzell:—Gate lodge—mason, carpenter, slater, plumber and plasterer's work; stable—mason, carpenter and slater's work; rabbit and sheep fence and fencing at stables—supplying and erecting about 1,400 yards. Mr. Geo. Bennett Mitchell, architect, 148 Union Street, Aberdeen.

SCOTLAND.—July 16.—For the mason, carpenter, plumber, slater's, &c., work in executing the following improvements on Lossiemouth schools, for the Drainie School Board:—(1) Building new latrines; (2) relaying and extending the drain system; (3) levelling and gravelling the playgrounds; (4) providing new seating, &c. Mr. R. R. Pratt, architect, Elgin.

SCOTLAND.—July 17.—For the mason, carpenter, slater, plumber, plasterer, painter and glazier's work of villa to be erected in Elgin. Mr. Charles C. Doig, architect, Elgin.

SCOTLAND.—July 23.—For the mason, carpenter, slater, lath and plaster, and painter and glazier's work to be done in connection with the renovation of the parish church of Kirkmichael. Mr. John Robertson, architect, Inverness.

SCOTLAND.—July 26.—For the iron and steelwork, masonwork, carpenter and joinerwork and paintingwork of a two-storey goods shed, for the Aberdeen Harbour Commissioners. Mr. R. Gordon Nicol, harbour engineer, Aberdeen.

STRETTFORD.—July 20.—For the erection of twenty pairs of semi-detached cottages in Lacy Street, Stretford, Manchester. Deposit 1*l*. Messrs. John Bowden & Co., architects, 14 Ridgfield, Manchester.

TEDDINGTON.—July 18.—For the erection of additional Council offices at Elmfield House, Teddington. Mr. M. Hainsworth, surveyor, Council Offices, Teddington.

THORPE AND BAILIFFE BRIDGE.—July 14.—For the erection of new school at Thorpe, Rothwell, Yorks (builder, joiner, slater, plumber, plasterer, painter). Deposit 1*l*. Erection of new school at Bailiffe Bridge, Hipperholme (builder, joiner, slater, plumber, plasterer, painter, concrete). Deposit 1*l*. Bilbrough Provided school—altera-

tions (builder, joiner, plumber, plasterer, painter). Mr. J. Vickers-Edwards, county architect, County Hall, Wakefield.

WALES.—July 16.—For the erection of twenty dwelling-houses at Senghenydd. Mr. G. L. Watkins, architect, Rectory Road, Caerphilly.

WALES.—July 17.—For alterations to the front of the Conservative Club, Treherbert. Mr. Jacob Rees, architect, Pentre.

WALES.—July 17.—For the erection of Calvinistic Methodist chapel, Llanwrttyd Wells. Mr. W. Beddoe Rees, architect, 3 Dumfries Place, Cardiff.

WALES.—July 17.—For the renovation of the town clock tower of Machynlleth. Mr. John Rowlands, clerk, Machynlleth, Montgomery.

WALES.—July 17.—For reseating, &c., St. Athan Calvinistic Methodist chapel. Rev. D. Wynn Rees, Llancale, near Cardiff.

WALES.—July 17.—For reseating, &c., Penmark Calvinistic Methodist chapel. Rev. D. Wynn Rees, The Manse, Llancale, near Cardiff.

WALES.—July 21.—For alterations and additions to Bethel English Baptist chapel, Maesteg. Rev. R. Davies, Rhainfa, St. Michael's Road, Maesteg.

WALES.—July 21.—For converting premises at Penry Street, Georgetown, Merthyr, into bakehouse, warehouse and coachhouse. Mr. T. Edmund Rees, architect, Gernant, The Walk, Merthyr.

WALES.—July 23.—For erection of a mixed school (to accommodate 400 children), with the necessary offices, boundary walls, &c., at Darranlas, Mountain Ash. Deposit 2*l*. 2*s*. Mr. W. H. Williams, architect, Town Hall, Mountain Ash.

WALES.—July 23.—For the erection of (1) public offices; (2) stables and cartshed, together with boundary walls, for the Risca Urban District Council, Mon. Deposit 2*l*. 2*s*. Mr. A. J. Dardis, surveyor, Council Offices, Risca.

WALES.—July 25.—For additions and alterations to the Council school at Narberth, Pembrokeshire. Mr. D. E. Thomas, architect, 17 Victoria Place, Haverfordwest.

WALES.—July 26.—For erection of stables, carthouse, yard and boundary walls, also butcher's shop and conversion

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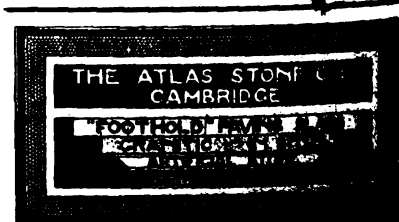
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WATERLOO.—July 23.—For painting and decorating, new drains, new offices, ventilation, &c., at the Waterloo Council school, Hants. Deposit 1*l.* 1*s.* Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

WEMBLEY.—July 17.—For the construction of about 50 yards lineal of concrete revetment wall with iron palisade fencing. Mr. Cecil R. W. Chapman, the surveyor, Public Offices, Wembley.

WESTEND.—July 16.—For the erection of cook's bedroom at the workhouse, Southampton. Messrs. W. H. Mitchell, Son & Gutteridge, architects, 9 Portland Street, Southampton.

WEST HARTLEPOOL.—July 31.—For the construction of steps leading from the Longhill subway to the proposed road. Mr. Nelson F. Dennis, borough engineer and surveyor.

WHITLEY.—July 18.—For alterations and additions to the school buildings, Whitley, near Runcorn. Deposit 1*l.* Mr. H. Beswick, county architect, Newgate Street, Chester.

WOLVERHAMPTON.—July 31.—For the erection of additions to the administrative block at the fever hospital in Green Lane. Deposit 1*l.* 1*s.* Mr. George Green, borough engineer.

TENDERS.

BARNARD CASTLE.

For pair of semi-detached houses in Wilson Street. Mr. T. FARROW, architect, Barnard Castle.

Accepted tenders.

Wilson & Son, excavator, bricklayer and mason	£205	0	0
Brown, carpenter and joiner	141	10	0
Raine, plumber and glazier	46	0	0
Lancaster, tiler and slater	40	0	0
Welford, plasterer	26	10	0
Wrathall, painter	10	0	0

BINGLEY.

For the erection of dressing, twisting and store-rooms at the Albert Mills. Mr. Wm. Rhodes Nixons, architect, Bingley, Yorks.

Accepted tenders.

J. & W. Potter, mason and bricklayer	£854	10	0
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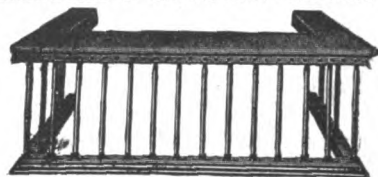
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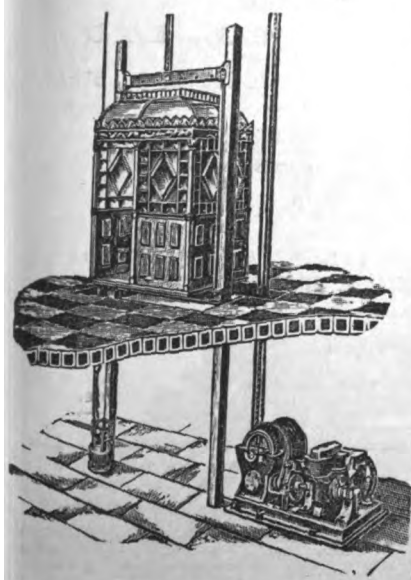
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Dolman	21,800	74,000	95,800
Hopkins	20,000	73,000	93,000
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Hughes	4,969	0	0
Hunt	4,812	0	0
Privett	4,757	0	0
Baster	4,589	0	0
Learnmouth	4,569	0	0
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Hiles	475	0	0
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Powell	470	0	0
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Woollev & Sons	450	0	0
BOLT, Hereford (accepted)	450	0	0

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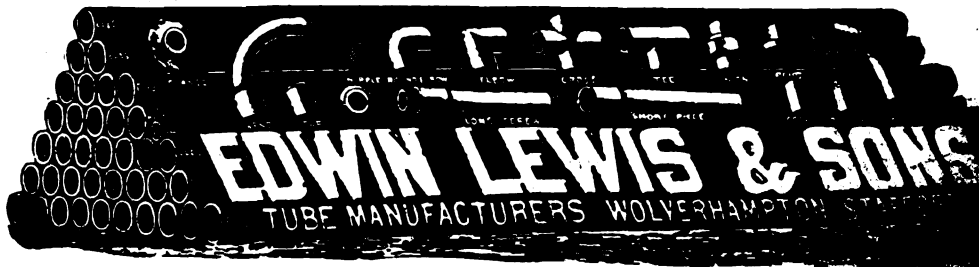
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FITTINGS**

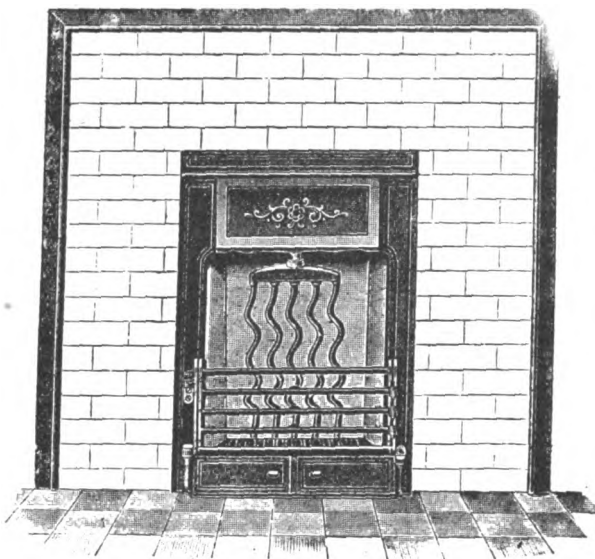


THE DELTA METAL CO.,
EAST GREENWICH,
LONDON, S.E.

lock it from the inside if privacy is sought. The roof is the most conspicuous feature, for it is formed in six separate pieces which can be made to move independently. In consequence it is possible to have either all the roof open to the sun, three-quarters, half and so on. All the gearing for altering the roof is placed under the floor where there is no chance of it getting out of order. The manufacturers are G. A. Williams & Co. Many visitors will find the exhibits of Mr. P. E. Gane a relief from the surrounding stands. It is a pleasing scheme for the decoration and furnishing of the dining-room and library of a modern house. Both are reposeful, and show thought for the attainment of a picturesque effect.

Rowe Bros. & Co., Ltd., in addition to showing a remarkably large supply of closets, cisterns, sinks, &c., exhibit their own manufactures in the shape of a striking collection of sections of lead pipes varying from 6 inches to $\frac{1}{8}$ th inch, as well as other useful products of lead, including special pipes and gutters, sash weights, &c. A bronze medal was awarded to their lead pipes. Their City Lead Works, Canons Marsh, Bristol, were rebuilt in 1903, and contain show-rooms which must prove a boon to the building trade in the West of England. They are on a most extensive scale, and contain stores sufficient to supply immediately all ordinary requirements. Rowe Bros. & Co., Ltd., have, moreover, extensive works in Birmingham and Liverpool. Several ranges come from the Eagle Range and Gas Stove Co., Ltd. The Eagle "Governor" grate, with their doors, may there be seen. If a fire is required to burn up very quickly the entire front is closed. The reverse of this is obtainable from the same stove by the slow combustion arrangements, which permits of a fire to be left alone for fourteen hours. The London Warming and Ventilator Co., Ltd., show the "Florence" patent warm air and ventilating grate in action, as well as several stoves, gas fires, &c. The Maughan Patent Geyser Co., Ltd., boldly assert that their "New Teba" geyser is the most perfect geyser made, for it embodies the experience of thirty years' manufacture of these contrivances. Its most essential feature is the patent safety-valve, or interlocking gas and water-taps, which prevent all accidents. Water must flow through the copper chambers before the gas jets will become lighted, thereby removing the risk of an explosion.

The "Simplice" geysers are on a somewhat different principle, for the water falls like a spray in the interior. The "Multi-supply" geyser, as its name suggests, is intended to provide hot water to several rooms, and renders a house altogether independent of the kitchen fire. Hot water is turned to quite another purpose by Prior's patent heat distributor. The idea is a most simple one, and should be carefully inspected at the stall of Mr. J. Damrel Prior in the east hall. At the back of a sitting-room grate a four or five copper tube distributor is inserted. The tubes are connected at the top by a gun-metal collector, out of which a flow-pipe conveys the water up the chimney or other convenient position to radiators or hot-water pipes



in adjoining or overhead rooms. The water is then returned to the reservoir at the bottom of the distributor. The hot water is controlled by a tap, and may be kept out or admitted into a room at will. One fire

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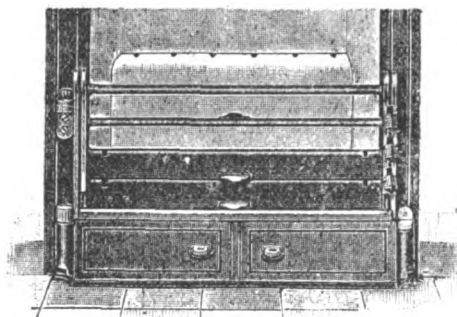
as being the premier Water Paint.

SOLE MANUFACTURERS—

THE SILICATE PAINT CO.,

J. B. ORR & CO., Ltd.,
CHARLTON, LONDON, S.E.

will, therefore, warm four rooms at the expenditure that is usually incurred for a single fire. The radiators may be fitted up with a combination towel rail, radiator and clothes airer. Mr. Prior has also invented improvements for the ordinary grate. His "Venetian" fire grate has an adjustable

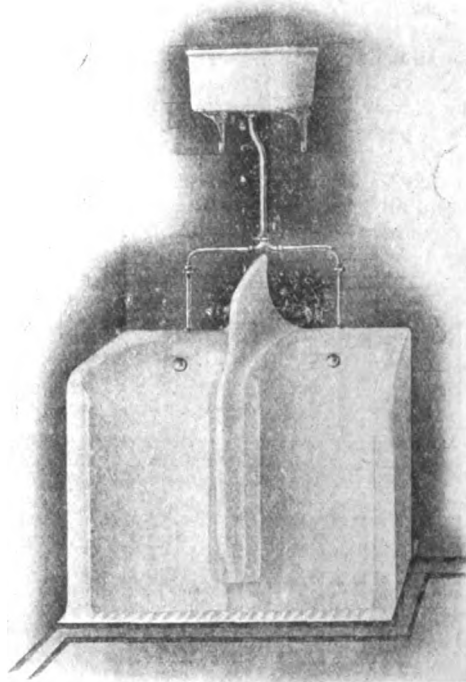
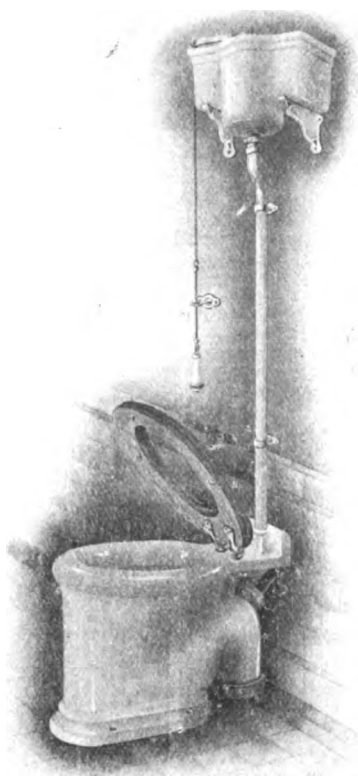


canopy at the top and draught-doors at the bottom and three Venetian bars, which, both conjointly and independently, make a fire completely controllable. The three Venetian front bars are like the laths of an ordinary Venetian blind.

medals have been awarded to them. The "Mural" closet, which won one of them, is fixed to iron wall-brackets



by nuts and screws, consequently if the pedestal has to be renewed or changed it can be done without touching the



For a very slow fire, such as an all-night one, all the bars are closed; for a moderate the top one is open, while for a fast fire all the Venetian bars and also the draught-door are open. The entire front swings open for cleaning purposes. For both the combined grate with the heating apparatus and the Venetian grate Mr. Prior has received bronze medals. The grate is also a preventive of smoky chimneys. The Iron and Marble Co., Ltd., have selected various makes of grates, ranges, registers and other necessities for house-building. They received an award for the "Drawell" register grate. The "Geyser" range should receive attention. James Stott & Co. are represented by several patent roof ventilators, fans, &c. The British Fuel Economiser and Smoke Preventer Company show a section of a boiler furnace with a "Bunsen bridge," which effects the prevention of smoke and a saving of fuel.

George Howson & Sons, Ltd., have their sanitary works at Hanley. The numerous objects in vitreous fireclay are for their own sake deserving of inspection. Two bronze

wall surface. It is fitted with an improved detachable seat and a "Rivo" cistern. The other medal was awarded for the colonial urinal, which is conspicuous for its glaze and cheapness in price. We show, in our illustration, their surgeon's lavatory, intended for operating rooms. It is fitted with a lever apparatus to turn on the taps. Below the basin is another lever which on a slight pressure opens the waste pipe. Some of the merit for the boasted advance in surgery should be accorded to firms like Messrs. Howson, who do much to render the surgeon's work successful. Messrs. Howson cater largely for public and private institutions. For example, their Asylum Safety Bath fitting has regulating valves and cam action, which render it impossible for a careless or even a malicious attendant to allow too much hot water to enter the bath and scald the user. A turn of the handle will let on the cold water, a further turn admits the hot, and the two then combine and make a temperate bath. This fitting, together with their automatic drop by drop flushing cisterns, have

been deferred by the judges for further consideration before an award is announced. There are other specialties intended for hospital work.

Doulton & Co.'s collection is always sought by visitors. They have fitted up two bath-rooms in a charming manner, and introduced many of the luxuries and necessities seen in this important part of every well-equipped house. On the same stand are their closets, urinals and lavatories, an oval operating lavatory with knee-operated mixing valve (which received a bronze medal), a sink for operating-rooms, an operating lavatory, a non-concussive water mixing valve (awarded a similar medal), and a mortuary slab. In the corridor are three glazed fireclay stoves and fireplaces which received a bronze medal from the Sanitary Institute. Shanks & Co., Ltd., show, amongst many other things, three or four baths. Those fitted with showers are pleasantly suggestive of coolness. In addition there are urinals, closets, &c. On another stand are a selection of marble-top lavatories.

A drain testing plug that has many recommendations (proof of this is seen in the bronze medal awarded to it) is shown by Mr. D. Smith, the inventor, of Sheffield. It can expand from $3\frac{1}{2}$ inches to $6\frac{3}{4}$ inches diameter. Mr. Smith also makes a gradient rule and level shown by the company of that name. The self-acting disinfectant machine is fixed on the top of a closet system. It discharges automatically a spray of the pine, carbolic or other disinfectant into the cistern water as it runs down for flushing purposes. The cost of the original machine and of its upkeep is insignificant, but its possibilities as a germ exterminator are remarkable. Last year, and again this year, the Sanitary Institute awarded a medal to the steel portable cloak-room fitting made by the "England Works." It accommodates hats, coats, umbrellas, &c. For large institutions it can be supplied in ranges up to 100 feet long. J. Duckett & Son, Ltd., have a big exhibit of glazed ware sanitary fittings. The judges have marked out for distinction a new radial trapped outlet for wash-down w.c.'s, Debney's patent. The jointed outlet can be turned three-quarters of a circle, so as to make an easy connection with drain or soil pipes in any position. The advantages are easily comprehended. Hines's locking bricks for bacteria beds, &c., obtained a bronze medal. The bricks can be

built in the ordinary way, closely together or pigeon-holed, leaving $2\frac{1}{2}$ -inch or $4\frac{1}{2}$ -inch openings. The makers claim that the new system effects a saving of 33 per cent. Enthusiasts for hygiene will be greatly interested in the idea patented by Vento, Ltd. This is an attachment fitted to w.c.s which makes an odourless water closet. An air vent is made in the pan which communicates with the outer air by means of a metal tube passing an electric fan fitted in a box. The fan may be set in motion as soon as the w.c. door is closed either by a switch or an automatic patent door bolt. The Plastoment Asbestos Flooring Co. have laid down a piece of their jointless flooring.

Our brief *résumé* of the exhibition will show it contains much to interest and instruct a large number of people during the fortnight in which it is to remain open. There are numerous novelties shown for the first time.

A new school is to be erected at Chalkwell Park, for the Southend-on-Sea education committee.

MR. CARNEGIE has increased his offer of 5,000*l.* to 15,000*l.* for the Northampton Library. Work will be immediately commenced.

ON Thursday, July 12, the British Association of Waterworks Engineers commenced their three days' conference at Scarborough.

THE Shoebury Urban Council have decided to erect a new gasholder, and that estimates be obtained, to contain 60,000, 100,000 and 120,000 cubic feet.

AT Preston Quarter Sessions on the 5th inst., eight magistrates, four barristers, six experts from various towns and others were engaged for five hours in an appeal regarding a drain which can be put right for 3*l.* The appellant was Mr. Hall, agent for Lord Derby, and the respondents the Preston Corporation. Appellant asked that a conviction at the police court regarding an alleged non-abatement of nuisance be quashed. Ultimately this was done, and the case was settled, the terms being that each party should pay its own costs and the appellant to purchase a new grease trap which the Corporation shall affix.

NEW PATENT "TRIDENT" COOKING RANGE.



**PERFECT COOKER,
VERY ECONOMICAL,
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OPEN FIRE MADE.**

**Choice Selection of
New Pattern Mantle Registers,
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ARGYLL COMPANY'S MOTOR WORKS.

ONE of the most hopeful signs for the future of British manufactures is the application of architecture to works and factories. Anyone who studied the kind of buildings which were formerly erected in English and Scottish towns would from their flimsy character realise that the owners were indifferent about the future. Their main ambition was to make a fortune as quickly as possible and then to retire, having the expectation that they would ascend to a different stratum of society. The State did not care about architecture or construction. But at last it realised the danger of defective buildings to the people employed in them. The numerous Factory Acts are a commentary on a class of work that does not deserve to be called building. Since the passing of Limited Liability Acts a great change has been recognised. A successful business has acquired a longer term of existence than was heretofore possible. It is therefore worth having a building which will endure. Moreover, it is becoming realised that it is more economical to begin with a suitable plan with everything required in its proper place than to be subjected to prosecutions for breaches of the Factory Act, and in consequence to become notorious rather than respected.

The new buildings of the Alexandria works in the Vale of Leven, about twenty miles from Glasgow, can be taken as a remarkable exemplification of the spirit of enterprise which is beginning to prevail. Works and offices which have cost nearly 150,000*l.*, exclusive of machinery, have been carried out from the designs of Mr. Charles J. Halley and Mr. Hamilton Neil. The works were formally opened by Lord Montagu of Beaulieu on June 26.

The new works are the largest of their class in the world. The buildings have a frontage to Luss Road of 760 feet. The office block occupies 550 feet, the machine shop 150 feet, the lodge 34 feet and the chassis shop 26 feet. The base of the central part of the office block is of Aberdeen granite. The entrance-hall has a floorage of 245 square feet. The gallery and stair balusters are of Derbyshire alabaster with a broad hand-rail of Pavonazzo. White Sicilian marble is used for the floor and steps. A gallery, which is carried round the upper part of the hall, is intended for a promenade, and has a floor laid with terrazzo. A corridor, 425 feet in length, extends along the centre of the building. On one side of this passage is the administrative department of the works. In the treatment of these rooms walnut, mahogany and oak have been used for the wall panelling. A sub-corridor provides means of communication between the office block and the works. The portion of the buildings on the other side of the long corridor is set apart for recreation purposes. There are dining-rooms for staff and managers. The entire length of the ground-floor of the block will be used as stores. The contract for the administrative block was carried out by Messrs. P. & W. Anderson, who worked all the stones in Glasgow. They used 93,920 cubic feet of red sandstone, 5,320 cubic feet of Peterhead polished granite, 602,500 common bricks, 411,520 enamelled bricks, 1,240 tons of Portland cement.



VIEW OF WORKS.

The size of the workshops can be judged from the roofing, which was carried out by Messrs. Donald Clerk & Son, Ltd., Glasgow. Machine shop, 416 feet by 360 feet, is covered with steel north light roof couples of 30 and 33 feet spans; the roof couples are constructed so that in addition to

the roof load, the tie-rod carries all the counter-shafting and also runways for transporting jobs to the different departments. Chassis shop, 340 feet by 80 feet, is covered by two spans of forty king-rod trusses; in this shop provision is made for two 10-ton electric travelling cranes to run on steel girders supported by steel columns. Coach-building shop, 422 feet by 100 feet, divided into two spans of 50 feet each. Painting and lining shop, 422 feet by 65 feet, divided into two spans of 32 feet 6 inches each. Power-house and smithy, 300 feet by 75 feet, divided into two spans of 37 feet 6 inches.

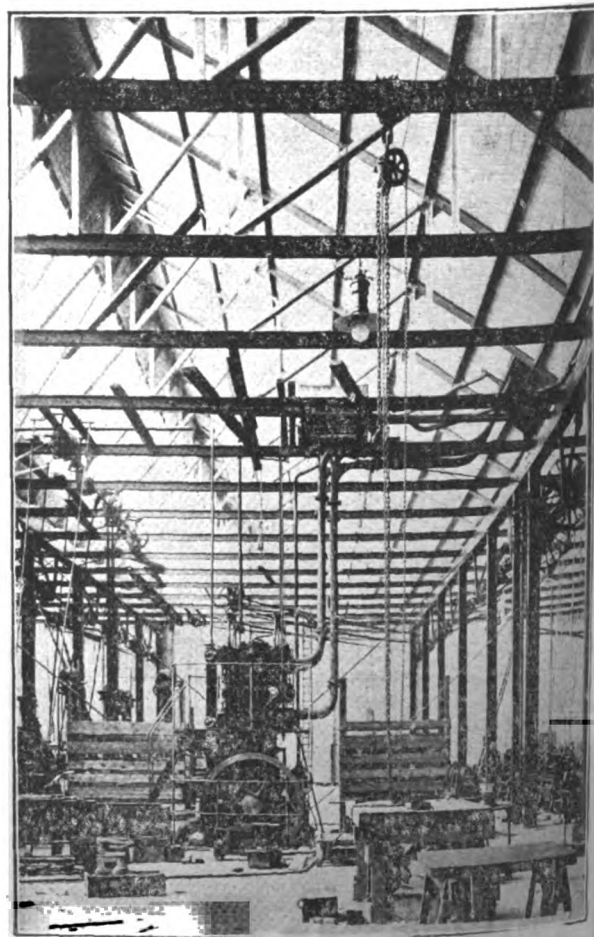
All the roofs are covered with Messrs. Ferguson, Allen & Co.'s concrete steel, which gives a maximum strength for a minimum weight. The concrete is waterproofed by two layers of rock asphalt, so that with the exception of the glazing the roofs are practically inde-



BENCH SHOP.

structible. All the buildings are provided with steel-framed gables covered with corrugated sheets to provide for future extension.

The motive-power at the works consists entirely of gas-engines, constructed and supplied by Messrs. A. Rodger & Co., Govan, Glasgow, under Professor Rowden's patents, and using producer gas from the gas plant manufactured

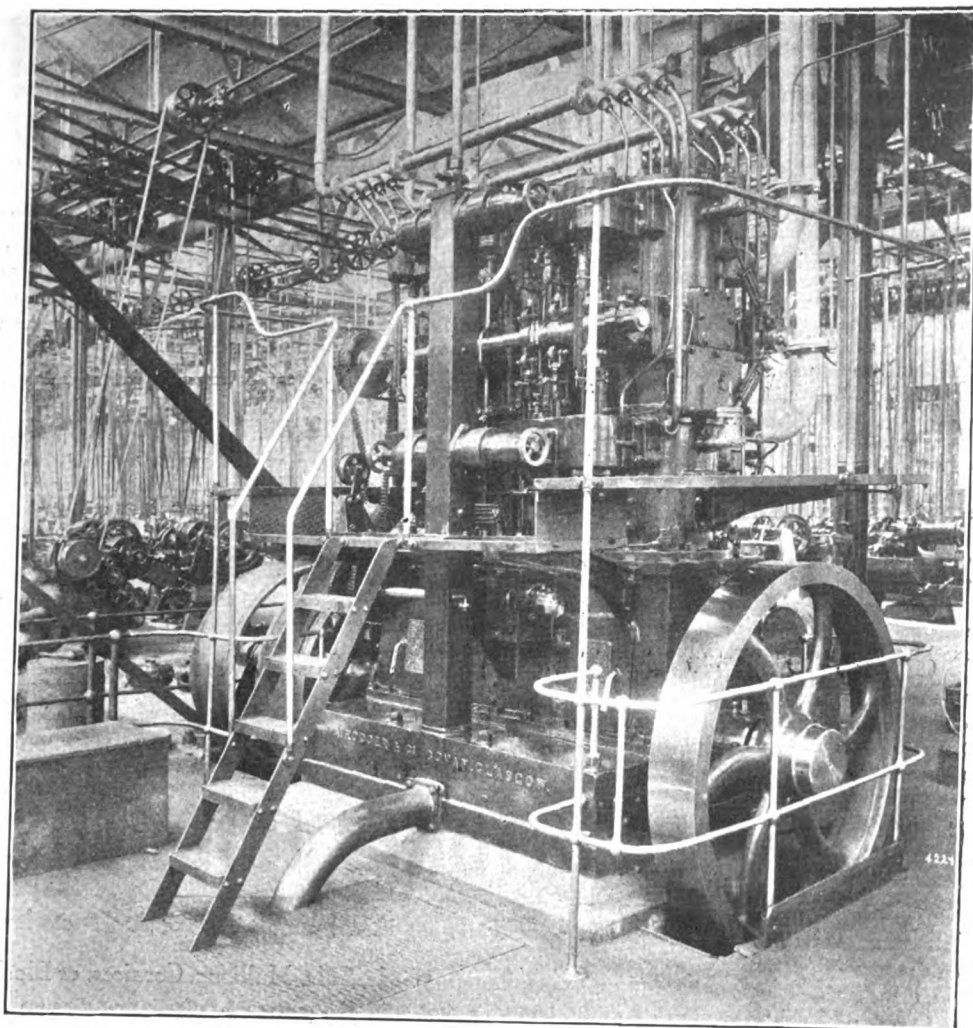


MACHINE SHOP

and installed by the same firm. There are at present ten of these Rodger-Rowden gas-engines, each capable of developing 100 b.h.p., and orders have been placed for three additional engines of the same make, with a corresponding increase in the gas plant. The driving of the works is partly direct by means of belts and partly by electric transmission, the case of each department being considered on

direct to a Crompton's continuous current dynamo, working at a pressure of 200 volts. These gas-driven generators are arranged to work in parallel, and the subdivision of power into units of 100 b.h.p. has proved a most economical feature.

The small space occupied by these engines is also a feature of much value in works crowded with machinery



VIEW OF GAS-ENGINE SUPPLIED BY A. RODGER & CO.

its merits, and the most suitable and economical method adopted.

The electric energy for the various electric motors for machine driving, ventilation, cranes, &c., as well as for lighting, is generated in the power station—a building 120 feet long by 32 feet wide, with walls of white-glazed brick and tiled floor, in which there are at present seven Rodger-Rowden gas-engines of 100 b.h.p., each coupled

as those of the Argyll Motors, Ltd., are. The degree of economy which is attained by these engines will be appreciated when it is stated that with coal costing 15s. per ton delivered at the producers, 12 b.h.p. is developed at the crank-shaft of the engine for 1d. per hour. This result far surpasses that attainable by any other method of power generation, and the subdivision into units not only reduces the risk of complete stoppage owing

British Goods for San Francisco.

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to any accident, but it also insures that the maximum economy is attainable at all loads from the maximum downwards.

The complete absence of smoke from the power-generating plant is also a point of great importance in these days of sanitary reform. The buildings are also fireproof. The general contractors were Messrs. Ferguson, Allen & Co., of Glasgow, to whose energy, care and organising power Mr. A. Govan, the managing director, has paid an eloquent tribute. About the middle of April 1906 their tender was accepted, and operations were immediately commenced on the machine shop and gas plant. On June 26 the first gas-engine was put in motion, and afterwards ran for some days. Therefore in a little over two months the Argyll Company were able to get machinery and shafting into position for working. The various shops are in most respects of similar construction. All roof trusses are of steel, bound together with T-bar purlins, covered with reinforced concrete 3 inches thick, which is also covered with asphalt ½-inch thick, the whole being supported by — section steel columns and channel beams suitable for attaching shafting, hangers, &c. The tie-bars of roof trusses are also specially strong to receive any countershafting of machinery below. The walls are all of brick (enamelled inside and terra-cotta pressed outside), excepting front wall, machine shop and south gable of chassis shop, which are built of Dumfries stone outside and lined with enamelled bricks inside. The floors are of concrete covered with 1 inch of asphalt, excepting coach-building shop, which is finished with maple. Where buildings are two storeys high the upper floors are thoroughly fireproofed with reinforced concrete, and finished in the usual way with asphalt. Lavatories are provided for the workmen in each shop, thereby making each department a works in itself complete in every detail. The shops are all well ventilated and lighted in the walls by iron casements and in roofs by Heywood's patent system. The various buildings are separated by good broad roadways formed of concrete and finished with asphalt 1½ inch thick. Below these roadways are laid the company's supply pipes and drains, the former being accessible through chases in roadways and the latter being all collected at a large septic tank before finally discharging into Council sewers.

The quantities of materials used up to May 26, 1906, are calculated to be as follows:—Steelwork, 2,200 tons; cement (Robson's, of Hull), 3,000 tons; concrete, 15,000 tons; stone, 3,000 tons; rubble for bottoming, about 5,000 tons; enamelled bricks, 1,000,000, about 5,000 tons; pressed facing terra-cotta bricks, 750,000, about 3,000 tons; common bricks, 1,800,000, about 6,750 tons; asphalt on roofs and floors, 3,500 tons; glass area, 170,000 superficial feet.

The works are complete under the following departments, the areas of which are also given:—Machine-shop, tool-room, gear-shop and bench-shop, 78,635 square feet; extension to machine-shop, tool-room, gear-shop and bench-shop, presently building, 92,820 square feet; power-house, smithy and plating-shop, including basement, 29,540 square feet; painting, lining and varnishing shops, including basement, 40,430 square feet; coachbuilding-shop, including basement, 62,200 square feet; chassis-shop, including basement, 30,400 square feet; gas plant, 8,400 square feet; total, 342,445 square feet. The total area works out at just a little under 8 acres.

Some of the other contractors merit to be mentioned. The whole of the blinds were made by Messrs. James Meighan & Son. The railings and gates were supplied by Mr. Ure; the granite, concrete, and marble was supplied by Messrs. Scott and Rae.

"THE COUNTRY IN TOWN" EXHIBITION.

THIS exhibition, which was opened by the Princess Christian at the Whitechapel Art Gallery on the 5th inst., and remains accessible to visitors until the 18th inst., originated with Miss K. M. Hall, the curator of the Stepney Borough Museum, while Mr. W. M. Webb, of the Selborne Society, literally created it. The aim and object thereof is educational in the fullest sense, and to show what can be done in the schools; also to create an appetite for better things with the view of changing the whole face of certain districts in the East End of London. The Town Council of Dresden have sent a plan, scale 1/100,000, with coloured projection of the children's playgrounds, and a view of Dresden after Kuchl's picture, with several prints and photographs, &c.

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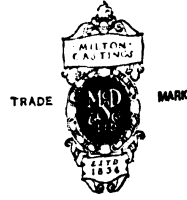
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Show Rooms:

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One room is devoted to plans and illustrations of garden cities and suburbs. Two large coloured scene paintings represent a suburb of London built in the usual manner, the houses close together in long monotonous lines, and the proposed Hampstead garden suburb, where there will be only eight houses to the acre. Then there are illustrations of cottages, &c., at Bournville village and Port Sunlight. Professor Patrick Geddes contributes views of suggested improvements at Dunfermline and Edinburgh. The Garden City Association have sent illustrations of the first garden city, plans and models, while Messrs. Raymond Unwin and Mr. Barry Parker also contribute illustrations of proposed cottages. A model of a country house by Mr. J. W. Rhodes, architect, is likewise on view.

Mr. Imre Kiralfy shows plans and pictures with the view of improving and beautifying the East End of London, more particularly Mile End Road, Spitalfields and Shadwell. The London County Council and the Metropolitan Public Gardens Association are, moreover, largely represented, and several well-defined photographs of views in London parks are contributed by Mr. W. H. Golding.

VARIETIES.

THE foundation-stone of the Lambeth town hall will be laid by Alderman Powell, the mayor, on the 21st inst.

THE Stretford District Council are about to erect 110 houses for the working classes at an estimated cost of 25,000*l*.

THE Portsmouth Council have decided to lay out ornamental grounds at Southsea, and to erect chalets similar to those erected on the beach.

THE extensive paper mills of Messrs. Wiggins, Teape & Co. at Dover were destroyed by fire on Tuesday last. The damage amounts to many thousands of pounds.

BRUCE HOUSE, which was erected by the London County Council at the corner of Kemble Street and Drury Lane as a lodging house, will be formally opened to-day (Friday).

A FOLK HALL is to be erected at Earswick by the Joseph Rowntree Village Trust from the designs of Messrs. Parker & Unwin. It will consist of main hall, 44 feet by 65 feet ;

club wing, 52 feet by 30 feet, two storeys high ; caretaker's house and bar parlour wing, 42 feet by 30 feet.

A BRONZE statue of the late Joseph Cowen, for many years member for Newcastle, was unveiled on Saturday afternoon in the Westgate Road, Newcastle, by Viscount Ridley. The cost was defrayed by public subscription and the sculptor is Mr. John Tweed, of London.

THE works committee of the Newport Corporation recommend the erection of a three-storeyed building on the Corporation land in Dock Street, opposite the town hall, at a cost of 4,900*l*.

THE Portsmouth Corporation have agreed with the Government authorities for the cost of carrying out the scheme for a more effectual drainage of the low-lying portion of the district, and work is to be commenced at once.

THE new waterworks for Rushden and Higham Ferrers have been completed and opened. They were carried out from the plans of Mr. R. E. Middleton by Mr. A. E. Nunn, of Finsbury House, at a cost of over 100,000*l*.

A PETROL motor fire-engine, built by Messrs. Merryweather & Sons for the Glasgow Fire Department, was tested on Saturday last with satisfactory results. The large quantity of 28,800 gallons of water per hour can be delivered.

THE works committee of the Marylebone Borough Council recommend that a double row of trees be planted down the centre of Portland Place. When the residents were circularised on the subject, out of 112 thirty-six replied in favour of the proposal and twenty-five against.

JOHN EDWIN KAYE, twenty-seven, a contractor, was killed while testing a well at Crosland Moor, near Huddersfield, on Saturday. He was being lowered into the well, which is 120 feet deep, on a seat suspended from a wire rope. A nut worked off a bolt and the seat fell. Mr. Kaye's head struck the pump shaft.

THE Whitehall Club in Parliament Street, Westminster, is to be sold on July 25. It was built about 1866, and cost some 25,000*l*. The design was by Parnell, and the structure, which is of stone, is in the Italian style. Over the doorway and upon the cornice is some fine sculpture. The club, whose rooms are spacious and lofty, has always possessed an advantage in its proximity to the Houses of Parliament.

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Apply to the ANTHROL Company, Kinning Park, Glasgow, and you will receive an interesting booklet on the subject, which gives a full account of the remarkable properties of ANTHROL and describes the very simple and inexpensive methods by which it is applied.

It is an antiseptic preparation which protects any kind of wood impregnated with it from decay in both damp and dry situations, and from the ravages of all wood-destroying organisms in either temperate or tropical climates.

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The result of much practical experiment has shown it to be the most efficient and economical means for preserving any variety of structural timber which it is impracticable or undesirable to have creosoted under pressure. ANTHROL does not require expensive pressure-plant ; does not reduce the mechanical efficiency of the timber ; does not increase the liability of the wood to inflame ; does not render the wood poisonous to human beings or domestic animals ; and does not leave the surface of the wood black and unpleasant for handling—on the contrary, ANTHROL, while protecting from decay, at the same time greatly improves the appearance of wood, and may be varnished or painted if desired.

The ANTHROL COMPANY, Kinning Park, GLASGOW ;
and 6 Cross Street, LONDON.

THE Paddington Borough Council recently discussed a proposal that the works committee should consider the desirableness of increasing by 2s. per week the wages of all permanent employes in the service of the Council who were in receipt of less wages than 28s. per week. The motion was rejected by eighteen votes to twelve.

THE North Dublin Union have directed their solicitor to insert in the advertisements for tenders for the carrying-out of the sewerage and water-supply works for Howth a provision that all materials required for the purpose should be of Irish manufacture, and, if possible, of Dublin make, unless the engineers should satisfy the Council that the materials could not be procured in Ireland. The resolution further directed that local labour should be employed, unless it should not be available in Dublin.

At the Wigan Town Council meeting Mr. Bott moved:—"That in view of the necessity for restricted expenditure all Corporation officials who are in receipt of 300l. or over a year shall have their salaries reduced 25 per cent. from August 1906." He pointed out that in consequence of the recent heavy increase of the rates of the town a great number of the Corporation's workmen had been discharged, and there was no reason why officials who had handsome incomes should not bear some share of the hardship. Mr. Parkinson seconded, and of those who supported one declared that the town was in a bankrupt condition. The resolution was defeated by twenty-six votes to eight.

THE Home Secretary has issued a draft of regulations which he proposes to make under section 79 of the Factory and Workshop Act, 1901, for the manufacture of paints and colours in which dry carbonate of lead or red lead is used. The regulations, which will supersede the existing special rules for processes in the manufacture of paints and colours, follow with some slight modifications the draft issued in March last, which embodied the points agreed upon at the conference between representatives of the Home Office and manufacturers of paints and colours, held at the Home Office on February 1 last. The Home Secretary understands that the draft regulations are now generally such as commend themselves both to employers and employed.

"OFF for the Holidays" is the title of a pictorial poster by which the Great Central Railway Company draws

the public attention to their arrangements for the holiday season, and an examination of their A B C programme demonstrates that this enterprising company has done everything possible to provide for the holiday traveller. For those wishing to visit the bracing health resorts on the North-East coast tickets are announced every Saturday during the season, covering a period from three to seventeen days, for 17s. to Cleethorpes, or 21s. to Scarborough and Filey. Similar tickets are issued to the West Coast watering-places, viz. to Southport and Liverpool for 19s., to Blackpool, Lytham, St. Anne's and Fleetwood for 21s., and to Douglas (Isle of Man) for 23s. 6d. and 27s. 6d. Every Thursday cheap tickets for sixteen days are obtainable to all the principal health and pleasure resorts in Ireland. Cheap tickets are also issued every Saturday for three, six or eight days to over 200 towns and places in the Midlands, Yorkshire, Lancashire and North of England. In the majority of cases the fare for an eight days' ticket is less than a sovereign. Such low fare tickets are, however, not offered to the detriment of comfortable and expeditious travel, as passengers are allowed to perform the journey by express trains composed of up-to-date corridor stock, and a buffet car is attached for the provision of meals on the train at a most reasonable tariff. For those desirous of spending a pleasant day or week-end in the country facilities are announced suitable for all tastes. There are day and half-day excursions to many delightful spots in Herts and Bucks, and for the pedestrian and cyclist over forty tours have been arranged, many of them covering fresh ground now accessible by the opening of the new suburban line into Buckinghamshire. Lovers of Shakespeare are given the opportunity of visiting Stratford-on-Avon three days a week at a special inclusive fare. For the modest sum of 14s. the journey to Stratford is covered, including two drives, luncheon and dinner. Every Friday and Saturday week-end tickets, available by any ordinary train, are issued to all the inland and seaside holiday resorts, extending from the Midlands to the north of Scotland. These arrangements are conveniently tabulated in the form of an A B C excursion programme, obtainable, free of cost, at Marylebone station, N.W., or at any of the company's town offices and agencies situated throughout London and suburbs.

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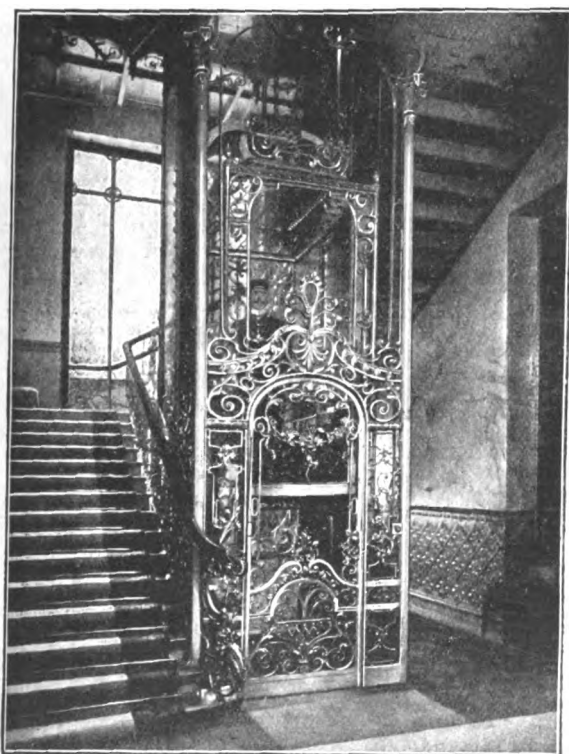
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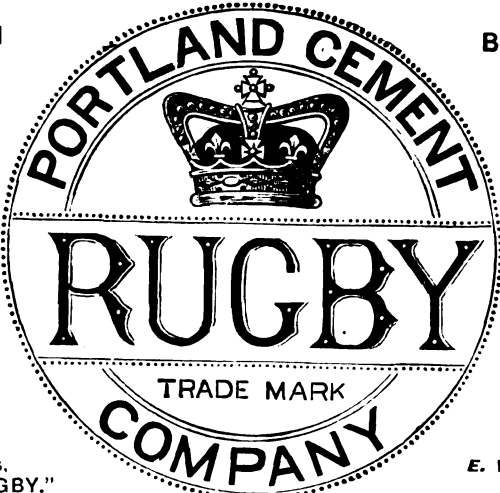
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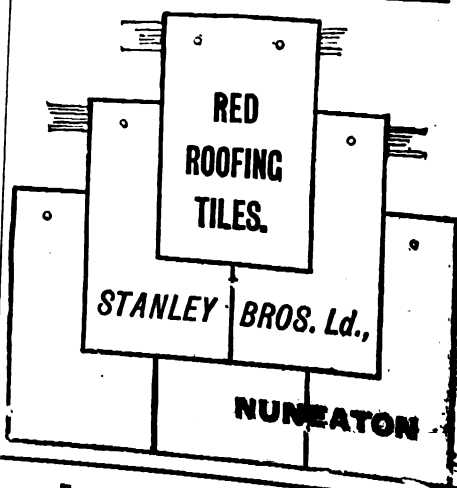
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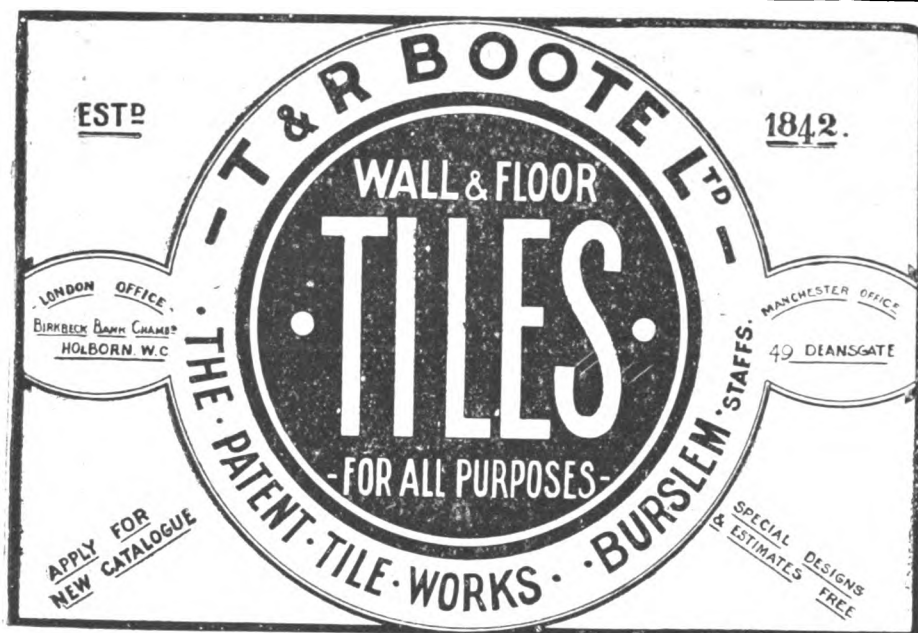
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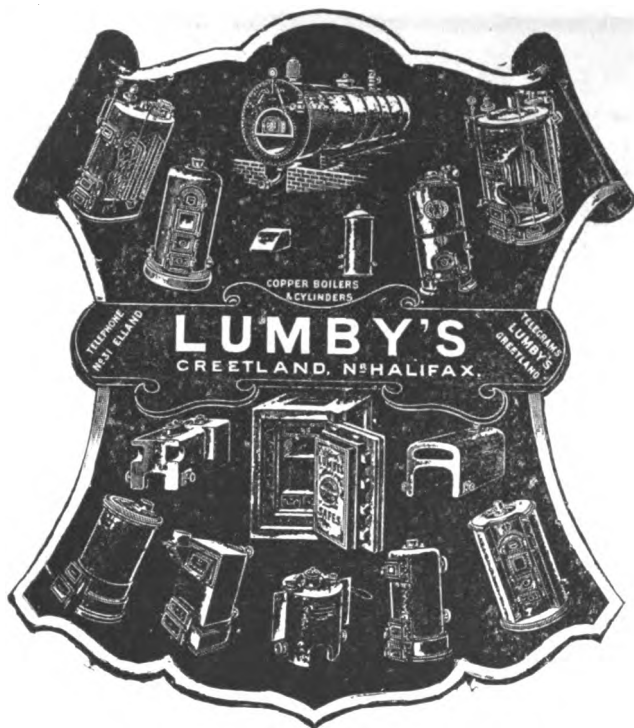
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For Index of Advertisers, see page x.

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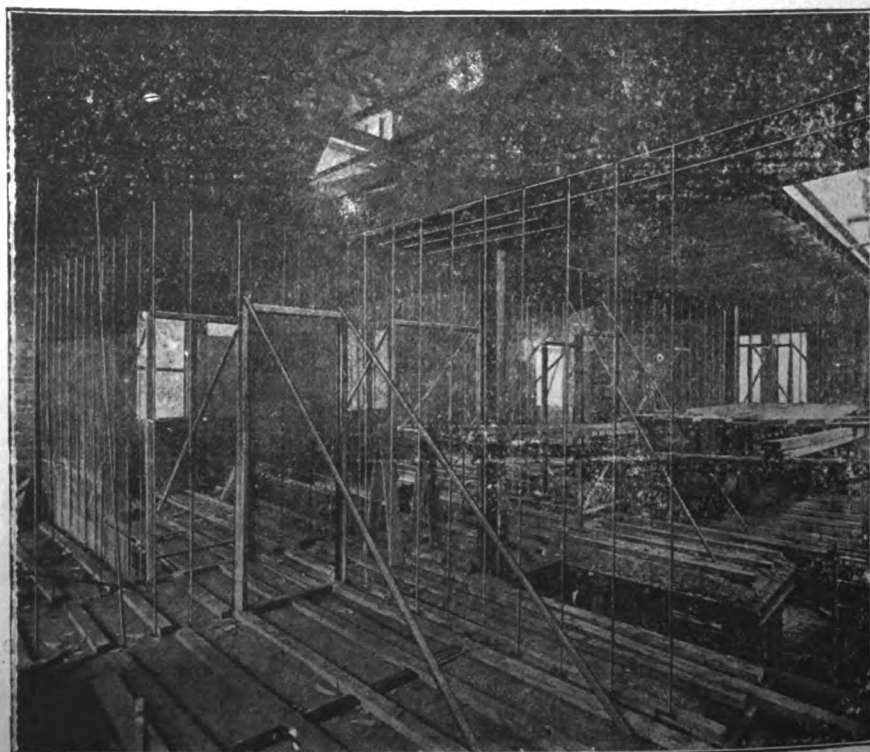
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LONDON.

For erecting receiving wards and porter's lodge at work-house, Woodfield Road, for the Paddington Guardians. Mr. F. J. SMITH, architect.

	Building.	Fence, Walls, &c.
North	£5,339 0 0	£749 0 0
Green	5,197 0 0	796 0 0
Mattock & Parsons	5,060 0 0	779 0 0
Aldin Bros. & Davis	4,800 0 0	700 0 0
Minter	4,789 0 0	782 0 0
J. & M. Patrick	4,751 0 0	706 0 0
Wall	4,675 0 0	727 0 0
Nightingale	4,578 0 0	678 0 0
Appleby & Sons	4,465 0 0	672 0 0
Kent	4,456 0 0	769 0 0
Patman & Fotheringham	4,320 0 0	677 10 0
Pocock	4,300 0 0	743 0 0
Baker	4,269 0 0	710 0 0
DEARING & SONS, Halliford		
Street (accepted)	4,205 0 0	650 0 0
Fryer & Co.	4,000 0 0	710 0 0

For construction of underground sanitary conveniences in Station Road, Balham, for the Wandsworth Borough Council.

		A.
Paterson	£2,577 4 6	£77 14 6
James	2,328 4 7	33 7 4
Twyfords, Ltd.	2,297 0 0	78 0 0
Doulton & Co.	2,260 0 0	51 0 0
Davis, Bennett & Co.	2,190 0 0	51 10 0
Nightingale	2,099 0 0	38 0 0
Gray	2,012 0 0	24 0 0
Spencer, Santo & Co.	2,000 0 0	57 0 0
Mellows & Co.	1,987 0 0	72 6 2
Jennings, Ltd.	1,982 9 8	60 7 0
Wallis	1,957 15 6	41 14 4
Rowe & Co.	1,930 0 0	35 0 0
Garrett & Sons	1,905 0 0	23 0 0
Wall (recommended)	1,790 0 0	40 0 0

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LONDON—continued.

For providing and fixing low-pressure hot-water apparatus in the new portion of the Gopsall Street school (Haggerston), for providing additional heating in the existing school and for necessary builder's work.

Defries & Sons, Ltd.	£445 0 0
The Paragon Heating Co.	437 10 0
Grundy	437 c 0
Richmond & Co., Ltd.	417 10 0
J. & F. May	403 10 0
Kite & Co.	400 0 0
Stevens & Sons	385 0 0
Yetton & Co.	379 17 0
Comyn Ching & Co., Ltd.	379 10 0
G. & E. Bradley	353 0 0
Bolton, Fane & Co., 298 and 300 Goswell Road (recommended)	339 0 0
Architect's estimate	395 0 0

For extending the heating apparatus, &c., and also for the necessary builder's work at Alma Pupil Teachers' school, Bermondsey.

Burkitt	£463 0 0
Grundy	417 0 0
Defries & Sons	370 0 0
Boyd & Sons	356 0 0
Kite & Co.	350 0 0
Palowkar & Sons	338 0 0
Brock	328 10 0
J. & F. May	326 0 0
Stevens & Sons	312 0 0
Comyn Ching & Co., Ltd.	282 10 0
Cash & Co., Ltd.	268 0 0
Bolton, Fane & Co., 298 and 300 Goswell Road (recommended)	252 0 0
Architect's estimate	250 0 0

For alterations and additions at 193 and 195 Hertford Road, Lower Edmonton. Mr. H. SEYMOUR COUCHMAN, architect, Tottenham.

Groves & Sons	£723 0 0
Porter	620 0 0
MONK (accepted)	550 0 0

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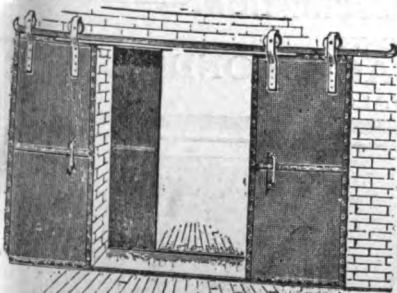
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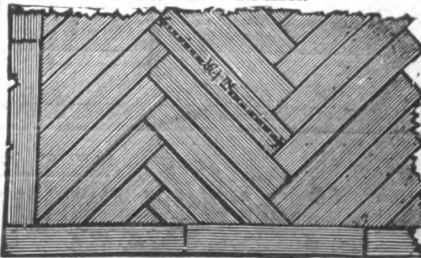
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For construction of reservoirs, &c., at Fortis Green, for the Metropolitan Water Board.

Kennedy, Ltd.	£130,167	3	0
Wilkinson Bros.	105,941	0	0
Griffiths & Co.	101,939	4	4
Trimm	100,937	0	0
Adams & Sons	98,585	8	1
Pearson & Son	91,827	8	6
Mowlem & Co.	87,783	0	0
Docwra & Son	85,340	12	5
Zadig & Co.	84,756	19	0
Trentham	82,703	5	11
Aird & Sons	82,464	1	1
Paterson	80,936	5	10
Hay & Co.	80,721	12	11
Muirhead & Co.	77,318	13	3
Neal, Ltd.	76,544	19	11
Boulding & Yerburch	76,529	0	0
Ewart	75,990	5	11
Kellett, Ltd.	75,673	9	5
Moran & Son	75,631	16	5
Smith & Co.	75,911	0	0
Davies, Ball & Co.	74,197	11	10
Lawrence & Son	74,000	0	0
Braithwaite & Co.	73,737	10	4
E. & E. Iles	73,447	0	0
Nunn	72,072	9	4
Kirk & Randall	71,774	0	0
Pattinson & Sons	71,665	9	2
Wall, Ltd.	70,283	12	11
Pethick Bros.	69,999	0	0
Moss & Son	68,800	18	1
Byrom, Ltd., Bury, Lancs (recommended)	60,278	17	9

For making, testing and delivering of 42-inch and other cast-iron pipes and castings required in connection with above reservoirs.

Stewart & Co.	£6,489	1	6
Oakley	6,483	0	0
Cochrane & Co.	5,131	4	0
Cochrane & Co.	5,028	12	0
Oakes & Co.	5,024	13	10

LONDON—continued.

Holwell Iron Co.	£5,011	5	7
Staveley Coal and Iron Co.	4,843	5	6
Stanton Ironworks Co. (recommended)	4,471	19	3

For board-room and offices, for the Guardians of St. George's Union. Messrs. F. J. SMITH & SON, architects. Quantities by Messrs. NORTHROP, NEIGHBOUR & NICHOLSON.

Green	£26,747	0	0
Aldin Bros. & Davies	26,700	0	0
Marriott & Salter	26,573	0	0
Pollard & Brand	26,400	0	0
McCarthy	26,375	0	0
Chessum & Sons	25,987	0	0
Dainton	25,900	0	0
Spencer, Santo & Co.	25,899	0	0
Willett	25,500	0	0
Lawrance & Sons	25,167	0	0
Seymour & Sons	25,000	0	0
Wells	24,995	0	0
Perry & Co.	24,873	0	0
Foster & Dicksee	24,610	0	0
Prestige & Co.	24,493	0	0
Scowen & Co.	24,473	0	0
Pocock	24,413	0	0
Baker & Sons	24,397	0	0
Bryen	24,397	0	0
Rice & Sons	24,369	0	0
Mowlem & Sons	24,307	0	0
Patman & Fotheringham	24,237	0	0
Kemp	24,195	0	0
Wall, Ltd.	24,097	0	0
Barker & Sons	24,094	0	0
Johnson & Sons	24,050	0	0
Bendon	24,000	0	0
Minter	23,969	0	0
Fryer & Co.	23,891	0	0
Vigor & Sons	23,841	0	0
Johnson & Co.	23,830	0	0
Kirk & Randall	23,799	0	0
Lawrence & Son	23,624	0	0
Appleby & Sons	23,400	0	0
Hawking & Co.	23,386	0	0

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LONDON—continued.

Clayton	£23,200	0	0
Shepherd & Co.	22,949	0	0
Wallis & Sons	22,946	0	0
Nightingale	22,824	0	0
DEARING, Islington (<i>accepted</i>)	22,757	0	0
For the division of room B in each of the boys and girls' departments of the Winsdor Road school, Hackney.			
Bouneau	£355	0	0
Lawrence & Sons	355	0	0
Shurmur & Sons, Ltd.	351	0	0
Barrett & Power	345	0	0
Grover & Son	338	0	0
General Builders, Ltd.	333	0	0
Spencer & Co.	333	0	0
McCormick & Sons, Northampton Street, Canonbury (<i>recommended</i>)	328	0	0
Architect's estimate	376	0	0
For classrooms for the infants' department, cookery and manual training centres, and offices for the divisional clerk at the Bowes Road schools, New Southgate, for Middlesex County Council. Mr. H. G. CROTHALL, architect.			
Stapleton & Son	£3,294	0	0
Wilton	3,292	0	0
Newby Bros.	3,289	0	0
Nicholls & Son	3,210	0	0
Tout	3,147	0	0
Barber & Sons	3,020	0	0
Porter	3,018	0	0
Treasure & Son	2,980	0	0
Groves & Sons	2,973	0	0
Stewart	2,924	0	0
Dudley	2,887	5	0
Lawrence & Son	2,784	0	0
Mattock & Parsons	2,779	0	0
Knight & Son (<i>recommended</i>)	2,654	0	0
For painting, &c., at infirmary, Harrow Road, for Paddington Guardians. Mr. E. HOWLEY SIM, architect.			
SABEY & SON, 3 St. Peter's Street, N. (<i>accepted</i>)	£298	0	0

LONDON—continued.

For improvement of heating apparatus, &c., at the Latimer Road school, Hammersmith.			
Palowkar & Sons	£237	0	0
Burkitt	223	0	0
Gray	210	0	0
Kite & Co.	200	0	0
Stevens & Sons	196	0	0
Brock	193	5	0
G. & E. Bradley	189	10	0
Davis	169	0	0
Cash & Co., Ltd.	164	0	0
Yetton & Co., 4 Carr Street, Limehouse (<i>recommended</i>)	156	12	0
Architect's estimate	180	0	0

MICHELDEVER.

For erecting a parish room. Messrs. HALL, PAIN & GOLD-SMITH, surveyors, Fareham.			
Grace	£1,150	0	0
Wright	1,127	0	0
Goodall & Sons	1,049	0	0
Eddols	1,027	1	0
Jenkins & Sons	984	0	0
Wise	969	0	0
Mussellwhite & Sapp	949	13	0

MIRFIELD.

For the erection of a shop, house and slaughter-house at Mirfield, Yorks. Mr. E. V. KING, architect, Dewsbury.

Accepted tenders.

Horkin, bricklayer and mason	£427	15	0
Naylor, carpenter and joiner	140	0	0
Cardwell, plumber	82	3	5
Thompson, slater	34	10	0
Shaw, plasterer	21	6	0
Ledgard, painter	12	1	6

OKEHAMPTON.

For the erection of residence in Station Road.			
Chapman	£1,050	0	0
Green, Son & Co.	1,045	10	0
Sleeman	999	0	0
Blatchford	989	0	0
KERSLAKE & SON, Okehampton (<i>accepted</i>)	980	0	0

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PICKERING.

For minister's house at Pickering, North Yorkshire. Mr. S. DYER, architect, Bridlington.

Fell	£856	0	0
Marshall & Sons	845	0	0
Leaf Bros.	844	0	0
Yearsley	793	0	0
Booth	730	0	0
POSTILL, Bridlington (accepted)	679	0	0

PAIGNTON.

For supply, delivery and laying of a 7-inch cast-iron water-main and other works in connection with the Paignton water supply. Mr. FRED. WM. VANSTONE, engineer, Palace Chambers, Paignton, Devon.

Brebner & Co.	£4,439	1	4
Grisenthwaite	4,294	3	1
Narracott	4,222	18	3
Pollard & Co.	4,213	1	11
Hawking & Best	4,147	2	7
Woodman & Son	4,121	0	0
Tabor	3,965	11	0
Pike	3,837	13	2
Drew	3,787	0	0
Bridgman	3,755	4	9
Clay Cross Co.	3,729	0	3
Smith & Co.	3,723	2	7
Jenkins & Son, Leamington*	3,720	0	0

* Provisionally accepted.

SEAFORD.

For the erection of a detached residence, Rosecroft, for the Seaford West Co. Mr. J. W. B. BLACKMAN, architect, Brighton and Seaford, Sussex.

Brown & Sons	£2,085	0	0
Jay	2,000	0	0
Wood & Sons	1,935	0	0
Martin	1,875	0	0
Morling	1,625	0	0
Smedley	1,500	0	0
WILKINSON, Seaford (accepted)	1,254	0	0

For stabling, riding school and house to be erected for the Seaford West Co. at Seaford.

Lee	£4,563	15	0
Barker & Co.	4,178	0	0
Smedley	4,153	16	8
Blay	4,100	0	0
Gough & Co.	4,094	0	0
Kirk & Randall	3,993	0	0
Peerless Dennis & Co.	3,978	0	0
Godfrey Bros.	3,936	0	0
Cook & Son	3,880	0	0
Brown	3,815	0	0
WILKINSON, Seaford (accepted)	3,651	0	0

SCOTLAND.

For carrying-out a water scheme for Stranraer. Mr. G. THOMSON, engineer, Glasgow.

HASTIE, Langs (accepted)	£5,044	0	0
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THWING.

For the erection of a chapel at Thwing, for the Trustees of the Wesleyan denomination. Mr. DYER, architect, Bridlington.

Booth	£487	0	0
Gardam	453	0	0
Kneeshaw	448	0	0
Smallwood & Shaw	442	6	6
Sawdon	440	0	0
Postell	434	0	0
Wilson	415	0	0
SAMPSON & SEDDALL, Bridlington (accepted)	410	15	0

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For the erection of schoolroom, vestries, kitchen, and alterations to Wesleyan chapel.

Lawrence	£1,129	0	0
Norris & Son	1,089	0	0
Sims & Co.	1,089	0	0
Kemp	1,085	0	0
Abbot	993	0	0
DEWBURY & SONS, Ware (accepted)	979	9	7
Salmon	894	0	0

WATFORD.

For 400 lineal yards of 9-inch stoneware pipe sewers and storm-water drain, with the necessary manholes. Mr. D. WATERHOUSE, surveyor.

Free & Sons	£766	13	6
Chesswas	693	9	7
Bracey & Clark	650	0	0
Smith & Co.	615	0	0
Ray	546	0	0
BROWN, Watford (accepted)	396	0	0

WELLINGTON.

For the erection of tower and spire of All Saints Church, Somerset. Mr. J. H. HOUGHTON SPENCER, architect, Taunton.

Merrick & Son	£2,375	0	0
Smith	1,964	0	0
Follett Bros.	1,925	0	0
Trask & Sons	1,860	0	0
Sweet & Burge	1,826	10	0
Spiller & Son	1,770	0	0
Twyford	1,725	0	0
Moggridge	1,710	0	0

TRADE NOTES.

HERR CARL FLOHR, who obtained the Grand Prix for lifts at the Paris International Exhibition of 1900, has opened offices at 73, Queen Victoria Street, E.C. His lifts are known throughout Germany, for they are installed in hotels, railway stations, hospitals and mansions. The Germans are advanced in their ironwork, and the cages are

remarkable examples of applied art. The London manager is Mr. H. H. Dignowity.

WE have received from The London Drawing and Tracing Office, 98 Gray's Inn Road, W.C., a little work entitled "Models," compiled by Mr. John B. Thorp. The opening paragraph in this little book best explains the nature of it. "There are times when an architect or surveyor is called upon to produce a model of some building, &c., perhaps at a moment's notice, either for a law case, or placing before a committee or client." Mr. Thorp has illustrated some of the principal models which have been entrusted to him to make from time to time, and the whole has been prepared in a careful manner, well printed and illustrated, thus making this a useful work of reference in an architect's office.

VELURE.

THE customary use of language compels every one to believe that in most cases when a glossy surface is produced it is the result of an application of varnish. In other words, it is believed that a varnished surface is the result of two processes—painting and varnishing. In that way glossiness is expensive, and it is no wonder that so many people have set themselves against it, owing, no doubt, to the expense. When, therefore, a paint which by itself, without other aid, can produce a surface which has all the appearance of being varnished, the novelty is such that there is no word in the English language to describe it. Messrs. Chancellor & Co. have therefore to invent a name for their paint, and call it Velure. It is, as they say, a perfect Japan paint, and supersedes varnish, but the makers of our language, not being prophets, could not provide for it a sufficiently descriptive name. If the testimony of contractors and others who have used it is of account, there is no doubt that it is adapted for the finest class of work. It is enduring, and it is economical in application. It has been used at Windsor Castle, Sandringham, Osborne House, the Houses of Parliament and in Royal and other yachts. The manufacturers say it is worth trying, and those who take their advice are likely to agree that in their descriptions they have not overstated the qualities of Velure.

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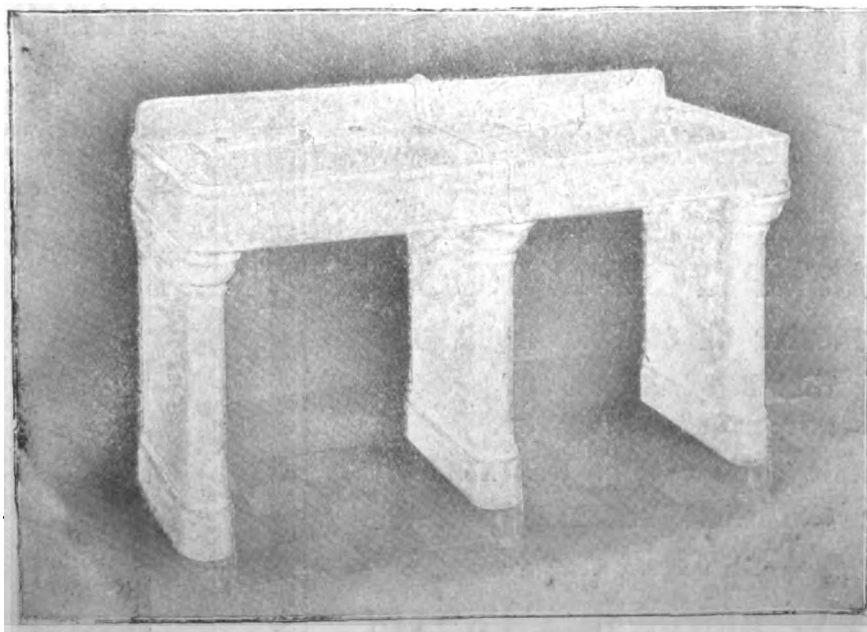


Fig. 905.—THE "CARLTON."

London Offices & Showrooms: 2 & 3 NORFOLK STREET, STRAND, W.C.

THE SANITARY INSTITUTE AT BRISTOL.

THE twenty-third Autumn Congress of the Royal Sanitary Institute was officially welcomed by the Lord Mayor of Bristol on Monday at the Council House. He subsequently went on to the Drill Hall in order to open a health exhibition held in connection with it. The awards, which were announced by Mr. H. D. Searles-Wood, chairman of the judges of the exhibition, included five silver medals and thirty-six bronze medals. It was announced that the exhibits at nine of the stalls would be subjected to further consideration before an award was made. The judges were Mr. H. D. Searles-Wood, Mr. Henry Adams, Dr. P. Boobyer, Mr. H. P. Boulnois, Mr. T. W. Cutler, Mr. E. T. Hall, Colonel J. Lane Notter, Dr. L. C. Parkes, Dr. G. Reid, Mr. Osborne Smith, Mr. W. C. Tyndale and Mr. J. E. Willcox.


The number of the exhibitors rendered it necessary that the east and west halls should be utilised, in addition to the main building and the corridor. There are four divisions in the classification of exhibits. Division A comprises science in relation to hygiene. Division B is hygiene of special classes, trades and professions. Division C (construction and sanitary apparatus) is subdivided into three classes, viz. (1) building materials, construction and machinery; (2) water supply and sewerage; (3) heating, lighting and ventilating. Division D relates to personal and domestic hygiene.

The few exhibits that are shown under A division have no practical interest for our readers, who are chiefly concerned with C and D. Under B come Wilson & Stockall, who show in the corridor a patent brougham ambulance and a motor ambulance to accommodate two patients with attendants. Adjoining them are the Bristol Waggon and Carriage Works Company, Ltd., with a new improved street watering van and new patent tipping dust van. Constable & Son have house refuse tip vans with sanitary coverings and wind-guards combined, and a street-orderly truck with sanitary cover-lids. Cochran & Co. show diagrams of their system for utilising waste gases from furnaces, and models of their vertical multi-tubular boilers. Three machines in

operation represent E. Bennis & Co., Ltd.—one a smokeless chain grate stoker, another a machine stoker, and the third a smokeless coking stoker. A full-size and completely equipped indiarubber padded room is something of a novelty for the vast majority of visitors to the Drill Hall. The one shown by Pocock Bros. must be taken as the latest development of that class of production, for it was awarded a silver medal. The features which have won this distinction are the lead gutter running round the bottom, the shutter, the special door hinge, which renders crushed fingers impossible, and the door bolts. A steam-oven for use in bakeries has been set up by Messrs. T. Collins & Co., who are manufacturers in Bristol. W. B. Haig & Co., Ltd., have their "Epicycle" chain mortising machine, and a square hollow chisel apparatus for attachment, which are practically novelties. The special feature is the use of an epicycle train of wheels for driving the chain sprocket.

As we have already remarked, the two most important divisions are C and D. The first in the former class, seen on entering from the street, is the "Safety" Water Elevator Company, with Jonet's patent well gear, which received a bronze medal. It claims attention on sanitary grounds, for the iron cover prevents any animal, foreign or vegetable matter getting into the well. The open dome of the cover and the spout are lined with a sheet of perforated metal. For these reasons it should be especially serviceable in tropical climates, where mosquitos and other insects are proved to have a partiality for wells. Caink's patent jets and sprinklers for attachment to street watering carts are shown by the makers, the Nevile Engineering Company, Ltd. The two types shown can give three degrees of spray, viz. a fine, a medium and a heavy spray. Mr. Caink, the patentee, as city engineer of Worcester, must know by experience of the requirements for street-watering purposes. He has also devised sewer ventilators and a hydro-pneumatic sludge lift. An automatic flood trap of universal applicability that will repay careful inspection is shown for the first time, we believe, by Murray & Co., of Preston. The contrivance is so

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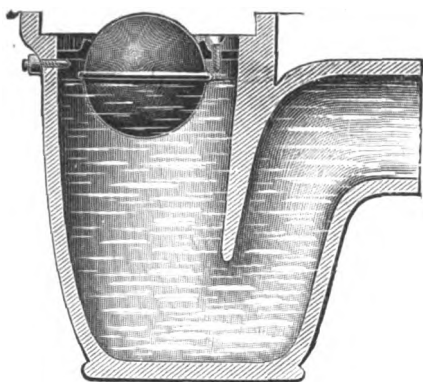
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simple and the whole exhibit occupies such a little space that it runs the risk of being overlooked. The gully near its inlet



and directly below the grid is fitted with two metal rings, and one of indiarubber is placed between them. The metal rings are fixed to the gully by bolts and nuts. Below is a copper ball float (whose diameter is larger than the opening in the rings, which is still further reduced by the rubber) resting on the surface of the water. The feature of the patent is that when the water in the drains cannot for any reason flow away quickly enough, the ball is lifted by the rising water to the rubber between the metal rings, and there it stops, being too large to go through, as shown above, and thereby sealing the gully entrance and preventing the water overflowing into adjacent premises. When the water subsides the ball drops. The gully can be fixed without touching the drains, and cleaned out without moving anything. The indiarubber is replaced by merely unscrewing the rings. The simplicity of the idea must commend itself to all who inspect the contrivance. Mr. G. P. Milnes, civil engineer, has invented and shows a flushing apparatus to discharge at various intervals, and two other apparatus, all of which work automatically. Sanitary fittings under many important forms are shown by John Knight & Sons, patentees and manufacturers, including their patent iron drain fittings and covers, which have non-detachable gun-metal fastenings. The covers are intended to be fixed over

gullies receiving wastes from bath-room, sink, &c., where it is often objectionable to leave them open. On the next stand Wm. Harriman & Co., Ltd., have a large number of Barron's patents, which include water-waste preventers, w.-c. connecting cones, "anti-foul" gully channel bends for manholes (which received a bronze medal), traps, range taps, &c. A working model has been brought to show the Newham false floor tiles, glazed and unglazed, as used for ventilating and draining bacterial filters and contact beds. The perforated tiles, which are laid on concrete, interlock and stand 3 inches from the ground. Special tiles are made to fit round circular spaces. Flushing tiles are inserted so that the concrete floor below may be thoroughly washed. Three of the exhibits of John Jones, Chelsea, relate to hospitals. There are also closets, interceptors, manhole covers, a cast-iron inspection chamber with low level cover and a large number of other specialties.

Heenan & Froude, Ltd., have elected to be represented by their refuse destructors. They atone for the exigencies of the limited space by showing a front of one of their cells which is reinforced by photos and plans of destructors which they have erected at home and abroad. Of course, the firm have in addition bridge, roof and constructional steelworks, and also works for making colliery and mechanical draught plant, &c., each being distinct from the others. The results of official tests at King's Norton, Birmingham, Worthing, Burslem, Dublin and elsewhere, bear witness to the satisfactory results obtained from "Heenan" destructors. As a silver medal was awarded for the centrifugal dust catcher of the Horsfall Destructor Company, Ltd., it is to that feature that most attention will be drawn. To demonstrate its complete application they provide a model of their "back-fed" and "top-fed" types of destructors. As a large amount of fine dust is contained in all town refuse great care has to be taken to prevent it being sent up the chimney. We could not do better than quote the description given in a joint report by Lord Kelvin and Professor A. Barr on a dust catcher supplied by the Horsfall Company to a destructor of another make at Edinburgh, in consequence of law proceedings compelling the Corporation to put a stop to a nuisance in the form of noxious gases and dust coming from the chimney. The report says:—

"The principal feature of the plant as it now stands is a

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dust-collector, patented and constructed by the Horsfall Company. It consists of a circular brickwork building about 16 feet internal diameter and 12 feet internal height, lined throughout with firebrick. In the centre of this is built an inner cylindrical chamber, 5 feet 8 inches internal diameter, communicating with the surrounding annular space through arched openings at the top of the separating wall. The main flue from the destructors enters the annular chamber tangentially at the bottom, so that the gases have to pass around and upwards through the annular space before they enter the central chamber, from the bottom of which again they pass off to the boiler or to the by-pass flue as desired. The annular chamber is partially obstructed by the entering flue, the by-pass flue, the boiler flue and a rake passage communicating with the central chamber; the spaces between these obstructions form pockets in which the dust, carried outwards by centrifugal action from the whirling gases, may be quietly deposited. Each of the pockets is provided with a cleaning door, through which the dust may be drawn.

"At our request Mr. Cooper, the city engineer, caused the dust intercepted during the week ending March 13, 1898, to be measured and found it to be in bulk 53 cubic feet. This may serve at once to indicate the efficiency of the design and the need for such an appliance in the case of Edinburgh, where the refuse is collected dry every day and is very light and dusty in character." The large destructor at Brussels is similarly provided. Messrs. Hughes & Stirling are another firm attracting notice to their dust destructors. They have sent a one-twelfth scale model of a "Sterling" destructor of two cells, complete with boiler, flues, dust-catcher and chimney.

Wm. M. Glover & Sons have three exhibits. The two that won silver medals are the "Warwick" street-washer and sprinkler, and their covered dust-van. The sprinkler (for which a patent has been applied) had a width of spread from 3 feet to 22 feet, and the fine, medium or full spread can be used at any width. It may be fitted to vans already in use. The driver has merely to touch a lever in order to use the flusher, which is especially useful for cleansing gullies, &c. The claims for their new dust-van are lightness, durability and simplicity. There are no bows or

levers at the back to hinder the contents from being shot out of the van. It is equipped with movable iron covers.

Interesting builders' ironmongery is shown by W. & R. Leggott, Ltd. There are various varieties of roof and lantern light openers. The Rojon door-spring sets out to improve upon the old-fashioned forms which have been responsible for many unpleasant moments to unwary people who did not expect the forcible return jerk. The Rojon is worked on a pneumatic piston, which renders such terrors impossible. Their panic bolts for buildings where people congregate are obviously successful. The British Challenge Glazing Company are content to offer a small model for examination.

By an ingenious disposition of their stand Candy & Co., Ltd., are able to show some ten varieties of the "Devon" fireplaces, which were so successful in the tests of open domestic grates conducted by the Smoke Abatement Society and H.M. Office of Works, and which have received the hall-mark of the Sanitary Institute. They are manufactured with fireclay backs, the glazed bricks, &c., and kerbs being made to match. C. W. Outram & Co. rely mainly on the "Hassall" w.-c. suites, with patent flushing rim, with 1½-gallon and 2-gallon flush. The "Hassall" closet was to the best of our memory first awarded a bronze medal in 1902. The tests then made by the judges included placing in the pan shavings, dish cloths, coloured water and paper. In every case the contents were entirely swept out by the first flush by the use of 1½ gallons of water. They have again the satisfaction of receiving a similar medal. School closets are a speciality at the Excelsior Potteries, near Burton-on-Trent, where Messrs. Outram manufacture their goods. It is of a strong fireclay with leadless glazing. The 1½ gallons flush meets all requirements. The general quickening in the demands of education authorities for faultless sanitary arrangements in schools should bring this closet into well-deserved prominence. There are in addition fireclay fittings for hospitals and domestic use. At a time when the open-air cure might almost be described as fashionable the arrival of a contrivance like the Alfred Williams "Hygienic" out-of-door room is opportune. The material is Navy duck, which cannot catch fire. It is fastened by cording to the revolving platform underneath and to a wooden framework forming the sides. It is possible to

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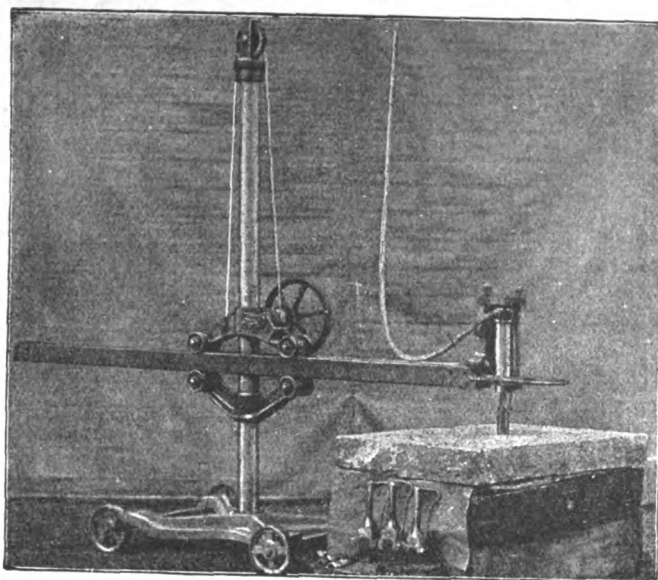
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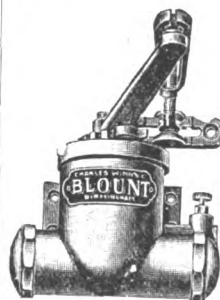


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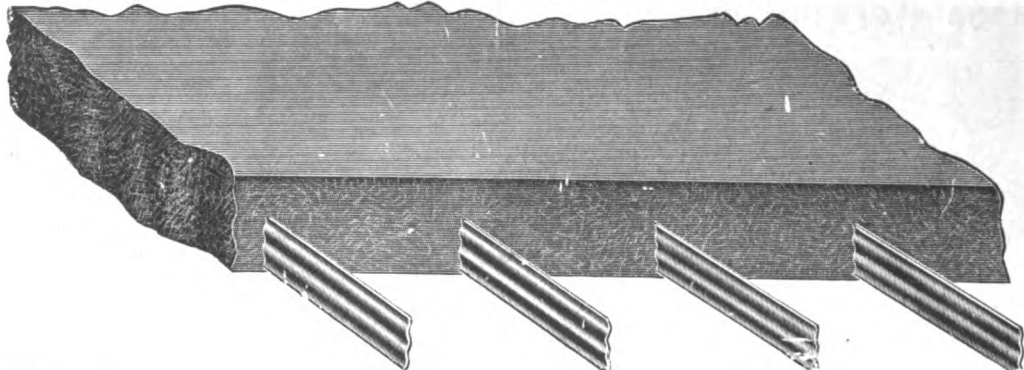
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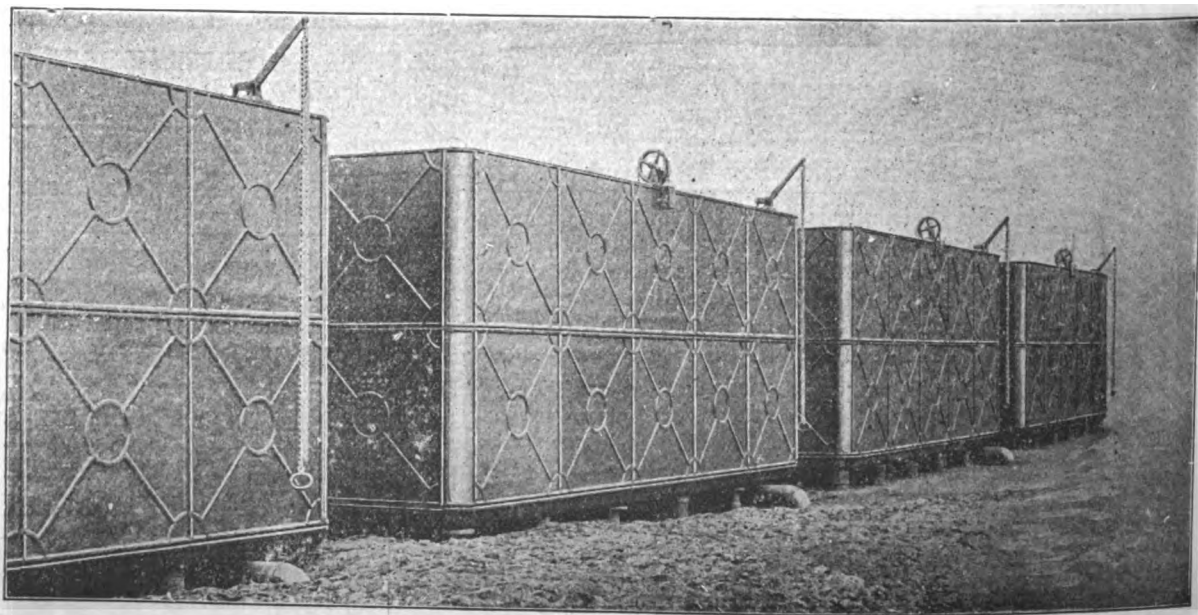
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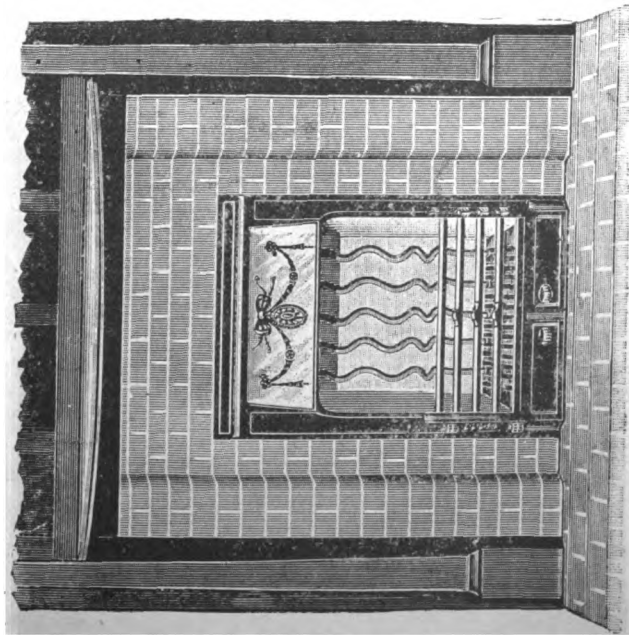
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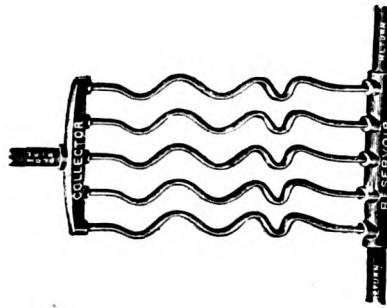
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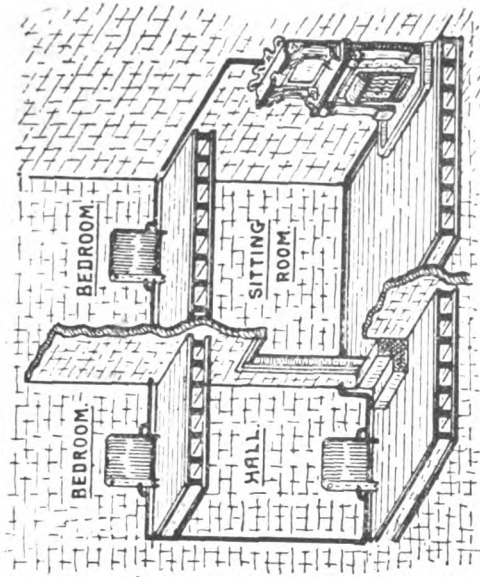


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THE Architect and Contract Reporter.

FRIDAY, JULY 20, 1906.

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NOTICE TO ADVERTISERS.

Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further

answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

TENDERS, ETC.

* * As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

SALFORD.—For proposed extensions of the Salford Royal hospital. Premiums amounting to 100l. will be awarded. Architects practising in the neighbourhood of Manchester and Salford apply before the 24th inst. to Mr. G. Ruddle, secretary, Salford Royal hospital.

SHEFFIELD.—For public baths at Primrose Meadows. Premiums of 30l., 20l. and 10l. will be awarded. Deposit 1l. 1s. Architects practising within Sheffield apply before July 28 to Mr. H. Sayer, town clerk, Town Hall, Sheffield.

CONTRACTS OPEN.

ACCRINGTON.—July 24.—For extension of Municipal Technical school. Mr. Henry Ross, architect, Accrington.

ALNWICK.—Aug. 2.—For the erection of residence. Mr. George Reavell, jun., architect, Alnwick.

AWBRIDGE.—July 23.—For repairs, painting, provision of lavatory accommodation, erection of offices, &c., at the Awbridge Council school, Hants. Deposit 1l. 1s. Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

BEXLEY HEATH.—July 23.—The Bexley Urban District Council invite separate tenders for (1) extension of the existing car-shed to form a paint shop, and (2) erection of a steel structure for a repairing shop. Deposit 10s. The Manager's Office, Car-sheds, Bexley Heath, Kent.

BRAISHFIELD.—July 23.—For repairs, painting and provision of lavatory accommodation at Braishfield Council school, Hants. Deposit 1l. 1s. Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

COSHAM.—July 23.—For erection of buttresses, new fencing, tierods, distemping new urinal and drains at the

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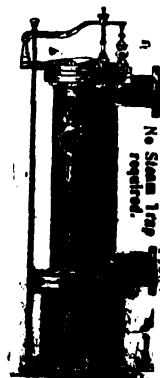
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DARTFORD.—July 25.—For alteration to the laundries at Darenth asylum, Dartford, Kent. Mr. W. T. Hatch, engineer-in-chief.

DERBY.—July 31.—For enlargement of the branch post office at Midland Road, Derby, for the Commissioners of H.M. Works and Public Buildings. Deposit 1*l.* 1*s.* Secretary, H.M. Office of Works, &c., Storey's Gate, London, S.W.

FAREHAM.—July 23.—For repairs, external and internal painting, ventilation, &c., at the Fareham Council school, Hants. Deposit 1*l.* 1*s.* Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

FAWLEY.—July 23.—For external painting, alterations to offices, erection of new lavatories and cloak-rooms, drainage, new offices, heating, ventilation, &c., at the Fawley Council school, Hants. Deposit 1*l.* 1*s.* Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

FUNTLEY.—July 23.—For gravelling, enlarging gateway, erection of cloak-rooms and lavatories, drainage, corrugated iron offices, conversion of buildings for coal store, &c., at the Funtley Council school. Deposit 1*l.* 1*s.* Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

GLASGOW.—July 30.—For the construction of a sponge cloth laundry at St. Rollox Stores, for the Caledonian Railway Company. Deposit 2*l.* 2*s.* The Engineer, Buchanan Street station, Glasgow.

GREAT YARMOUTH.—July 24.—For alterations to building adjoining tramway depôt, Gorleston. Borough Surveyor, Town Hall, Great Yarmouth.

GREENWICH.—July 27.—For the erection of branch library in London Street. Deposit 2*l.* 2*s.* Messrs. Wills & Anderson, architects, 24 Bloomsbury Square, London, W.C.

GRIMSBY.—July 25.—For the erection of Primitive Methodist church, &c., Wellington Street. Mr. Hy. Harper, architect, 54 Long Row, Nottingham. Rev. J. Goldthorpe, Grimsby.

HALIFAX.—July 24.—For mason, ironfounder, joiner, slater and plasterer, and plumber's work in connection with extension of the technical college, Hopwood Lane. Deposit

1*l.* 1*s.* Mr. James Lord, borough engineer, Town Hall, Halifax.

HEATH TOWN.—July 21.—For the erection of infants' department at Woden Road Council School, Heath Town, Staffordshire. Deposit 1*l.* 1*s.* Mr. Graham Balfour, director of education.

HOPKINSTOWN.—Aug. 1.—For erection of chapel and schoolrooms for the English Baptist church at Hopkinstown, Pontypridd. Mr. Arthur Lloyd Thomas, architect and engineer, Pontypridd. Rev. Samuel Davies, Oakfield, Pwllgwaun, Pontypridd.

HUNSLET.—July 31.—For the erection of engine-house and pump-room at workhouse, Rothwell Haigh. Mr. W. E. Richardson, architect, Rothwell, near Leeds. Mr. Fred W. Mee, clerk, Hunslet, near Leeds.

KING'S HEATH.—July 25.—For the erection of six homes for epileptics and other works on the Monyhull Hall estate, near King's Heath, Birmingham. Apply to Mr. R. J. Curtis, clerk to the joint committee, Guildhall Buildings, Birmingham, and deposit 25*l.* before June 30.

LLANELLY.—July 25.—For additions and alterations to the Llanelly hospital. Mr. W. Griffiths, architect, Llanelly. Mr. D. G. Rees, secretary.

LONDON.—July 24.—For pulling-down and reconstructing the second portion of the Streatham depôt, Streatham Hill, as a car-shed for electric cars, for the London County Council. The Superintending Architect's Department (Highways Section), 13 Charing Cross, S.W.

LONDON.—July 26.—For the erection of a central library building in Mare Street, Hackney. Deposit 1*l.* 1*s.* Mr. H. A. Crouch, architect, 12 Gray's Inn Square, W.C.

LONDON.—Aug. 1.—For the erection of workshops at their workhouse in the Harrow Road, W., for the Paddington Board of Guardians. Deposit 5*l.* 5*s.* Messrs. Giles, Gough & Trollope, architects, 28 Craven Street, Strand, W.C.

LOSTOCK HALL.—Aug. 15.—For the erection of a school at Lostock Hall, near Preston. Deposit 2*l.* Mr. Henry Littler, architect, Preston.

MAPPLEWELL.—July 24.—For the conversion of offices and asphaltting of part of playground at Mapplewell Pro-

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vided infant school, Yorks. Mr. T. Graham, divisional clerk, Education Office, Obelisk Chambers, Barnsley.

NORWICH.—July 25.—For the erection of boiler-house, &c., at the Norwich workhouse. Deposit 1*l.* 1*s.* Messrs. Morgan & Buckingham, architects, 5 Redwell Street, Norwich.

PORTCHESTER.—July 23.—For gravelling, erection of offices, ventilation, &c., at the Portchester Council school. Deposit 1*l.* 1*s.* Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

ST. ANNES-ON-SEA.—July 28.—For the erection of a technical school at St. Annes-on-the Sea, Lancs. Deposit 2*l.* Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

SCOTLAND.—July 23.—For the mason, carpenter, slater, lath and plaster, and painter and glazier's work to be done in connection with the renovation of the parish church of Kirkmichael. Mr. John Robertson, architect, Inverness.

SCOTLAND.—July 26.—For the iron and steelwork, masonwork, carpenter and joinerwork and paintingwork of a two-storey goods shed, for the Aberdeen Harbour Commissioners. Mr. R. Gordon Nicol, harbour engineer, Aberdeen.

SUTTON.—July 25.—For stabling and other buildings on the Belmont asylum estate. Deposit 1*l.* 1*s.* Messrs. T. W. Aldwinckle & Son, architects, 20 Denman Street, London Bridge, S.E.

WALES.—July 21.—For alterations and additions to Bethel English Baptist chapel, Maesteg. Rev. R. Davies, Rhainfa, St. Michael's Road, Maesteg.

WALES.—July 21.—For converting premises at Penry Street, Georgetown, Merthyr, into bakehouse, warehouse and coachhouse. Mr. T. Edmund Rees, architect, Gernant, The Walk, Merthyr.

WALES.—July 23.—For erection of a mixed school (to accommodate 400 children), with the necessary offices, boundary walls, &c., at Darranlas, Mountain Ash. Deposit 2*l.* 2*s.* Mr. W. H. Williams, architect, Town Hall, Mountain Ash.

WALES.—July 23.—For the erection of (1) public offices; (2) stables and cartshed, together with boundary walls, for

the Risca Urban District Council, Mon. Deposit 2*l.* 2*s.* Mr. A. J. Dardis, surveyor, Council Offices, Risca.

WALES.—July 25.—For additions and alterations to the Council school at Narberth, Pembrokeshire. Mr. D. E. Thomas, architect, 17 Victoria Place, Haverfordwest.

WALES.—July 26.—For erection of stables, carthouse, yard and boundary walls, also butcher's shop and conversion of existing stables into shoemaker's shop at Nantymoel, near Bridgend. Deposit 1*l.* 1*s.* Mr. J. Morgan, Co-operative Society, Nantymoel, near Bridgend.

WATERLOO.—July 23.—For painting and decorating, new drains, new offices, ventilation, &c., at the Waterloo Council school, Hants. Deposit 1*l.* 1*s.* Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

WEST HARTLEPOOL.—July 31.—For the construction of steps leading from the Longhill subway to the proposed road. Mr. Nelson F. Dennis, borough engineer and surveyor.

WOLVERHAMPTON.—July 31.—For the erection of additions to the administrative block at the fever hospital in Green Lane. Deposit 1*l.* 1*s.* Mr. George Green, borough engineer.

THE *Iron Age* (New York) publishes the following statistics, collected by the American Iron and Steel Association, of the production of iron and steel structural shapes in the United States in 1905. These statistics include the production of beams, beam girders, tee bars, tees, channels, angles and other structural forms, but they do not include plates or girders made from plates. The total production of strictly structural shapes in 1905 was 1,660,519 tons, against 949,146 tons in 1904—an increase of 711,373 tons, or over 74.9 per cent. The production of 1905 was much the largest ever turned out in one year. The next largest production was in 1902, when an output of 1,300,326 tons was attained, falling to 1,095,813 tons the next year, and to 949,146 tons in 1904. Of the total production in 1905 about 1,648,889 tons were rolled from steel, and about 11,630 tons from iron, against about 941,127 tons from steel and about 8,019 tons from iron in 1904.

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TENDERS.**BEESTON.**

For the erection of woollen mill. Messrs. T. A. BUTTERY & S. B. BIRDS, architects, Leeds and Morley.

Accepted tenders.

Atkinson & Son, Leeds, mason and joiner	£3,175	0	0
Roberts, Brooks & Co., Bramley, iron-founder	1,039	0	0
Mountain, Holbeck, plasterer and concreter	285	0	0
Chappell, Morley, plumber	275	11	0
Kellett, Morley, slater	230	0	0
Heywood & Co., Huddersfield, patent glazing	182	16	3

CAERPHILLY.

For erection of isolation hospital. Mr. J. H. PHILLIPS, architect, Cardiff.

R. Jones	£12,587	0	0
Allan & Sons	12,129	0	0
Hallet	12,000	0	0
Colbourn	11,998	0	0
Williams	11,973	0	0
Knox & Wells	11,950	0	0
Thomas & Co.	11,903	0	0
S. Jones	11,787	0	0
Davies	11,490	0	0
Stanbury	11,477	0	0
Blacker Bros.	11,400	0	0
Price Bros.	11,290	0	0
Jenkins	11,230	0	0
Price	11,050	0	0
Bowers & Co.	10,990	0	0
Evans Bros.	10,797	0	0
Howells	10,700	0	0
Hamilton & Millard	10,650	0	0
Evans	10,589	0	0
Bevan	10,239	0	0
Rutter	10,200	0	0
Morgan	10,145	0	0
Rossiter	10,040	0	0
Hunter & Co.	9,935	0	0
LEWIS, Caerphilly (accepted)	9,880	0	0
Harding	9,860	0	0

CAERPHILLY—continued.

For ten dwelling-houses on Pontygwindy Road. Mr. G. L. WATKINS, architect, Caerphilly.

Davies & Son	£223	10	0
Jones	220	0	0
Hamilton & Millard	217	10	0
Williams	208	0	0
Howells	200	0	0
R. & J. EVANS, Caerphilly (accepted)	200	0	0

For twenty or more dwelling-houses on Pontygwindy Road, for the Mutual Building Club. Mr. G. L. WATKINS, architect.

Davies & Son	£223	10	0
Jones	220	0	0
Hamilton & Millard	217	10	0
J. Williams	209	0	0
Howells	205	0	0
D. Williams	199	0	0
R. & J. EVANS, Caerphilly (accepted)	198	10	0
Jones	197	17	6

CHATTERIS.

For the erection of a pair of cottages for the County Council. Mr. R. S. W. PERKINS, county surveyor, Ely.

Elworthy & Co.	£527	0	0
Heath	497	0	0
Feast	470	0	0
Angood	461	0	0
Barrett	450	0	0
SHANKS, Chatteris (accepted)	425	0	0

CHESTER-LE-STREET.

For making-up private streets, also concrete retaining wall and fencing. Mr. GEO. W. AYTON, highway surveyor.

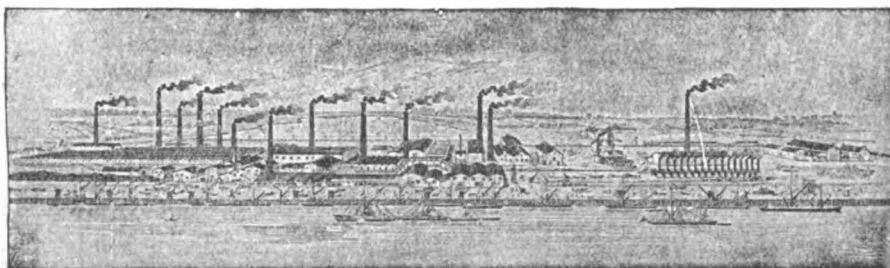
Birtley	£1,000	5	1
Simpson	947	9	5
Thompson & Son	896	15	9
McLAREN, Gosforth, Newcastle (accepted)	769	8	11

Retaining wall.

McLaren	325	10	0
Thompson & Son	321	13	4
Johnson & Strong	316	11	8
Simpson	301	18	4
BIRTLEY, Stanley R.S.O. (accepted)	213	7	6

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For renovating Station Road Council school.
G. DOWNING (accepted) £221 0 0
For renovating Morley Place Council school.
G. DOWNING (accepted) £139 0 0

DOVERCOURT.

For the erection of a golf-house for the Harwich and Dovercourt golf club. Mr. H. STEWARD WATLING, architect, Kingsway House, Dovercourt, Ipswich and Felixstowe.
DOWNS & SAGE, Dovercourt (accepted).

DURHAM.

For laying the Gilesgate sewer, for the Urban District Council.
THOMPSON, Gosforth (accepted) £963 19 3

ELLESMERE.

For making and completing Birchfield Road, Ellesmere Port.
Davis & Co. £660 6 9
Jones & Hough 649 10 0
Harris 627 15 9
Cooke & Co. 615 0 0
PARKER, Ellesmere Port (accepted) 600 0 0

EPSOM.

For the erection of engine-house, &c., for the Urban District Council. Mr. W. VAUX GRAHAM, engineer, 5 Queen Anne's Gate, S.W.
Smith & Sons £2,358 0 0
Mowlem & Co. 2,310 0 0
Lee 2,244 0 0
Brown 2,190 0 0
Coles 2,185 14 0
Martin, Wells & Co. 2,167 17 0
Cropley Bros. 2,165 10 0
Potter Bros. 2,141 1 10
Cummins & Sons 2,141 0 8
Wisdom Bros. 2,125 0 0
Page & Son 2,056 5 10
ROLL & TAYLOR, Epsom (accepted) 1,855 5 6

EDMONTON.

For the erection of stabling at Shrubbery Road, Lower Edmonton. Mr. H. SEYMOUR COUCHMAN, architect, Tottenham.
Fairhead & Son £471 0 0
Porter 445 0 0
Monk 440 0 0
GROVES & SONS (accepted) 409 10 0

ERDINGTON.

For the equipment of tramways from Salford Bridge to Chester Road.
BLACKWELL & Co. (accepted) £5,385 0 0

FERRYHILL.

For erecting twenty-two cottages for the Bishop Auckland Co-operative Society. Mr. F. H. LIVESAY, architect, Bishop Auckland.

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Co-operative Society, joiner 717 18 0
Laycock, plasterer 370 0 0
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Wilson, painter 80 0 0

GUILDFORD.

For the construction of a reservoir in ferro-concrete, windmill and gas plant, &c. Mr. C. G. MASON, borough surveyor.
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Smith & Co. 1,324 14 10
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Playfair & Toole 1,252 0 6
DICKINSON & BURN, Guildford (accepted) 1,198 15 0

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HAVANT.

For formation of 1,000 feet run of new road on Warblington Farm. Messrs. HALL, PAIN & GOLDSMITH, surveyors, 48 West Street, Fareham.

Freeman & Co.	£738	0	0
Crockerell	705	0	0
Osenton	655	0	0
Dobson	622	0	0
Wilcox	544	18	0
King	540	0	0
James & Co.	497	0	0
Grounds & Newton	493	0	0

HORNSEA.

For the construction of a concrete sea-wall, promenade and timber groynes at Hornsea, Yorks. Mr. W. T. DOUGLASS, consulting engineer, 15 Victoria Street, Westminster.

Page	£22,580	5	8
Pearson & Sons	20,443	10	10
Lawson	19,225	0	0
Riley	18,246	14	4
Hardy & Atkinson	18,222	5	5
Best	17,314	1	5
Holme & King	16,786	4	7
Greenwood	14,300	0	0
Harman & Langton	14,282	4	0
Neal, Ltd.	13,614	0	0
Fasey	13,253	9	5
Brebner & Co.	13,205	0	0
Leggott & Speight	12,796	14	0
Griffiths & Co.	12,725	8	9
Hill & Co.	12,571	11	5
Bell & Sons	12,554	16	3
Robinson	12,069	16	0
Gradwell & Co.	12,051	6	10
FASEY & SON (accepted)	11,875	6	5
Braithwaite & Co.	10,977	10	6
Engineer's estimate	11,650	0	0

HORBURY.

For thirty-eight houses and shop at Horbury Junction, near Wakefield. Messrs. GARSIDE & PENNINGTON, architects, Pontefract and Castleford.

Donovan & Scott	£5,245	0	0
Thorpe & Beddard	5,243	10	0
Prince	4,950	0	0
Hellier	4,950	0	0
BRAMHAM & SON, Altofts (accepted)	4,570	10	0
Neal & Son	4,465	0	0

LEEDS.

For works required in connection with the erection of police station, &c., buildings at the junction of Meadow Lane and Great Wilson Street, for the watch committee.

Accepted tenders.

Rhodes, excavator, mason and bricklayer	£3,997	0	0
Mawson, carpenter and joiner	1,244	0	0
Lindley, plumber and glazier	698	0	0
Bagshaw & Sons, smith and ironfounder	351	0	0
Pickles Bros., slater	211	7	0
Braithwaite & Co., heating	208	0	0
Phillips, plasterer	170	0	0
Jackson & Co., painter	154	14	0
Neville & Co., electric lighting	125	17	0

LETCHWORTH.

For new roads for the First Garden City, Ltd.

DAVIS, BALL & Co., Letchworth (accepted) . £3,304 19 4

LITTLEHAMPTON.

For construction of movable bridge across the river Avon. Major TULLOCH, R.E., Engineer.

Alf. Thorn, Westminster: Bridge, £10,525; extra for steel flooring, £120; approaches, £2,343 14s. 4d.; total, £12,988 14s. 4d. Fasey & Sons, Leytonstone: Bridge, £12,080; approaches, £2,533 15s. 3d.; total, £14,613 15s. 3d. Handyside & Co., Derby: Bridge, £12,279 9s. 6d.; approaches, £2,532 8s. 2d.; total, £14,811 17s. 8d. Handyside & Co., alternative scheme: Bridge, £12,047 11s. 7d.; approaches, £2,532 8s. 2d.; total, £14,579 19s. 9d.—Mr. Alf. Thorn's tender was accepted.

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WARING & SONS, Huddersfield (accepted) . £4,100 0 0

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For alterations and repairs to 3 Devonshire Square, E.C.
Mr. H. SEYMOUR COUCHMAN, architect, 522 High Road,
Tottenham, N.

Porter	£507	0	0
Waring & Gillow	505	10	0
Snawin Bros. & Co.	495	0	0
Groves & Sons	463	10	0
BROWN (accepted)	461	0	0

For additional exit and cloakroom, &c., in the infants' department of the Queen's Head Street school, Islington.

Harris	£163	0	0
Lawrence & Sons	140	0	0
Williams & Sons	130	0	0
McCormick & Sons	111	0	0
L. H. & R. Roberts	105	0	0
Grover & Son	96	0	0
Bull, 31 Old Hill Street, Clapton (recom- mended)	91	10	0
Architect's estimate	85	0	0

For reconstructing and extending heating apparatus at the Tower Street school, Holborn.

Davis	£486	0	0
Price Lea & Co.	330	0	0
Defries & Sons	326	0	0
Turner & Co.	305	10	0
Brightside Foundry and Engineering Co.	299	0	0
Wenham & Waters	294	0	0
Bolton, Fane & Co.	280	0	0
Beeson & Sons	280	0	0
Grundy	277	0	0
Harlow & Son	277	0	0
G. & E. Bradley, Elfort Road, Highbury (recommended)	265	0	0
Architect's estimate	290	0	0

LONDON—continued.

For supply of (a) high-tension cables, cable troughs, &c., and (b) low-tension cables, feeder pillars, &c., required in connection with the reconstruction of the first section of the northern tramways, for the London County Council.

High-tension cables, &c.

Kabelfabrik Actien-Gesellschaft	£43,439	10	0
Lahmeyer Electrical Co.	40,095	10	0
Glover & Co.	37,330	18	9
Callender's Cable and Construction Co.	37,239	12	6
St. Helens Cable and Rubber Co.	36,660	10	0
British Insulated and Helsby Cables	36,222	6	7
Johnson & Phillips	36,102	16	2
Siemens Brothers & Co.	36,078	2	10
Henley's Telegraph Works Co.	36,050	0	0
Western Electric Co., London (recom- mended)	35,726	19	6

Low-tension cables, feeder pillars, &c.

Lahmeyer Ele trical Co.	26,022	12	6
Glover & Co.	24,879	9	5
Callender's Cable and Construction Co.	24,715	17	3
St. Helens Cable and Rubber Co.	24,622	2	6
Siemens Bros. & Co.	24,139	19	6
Western Electric Co.	24,003	11	0
Johnson & Phillips	23,913	12	1
British Insulated and Helsby Cables	23,748	7	11
Henley's Telegraph Works Co., Ltd., London (recommended)	23,628	16	3
Kabelfabrik Actien-Gesellschaft	22,238	12	6

(Incomplete tender.)

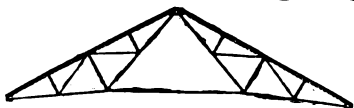
For the erection of bandstand for thirty-seven performers in Finsbury Park, N.

Parrott & Isom	£487	10	6
Stevens & Sons	461	0	0
Lascelles & Co.	445	6	10
Clemens	423	18	5
Chambers Bros.	415	0	0
Smith & Co.	404	13	0
Boulton & Paul	396	0	0
Jackson & Co., 92 Upper Tollington Park, N. (recommended)	369	12	1

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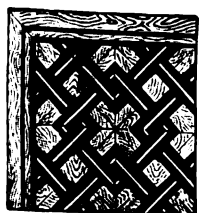
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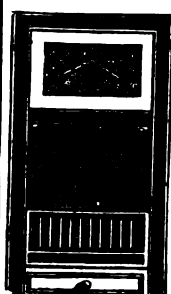
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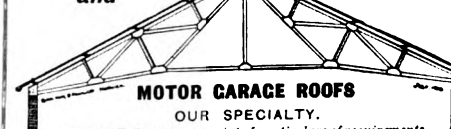
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LONDON—continued.

For the making-up of Station Avenue, &c., for the Southgate Urban District Council. Mr. C. G. LAWSON, surveyor.

Turner	£3,410	0	0
Rogers & Co.	3,015	0	0
Hampton	2,957	0	0
Adams	2,905	0	0
Griffiths, Ltd.	2,806	0	0
Mann	2,718	0	0
FROST (accepted)	2,586	0	0

For the execution of works of asphaltting, tar-paving, kerbing and channelling of several streets in the district, of a total length of about 2,080 yards, for the Southgate Urban District Council. Mr. C. G. LAWSON, surveyor.

Adams	£2,338	0	0
Frost	2,246	0	0
Smart & Son	1,929	0	0
Mann	1,920	0	0
Bradshaw & Co.	1,721	0	0
GRIFFITHS & Co. (accepted)	1,690	0	0

For erecting and furnishing iron building on the Ensham Street site, Wandsworth.

Crowys	£875	0	0
Bain & Co.	560	0	0
Croggon & Co.	555	0	0
Humphreys	530	0	0
Harbrow	501	0	0
Hawkins & Co.	498	0	0
Leather	494	0	0
Smith & Co., Ltd.	469	0	0
Harrison & Co., Denmark Road, Camberwell (recommended)	430	0	0

For provision and fixing of motor-generators and switch-boards and for wiring the L.C.C. School of Building for the installation of electric light.

Witting, Eborall & Co.	£812	0	0
Westminster Engineering Co.	718	0	0
Electric Construction Co.	665	0	0
General Electric Co., 71 Queen Victoria Street, E.C. (recommended)	646	10	0

LONDON—continued.

For construction of an underground convenience in Arnside Street, Walworth.

Davis, Bennett & Co.	£750	0	0
Finch & Co.	719	0	0
Mellows & Co.	680	7	0
Jennings, Ltd.	663	13	4
WISDOM BROS., Isleworth (accepted)	630	0	0

For the erection of boat-house in Battersea Park.

Evans & Co.	£739	0	0
Chambers Bros.	632	0	0
Hyde	614	0	0
Martin, Wells & Co.	596	0	0
Vigor & Co.	566	0	0
F. & H. F. Higgs	555	0	0
Bragg & Sons	517	8	2
Barker & Co., Kensington (recommended)	494	0	0

Tenders recommended for acceptance for cleaning and painting certain London County Council schools.

Battersea Park Road, Battersea, Holliday & Greenwood	£385	0	0
Surrey Lane, Battersea, Maxwell Bros.	499	0	0
Teesdale Street, Bethnal Green, Barrett & Power	409	0	0
Knapp Road, Bow and Bromley, Newell & Lusty	280	0	0
Santley Street, Brixton, H. Bragg & Sons, Ltd.	457	0	0
Credon Road, Camberwell, E. Proctor & Son	723	0	0
Southampton Street, Camberwell, H. Bragg & Sons, Ltd.	287	0	0
Goodrich Road, Dulwich, E. Triggs	520	0	0
Heber Road, Dulwich, Maxwell Bros., Ltd.	619	0	0
Risinghill Street, Finsbury, Marchant & Hirst	243	0	0
Fulham Palace Road, Fulham, W. Brown & Sons	439	10	0
Sherbrooke Road, Fulham, Lole & Co.	499	8	0
Blackheath Road, Greenwich, W. Banks	244	15	6
Enfield Road, Hackney, W. Shurmur & Sons, Ltd.	296	15	0
Gayhurst Road, Hackney, Newell & Lusty	252	0	0
Northwold Road, Hackney, H. Willmott	335	0	0
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The Hither Green, Lewisham, H. Groves	365	0	0
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Wood Street, Woolwich, J. Scott Fenn	298	0	0
Gordon House Girls' Home, Woolwich, H. Tinkler	153	19	11
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Greenwich Road (iron buildings), Greenwich, W. Hayter & Son	60	10	0
Berger Road Special school, South Hackney, H. Willmott	51	0	0
Fellows Street, Haggerston, J. Haydon & Sons	88	3	6
Brackenbury Road Special school, Hammersmith, W. Brown & Sons	40	0	0
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Rickardo Street, Poplar, Barrett & Power	125	0	0
Flint Street, Walworth, W. H. King	101	0	0
Mitcham Lane (iron buildings), Wandsworth, W. Read	158	0	0
Elizabeth Street, Woolwich, W. J. Howie	181	0	0
Greening Street, Woolwich, J. Scott Fenn	78	10	0
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MANCHESTER
TRAFFORD PARK

MOUNTAIN ASH.

For street improvements in Bush Road, Miskin. Mr. W. G. THOMAS, surveyor.

Brock & Son	£374	4	1
Evans & Murry	298	0	7
Morgan	295	18	7
John	293	1	11
WEBB, 39 Mountain Ash Road, Abercynon (accepted)	277	17	7

NEWCASTLE-ON-TYNE.

For the erection of a warehouse. Mr. J. W. DYSON, architect.

Elliott Bros.	£1,100	0	0
J. & W. Lowry	900	0	0
Maughan	897	12	11
Ferguson	888	0	0
Lunn	867	3	0
Robertson & Sons	858	15	0
Davison	854	9	6
Craven	853	6	7
Hunter	850	0	0
Davidson	837	3	6
Hope	834	14	0
Weatherley	830	2	6
George	819	18	6
Hepple	813	19	0
Lumsden	812	2	7
McElhatton, jun.	795	4	4
White	795	0	0
Brown & Bell	793	11	4
Exors. of Arundel	764	17	0
Hall	764	16	6
Veitch & Jordan	762	16	4
Milne	759	3	0
Hutchinson	745	9	0
Franklin & Sons	729	1	9
Fenwick & Co.	725	0	0
KIRK & BROWN, Newcastle (accepted)	722	2	5

NEW HERRINGTON.

For erecting a pavilion and fives court. Mr. J. PALLISER, architect, Philadelphia, co. Durham.

Foster	£752	14	0
HALL & WHARTON, Sunderland (accepted)	726	15	0

NORFOLK.

For alterations at the county asylum.

RICHES (accepted)	£667	2	3
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For providing slaughter-houses, &c.

RICHES (accepted)	£631	6	9
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NORTHALLERTON.

For the erection of about 1,000 square yards of roofing at the North Yorkshire Farmers' Stock Mart, Northallerton.

Pearce	£498	15	0
Harrison & Co.	470	0	0
A. & J. Main & Co.	465	0	0
Boulton & Paul	450	0	0
Teasdale	395	0	0
Atkinson & Son	335	0	0
Beck	335	0	0
Alnwick Foundry Co.	306	15	0
Davies Bros.	306	10	0
Blakey & Co.	284	10	0
Mordy & Son	278	0	0
Darlington Construction Co.	271	10	0
Sander & Co.	270	0	0
Mundy	265	0	0
WILLOUGHBY, Northallerton (accepted)	261	15	0

PENARTH.

For the construction of tumbling bays, manholes, flushing tanks and about 580 lineal yards of stoneware pipe sewers. Mr. EDGAR J. EVANS, surveyor.

Collins & Co.	£1,616	14	0
Hatherly & Co.	1,005	10	9
Powell	967	6	5
Barnes, Chaplin & Co.	763	6	2
Bevan	759	0	0
Mackay & Davies	732	18	3
Rutter	714	5	9
ASHLEY, Cardiff (accepted)	709	8	11
Burton (withdrawn)	543	7	0
Surveyor's estimate	700	0	0

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206 Upper Thames Street, E.C.

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ILLUSTRATIONS.

ELEVATION OF PROPOSED CHAMBER OF COMMERCE, LONDON.

9 LOWTHER TERRACE, GLASGOW.

CATHEDRAL SERIES.—ST. DAVIDS: VIEW OF NAVE FROM WEST DOOR.

FULHAM TOWN HALL.

NORWICH.

For the Shirehouse extension.

GILL (accepted) £12,240 0 0

There were twenty-two tenders.

OTFORD.

For the erection of isolation hospital for the Sevenoaks Rural District Council.

Lawrence & Son	£6,647	0	0
Maddison	6,490	0	0
Phillips	6,480	0	0
Constable	6,473	10	0
Durnell & Sons	6,320	0	0
Somerford & Son	6,152	0	0
Banks	6,139	0	0
Jones & Andrews	6,078	0	0
Chesman & Sons	6,031	0	0
Abbott	5,986	12	11
Patman & Fotheringham	5,976	0	0
Spencer, Santo & Co.	5,975	0	0
West Bros.	5,957	0	0
Wallis	5,906	0	0
Barker & Co.	5,873	0	0
Thomas & Edge	5,850	0	0
Lonsdale	5,743	0	0
Strange & Sons	5,735	0	0
Martin & Co.	5,694	0	0
Eyde	5,690	10	0
Browning	5,636	0	0
Flay	5,539	15	0
G. E. WALL'S & SONS, Maidstone (accepted)	5,534	0	0

PENRITH.

For Contract No. 1, sewerage works. Messrs. BRIERLEY, HOLT & Co., engineers, Blackburn.

Jackson	£3,846	3	6
Dawson	3,159	7	0
Carr	2,851	8	0
Laing & Son	2,735	8	6
Clegg Bros.	2,709	11	4
Moore	2,707	15	0
Brebner & Co.	2,695	0	0
Taylor	2,661	11	11
Mackay	2,617	17	6
Read & Sons	2,520	15	3
Grisenthwaite	2,478	0	11
Hill	2,444	5	6
Buckley	2,436	11	0
Broadhead	2,379	1	11
Hooper, Neary & Co.	2,348	2	5
Egan & Sons	2,320	10	0
Morley & Sons	2,264	16	0
MACKAY & SONS, Edinburgh (accepted)	2,136	15	9
Farrell	1,946	9	1

PENYRHEOL.

For erection of nineteen dwelling-houses at Penyrheol, Wales, for the Penyrheol Building Club. Mr. G. L. WATKINS, architect, Caerphilly.

Nichols	£231	0	0
Davies & Son.	229	0	0
R. & J. Evans	220	0	0
Lloyd	215	0	0
Bristow	214	10	0
Howells	210	0	0
Williams	210	0	0
ROSSITER, Caerphilly (accepted)	210	0	0

RUNCORN.

For work in connection with the Norley water supply.

TIMMINS (accepted)	£2,315	0	0
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FAÏENCE FIREPLACES.

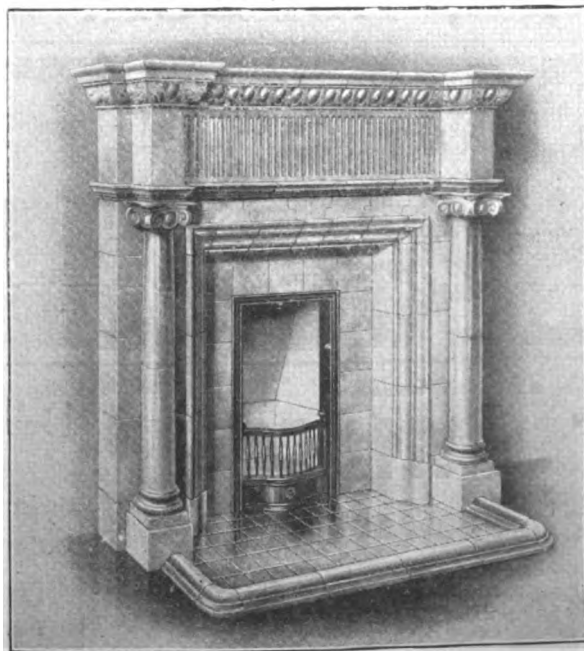


Figure 7.

London Offices & Showrooms: 2 & 3 NORFOLK STREET, STRAND, W.C.

RYDE.

For additions to the Royal Isle of Wight County Hospital.
Mr. F. W. CUTLER, architect.

James	£5,847	0	0
T. & E. W. Jenkins	5,665	0	0
Langdon	5,458	0	0
Barton	5,228	0	0
Croad	5,190	0	0
Ball & Son	5,180	0	0
Cawte	4,835	0	0

SALISBURY.

For the erection of a cabmen's shelter and convenience in Fisherton Street, and a public latrine in Castle Street, for the Town Council.

Cabmen's shelter in Fisherton Street.

Wort & Way	£245	0	0
Witt	239	2	0
Burton	215	0	0
JENNINGS, Windsor Street (accepted)	199	18	9
Tryhorn & Sons	198	0	0

Public latrine in Castle Street.

Witt	359	12	0
Wort & Way	315	0	0
Burton	305	0	0
JENNINGS (accepted)	299	0	0
Tryhorn & Sons	290	12	0

SANDBACH.

For the erection of workshop, alterations, &c., at the central premises of the Co-operative Society.

Street	£775	0	0
Stringer	755	11	0
Jackson & Co.	595	0	0
EDWARDS, Alsager (accepted)	549	10	0

SCOTLAND.

For the work in connection with the new laboratories at the High school, Kirkcaldy.

Accepted tenders.

Wishart, joinerwork	£559	17	0
Hood & Sons, plumberwork	467	5	0
Smith & Sons, mason and brickwork	225	0	0
Hutchison, plasterwork	59	15	6

SCOTLAND—continued.

For the erection of a corner block at Station Road, Methil.
Mr. ALEXANDER C. DEWAR, architect, Leven.

Accepted tenders.

Thomson & Gordon, Methil, masonwork.
Kirkcaldy & More, Leven, joinerwork.
Bruce, Buckhaven, plumberwork.
Brookbanks, Leven, plaster and slaterwork.

SCUNTHORPE.

For extensions at the gasworks.

DEMPSTER & SONS, LTD., Elland (accepted) . £720 0 0

SWADLINCOTE.

For the erection of Council offices.

KERSHAW, Burton-on-Trent (accepted) . £1,771 17 6

TUPSLEY.

For the erection of villa on the Highfield building estate.
Messrs. GROOME & BETTINGTON, architects, Hereford.

Davies	£537	10	0
Wilkes	519	0	0
Hiles	475	0	0
Cooke	470	0	0
Powell	470	0	0
Jones	455	0	0
Woolley & Sons	450	0	0
BOLT, Hereford (accepted)	450	0	0

WALES.

For the erection of thirty-one houses (at per house) at Llanbradach, for the Llanbradach Building Club. Mr. JOHN H. PHILLIPS, architect, Cardiff.

HOWELLS, Cardiff (accepted) . £198 0 0

WEYBRIDGE.

For additions to electric-light station.

Brown	£920	0	0
Messum	739	0	0
HORSELL (accepted)	717	0	0
Smith	710	0	0
Greenfield	710	0	0
Gaze	687	0	0

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For Index of Advertisers, see page x.

BACK NUMBERS.

Owing to the demand for the Cathedral Series, all numbers previous to Dec. 31, 1905, are now charged at 6d. each.

GILBERT WOOD & CO., Ltd.
Publishers, "The Architect,"

6-11 Imperial Buildings,
Ludgate Circus, London, E.C.

WIGTON.

For providing and laying about 3,760 lineal yards of 6-inch water piping.

AIRD & SON, Wigton (*accepted*).

TRADE NOTES.

THE whole of the railings and gates to be found at the Argyle Motor Works were supplied by Mr. David M. Tyre, architectural smith and art metalworker, 12 Orr Street, Glasgow. By an oversight his name was printed last week as "Mr. Ure." But the error could not cause much inconvenience, as Mr. Tyre is a recognised specialist for such work in the North.

THE directors of John Oakey & Sons, Ltd., have declared an interim dividend on the ordinary shares for the six months ending June 30 at the rate of 10 per cent. per annum, payable on Saturday, September 1.

MESSRS. JOYCE, Whitchurch, Salop, have just completed the fixing of a large quarter clock and carillon at Glandford Church, Norfolk, and also a striking clock at Drayton Bassett Church, Tamworth. The same firm have a very large quarter clock in hand for India, and two similar ones for the colonies.

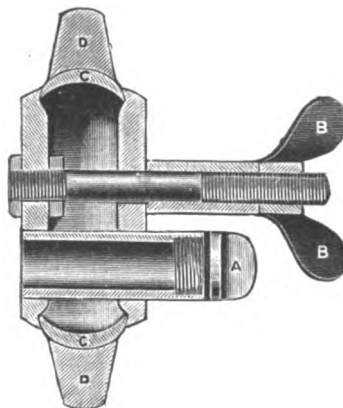
WE have received some samples of the pens manufactured by Messrs. Joseph Gillott & Sons, of London and Birmingham. In these days, when everyone writes, the question of pens is an all-important one, and there are few people who would not be interested in a pen which exactly suited their handwriting. The suiting of the many idiosyncrasies which govern penmanship is the keynote of Messrs. Joseph Gillott & Sons' business. They claim, and rightly, that amongst the hundreds of varieties which are turned out, one pen at least in the list will suit the most exacting hand.

IN the deplorable motor-omnibus accident at Handcross Hill it would appear that only one of the killed, Mr. Francis, was insured with the Railway Passengers' Assurance Company. It is certainly strange that in an age when the daily papers are constantly reporting more or less serious accidents so few people take advantage of the liberal policies of the company insuring against accidents of all kinds. Mr.

Gladstone recently stated in Parliament that 956 accidents in connection with motor vehicles occurred in May alone in the metropolitan area, and this without including the tram-car accidents. It should be borne in mind that it is not merely the passengers who suffer; pedestrians also stand the chance of being killed or injured.

A NEW DRAIN-TESTING PLUG.

ONE of the novelties shown at the Public Health Exhibition at Bristol (which was opened last week and which closes on the 21st) was a Smith's Patent Combined Drain-Testing Plug. The section here given will show the main principles. A is the emptying tube (cast in one piece with inner plate); by this arrangement the cap-nut at end of tube need never be unscrewed, except for emptying drain after the test. B is



a wing-nut threaded on to a $\frac{1}{2}$ -inch bolt, the pressure being borne by a sleeve tube fitted over the bolt, and bearing the tightening pressure from wing-nut to face of plug. C to C is the ordinary rubber ring which expands under the tightening pressure. D to D is the additional rubber ring (detachable) fixed over the rubber (when not under pressure), then by tightening the plug the two rubbers expand together, making it into a 6-inch plug. The plug is quite light and easily portable, being very compact.

THE "DRAWWELL" GRATE

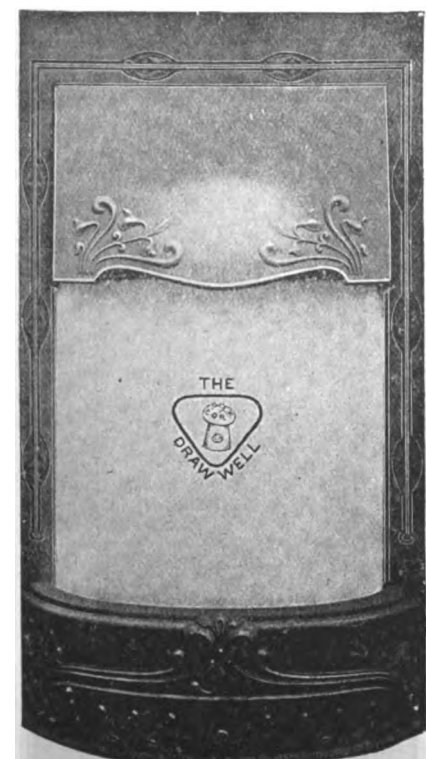
WAS PLACED

First in the Final Tests

at the recent test with Firegrates at the New Government Offices in Whitehall, under the direction of a sub-committee of the Coal Smoke Abatement Society, in conjunction with Sir Henry Tanner and a committee of experts, for smoke abatement, heating power, fuel economy, and suitability for public and private buildings.

N.B.—All Grates bear the Trade Mark and Name of "Drawwell" on firebrick to insure against imitation.

This Grate can only be supplied through Builders' Merchants, Ironmongers, &c., but Drawings and Particulars can be obtained from



J. & R. CORKER, Ltd.,

GENERAL IRONFOUNDERS, Ferham Works, ROTHERHAM.

London Showrooms, Saracen's Head Buildings, Snow Hill, City,

W. B. OLARKE, Agent.
where the "Drawwell" can be seen in action.

ELECTRIC NOTES.

THE Gloucester County Council have agreed to subscribe 20,000l. towards the construction of a light railway from Fairford to Cirencester.

THE electric light has been introduced at the Beauchamp Tower (the old State prison) in the Tower of London, and at the Jewel or Wakefield Tower. Hitherto neither of them has been lighted.

THE electric trams at Chester have proved a great success. The Corporation have therefore decided to extend to the suburbs of Boughton, and work will be immediately commenced.

THE telephones committee of the Glasgow Corporation have recommended that an offer of the Government to purchase the telephone system for 305,000l. be accepted. The Corporation spent upwards of 360,000l. in the establishment of the system.

At the last meeting of the King's Norton District Council a formal resolution for the acquisition of the Moseley and King's Heath tramways within the Council's district was passed. The purchase price is 26,000l., and it is estimated that the electrification of the lines and the other attendant expenses will cost the Council about 40,000l.

THE *African World* publishes further particulars of the projected great central electric power station for South Africa, for which purpose it is proposed to utilise the natural energy of the Victoria Falls. This is to be transmitted over an exceptionally long distance, the current serving many parts of South Africa, though special regard will be had to Johannesburg and the Rand industries.

THE traffic revenue of the Glasgow tramways for the year was 813,768l. 11s. 1d., and 7,170l. 3s. 6d. of other receipts brought up the total income to 820,938l. 14s. 7d. The working expenses (excluding depreciation) amounted to 456,268l. 19s. 2d., leaving a balance to be carried to net revenue account of 364,669l. 15s. 5d., in addition to which there was 4,745l. 6s. 9d. of interest on surplus revenue, making a total of 369,415l. 2s. 2d.

THE Chief Inspector of Factories and Workshops has published his report for 1905. The electrical inspector, in dealing with the dangers of persons in electrical works and

power stations, mentions a passage-way of 2 feet wide in which "the penalty for not walking straight was probably sudden death." The switches were so arranged on either side that the attendant, by the slightest error or slip, was exposed to the peril of his life.

HIS Majesty's Consul at Fiume (Mr. G. L. Faber), in his report on the trade of that port for 1905, remarks that the municipality has under consideration a scheme for the erection of a large electrical plant for the supply of electricity for industrial and domestic purposes at a small cost to consumers. Water-power will supply something like 10,000 horse-power for the purpose at an initial cost of from 40,000l. to 50,000l., and the work is to be carried out within the next two years.

THE Deptford surveyor reports that an arc lamp gives a light of 2,000 candle-power; the cost is 1d. per unit, and the cost of maintenance, recarboning, &c., equals 6l. 10s. per annum. The total cost for an arc lamp yearly would be about 16l. On the other hand, the incandescent gas lamps on the main roads cost 3l. 5s. 4d. per annum, so that approximately five road lamps could be erected and maintained at the same cost as one arc lamp. The ordinary street incandescent lamps cost 2l. 9s. 2d. per annum, six and a half being equal to one arc lamp.

THE Town Council of Carlisle are seeking authority to borrow 6,070l. for extension of the electricity works, and which would be expended on a battery (260 cells), 2,450l.; reversible booster, 400l.; motor generator, 400l.; switch-board and connections, 550l.; buildings, 900l.; spare armatures, 250l.; two ventilating fans, 50l., making 5,000l., to which 10 per cent. was added for contingencies, increasing the cost to 5,500l. The remaining 570l. represents capital already expended on machinery, arc lamps, &c.

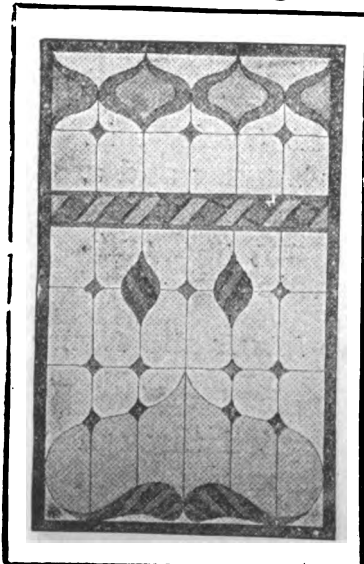
THE Erdington District Council have come to an agreement with the Aston Manor Corporation for the supply by the latter of electrical energy for traction purposes in the district of Erdington. One of the principal terms is that Aston Manor will supply Erdington with electrical energy for traction purposes at 1½d. per B.T.U., Erdington Council, on their part, to take a supply from the Corporation for a term of twenty-one years, and to guarantee a minimum consumption of 250,000 units per annum, which works out at 130l. per month.

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TEAK LOGS & PLANKS.**

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For Index of Advertisers, see page 2

A NOVEL application of electricity in the handling of iron and steel is reported from Cleveland, Ohio, by Mr. Powell, the British Consul at Philadelphia. It is a lifting magnet, consisting of a large iron disc, supported by chains, which may be fastened to the hoop of a derrick or crane block. To the top of the disc is applied an electric plug device, connected with insulated wires led to a controller on the operator's cab of the crane. This disc is lowered over the material to be lifted and the current turned on, and in this way enormous loads of material are gathered together and held by the magnet so long as the current remains connected. By the use of one of these magnets a car containing 61,000 lbs. of heavy crop ends, many individual pieces weighing over 500 lbs., was recently unloaded in an hour and a half. One hour of this was consumed in crane travel, so that the actual lifting and dropping was done in 30 minutes, or at the rate of 2,000 lbs. per minute. Scrap tin has always been an ugly material to handle, but it is now disposed of as rapidly and easily as heavier stock. The magnet is the result of years of experiment and will and the roughest usage.

VARIETIES.

THE Bradfield District Council have adopted a scheme for the drainage of Tilehurst at an outlay of 12,000/.

THE contract for the new Central Home, Birmingham, has been let to Messrs. R. Fenwick & Co., Birmingham. The architects are Messrs. Cossin, Peacock & Bewlay.

MESSRS. PATMAN & FOTHERINGHAM, LTD., have been appointed the builders to rebuild the Avenue Theatre for Mr. Cyril Maude.

PLANS have been passed by the general works committee of the Coventry City Council for the development of the Bird Grove estate, six and a half acres in extent. There will be two roads and 250 houses will be erected of the artisan class.

THE Manchester Corporation have decided to establish a new hydraulic station in Water Street in consequence of the increased demand for hydraulic power. This is to be

of the same size as the station in Potts Street. The water-works committee have approved the plans.

A BLUE-BOOK containing reports by lady factory inspectors contains the statement that great suffering is caused to women workers throughout the country by lack of proper ventilation in the places in which they work. Some, too—dressmakers, for instance—suffer from excessive cold, others from excessive heat.

THE building boom in the United States is shown in a report which the Government will soon issue. In forty-seven principal cities of the country 184,416 building permits were granted in 1905. The value of the structures erected was 128,111,000/. This shows a large gain of nearly 40 per cent. over the record of the previous year.

CONSUL-GENERAL L. M. IDDLINGS (America), reporting from Cairo, says that the prospects of the use of automobiles are better. Motors can at present be used only in and about Alexandria and Cairo, but the desert offers almost natural roads, and it is estimated that it will cost only from 5 to 10 dols. per mile to make them perfect. The experiment had succeeded so far, and police inspection formerly made on camels and taking six weeks for each trip, can now be made in two weeks.

THE Shrewsbury Recorder has repeated an extraordinary dictum which recently aroused some comment. Dealing at the Quarter Sessions with a charge of lead stealing, he said the curious state of the law was that lead or any other matter fixed to a building became part of the land, and as land could not be stolen, so lead could not be stolen. If anybody without the authority of the owner stripped lead from a dwelling-house, then, subsequent to certain conditions, the prisoner must be acquitted, as he had committed no offence known to law.

MR. CAREW-HUNT, the British Consul at New Orleans, records a proposal to connect the Great Lakes of the North with the Gulf of Mexico by a navigable channel, and the United States Congress will be asked to appropriate 6,000,000/ for the purpose. The river Mississippi will have to be deepened in its higher reaches to allow of steamers navigating it. One of the main reasons for connecting the Great Lakes and New Orleans is to utilise the large lake tonnage during the five winter months when the Northern

CAST-IRON SECTIONAL BOILER.

Cotton's Patent.

NO BRICKWORK REQUIRED.

The most modern and Improved Sectional Boiler.

ECONOMICAL. EFFICIENT. DURABLE.

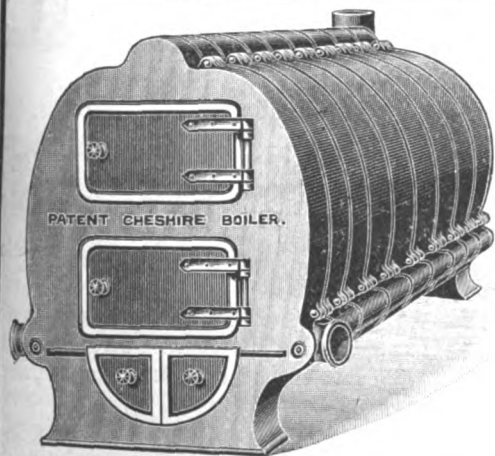
Easy to keep clean.

Heating Power 300 to 5,000 feet of 4-inch Pipes.

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Victoria Boiler Works, HOLMES CHAPEL, Cheshire.

Contractors to His Majesty's Government.
Telegrams, "Cotton, Holmes Chapel."



Telegrams, "LODGE, SUNDERLAND."

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AMERICAN HARDWOODS, &c., of every description.

JOINER WORK, &c.

Offices and Saw Mill—**HENDON LODGE.**
Deal, Batten and Board Stocks—**SOUTH DOCK.**

Hardwood Yard—**LAWRENCE STREET.**
Timber Ponds—**CLAXHEUGH.**

waters are blocked with ice. An outlet to the South would allow of this shipping being used to carry grain and other freight down to tidal waters, instead of its lying idle in winter.

THE action of Godden v. the Hythe Burial Board came before Mr. Justice Joyce in the Chancery Division recently as a short cause in default of defence. The plaintiff is a landowner at Hythe, in Kent. In April last the defendants acquired a piece of land adjoining that of the plaintiff for a burial-ground, and in spite of a protest from the plaintiff buried a pauper within 100 yards of a house. Mr. Justice Kekewich had granted an interlocutory injunction, and the Court of Appeal affirmed his judgment on the ground that the burial board could not legally bury a person within 100 yards of a house. The defendants now felt that they could not defend the case further, and Mr. Justice Joyce made the interlocutory injunction perpetual, and ordered the defendants to pay the costs of the action.

THE Platt Hall estate at Rusholme, Manchester, consisting of 77 acres, was put up for auction on the 26th ult. The auctioneer outlined a scheme of building development showing a resultant chief rent of 6,413l. 10s. annually, which, capitalised by a twenty-five years' purchase, equalled 160,337l. 10s., and allowing for interest and time to develop the estate, there was an income in the estate capitalised of 120,000l. to 125,000l. By his proposal fourteen shops and 1,537 houses would be placed on the estate. It was stated that the price of the adjoining land in Moss Side was 1,200l. an acre for building sites. When the bidding had reached 46,300l. the estate was withdrawn.

LORD CAMPERDOWN'S committee of the House of Lords, which has had under consideration the London County Buildings Bill, by which the London County Council seek authority to acquire a site and build a new county hall and offices near Westminster bridge at a cost of 1,700,000l., have found the preamble proved, and have ordered that it should be reported for third reading. Evidence was given on behalf of Messrs. Holloway Bros., whose land forms part of the site proposed to be acquired. It was argued on their behalf that if their land were not taken, the London County Council would still have a sufficiently extensive site to put up an adequate building.

It was reported at a recent meeting of the Coventry Board of Guardians that the joint house and estates committee had received a letter from the United Operative Plumbers' Association stating they had received information that the fair wage clause was being violated and the standard rate of wages not being paid to the plumbers on the infirmary extension work. The clerk had communicated with Mr. Wincott, the contractor, who emphatically denied the allegation, and asked that he might be furnished with a copy of the letter, and also a specific case of alleged violation of the fair wage clause. He would then deal with the matter as he might be advised. It was decided that a copy of the letter be supplied to Mr. Wincott.

THE Municipal Art Society of New York include in their arrangements for the ensuing twelve months a series of "Seeing New York" excursions to visit the important city works now under way; inquiry into the availability of Rockaway beach as a summer resort for the city's poor; offering medals and prizes to the pupils and students in the city schools, the Normal College and the College of the City of New York; co-operating with the police commissioner as to traffic regulation, and drawing up a Bill to be presented at Albany with reference to tall buildings, different heights to be established in different quarters of the city, following somewhat the law of Paris.

THE contractors of Quebec City have formed a protective association, and, according to the *Canadian Architect*, officers have been elected for the different sections as follows:—Carpenters—E. Paquet, P. E. Lamonde, E. Morcissette, W. Peters. Masons—G. B. Ginchereau, W. Sharp, P. Larose, J. Giroux. Painters—B. Leonard, B. Vaillancourt, J. A. Marier, Messrs. Simard & Gauthier. Gas-fitters and Plumbers—J. Walker, A. Picard, M. Matte, C. Vezina, Mr. Brousseau. Roofers—P. Dallaire, E. Falardeau, Messrs. Barbeau & L'Heureux. Contractors' supplies—W. H. Wiggs, L. H. Gaudry. Electricians—R. H. Gale, T. Loneragan. Stonecutters—E. Roy, H. Laforce, A. Lefavre, Mr. Bedard. Alderman A. Galipeault, advocate, has been retained as legal adviser.

THREE anti-road dust schemes are on their trial in Switzerland. The processes under consideration are oiling, watering with deliquescent salts, and tarring. The first

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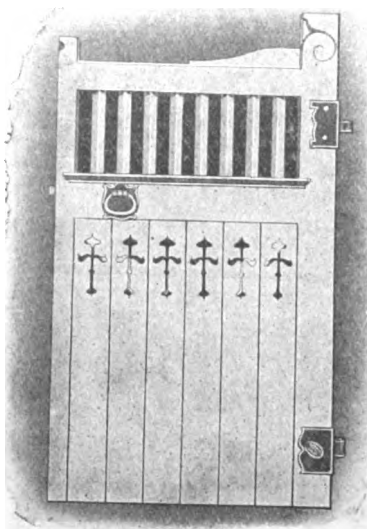
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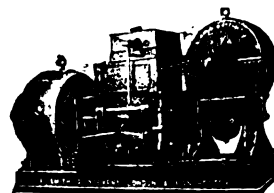
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VOLUME LXXIV OF THE ARCHITECT & CONTRACT REPORTER

consists in spreading upon a well-swept road a heavy oil obtained from distilled petroleum, and costing about 1/4 a barrel. Watering with such salts as chloride of calcium would give appreciable results were it not for the ophthalmic effect on the eyes. Products of this kind are rapidite, westrumite, apulvite, basilite, odocreol and pulveranto. For tarring the product used is a coal tar, the product of gasworks. It can be applied hot or cold. The spreading with watering-pots must be done during a warm and dry period. It is said these three anti-dust processes have given general satisfaction, and the numerous trials made under the supervision of the Anti-dust League in Switzerland demonstrate that the tar obtained as above is the most efficacious of anything heretofore tried. The League urges frequent and substantial demonstrations of dust-settling processes, and estimates the cost to be but nominal. The French Government, after a four years' trial of the tarring method, have obtained satisfactory results, fully justifying the expense of from 2½c. to 3c. per square yard.

A NEW STEAM PUMP.

Any machine which comes from the works of Mather & Platt, Ltd., engineers, is always calculated to bear the keenest criticism of practical engineers. Their new patent steam pump for boiler feeding against high pressures is remarkable not only for its efficiency, but for its compactness. They are direct-acting in principle, and in consequence there is far less strain, less wear and tear, and less waste of steam than with the ordinary fly-wheel pumps. The steam valves are on an ingenious principle, and are calculated to allow of equal wear in the different parts. The silent working is also evidence of the absence of strain. The water end is also peculiar. The cylinders are lined with gunmetal, the water pistons have bronze and ebonite rings, and there are large surfaces for the clacks. There are several other advantages, not the least being the adoption of standard gauges and templates of all parts. Every pump is tested before leaving the works at Manchester. For everyone who uses high-pressure steam the new feed-pump is a high desideratum.

BRITISH PORTLAND CEMENT.

THE Associated Portland Cement Manufacturers (1900), Ltd., under the title of "A Modern Danger," warn users of Portland cement about the risks which are incurred in purchasing foreign manufacture which appears under the guise of being a genuine British product. They give the following suggested safeguards against fraud, which should be always observed in practice:—When engineers and architects specify "Portland cement" they are naturally anxious to obtain a first-class quality of the genuine article. With so much fraudulent trading in existence, how are they to insure compliance with their wishes? There are various ways of doing this:—

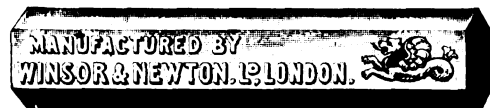
1. By specifying that only genuine artificial Portland cement of British manufacture shall be used on the work.
2. By insisting upon the cement being supplied in sacks bearing the full name of some well-known and reputable British manufacturer.

Unless care is taken the opposition has now assumed such a deceptive character that not only loss but danger may arise. The Belgian Government, it is said, will not allow their engineers to use the same kind of cement used in public works which is foisted on Englishmen.

LOADS ON WAREHOUSE FLOORS.

ON June 15 a six-storey warehouse, the property of the Liverpool Corporation, collapsed and three men were killed. The inquest was postponed to enable an investigation of the condition of the building to be undertaken. It was resumed last week.

The Coroner stated that the internal measurement of each floor was 74 feet 4 inches long and 25 feet wide, and the superficial area of each floor was about 212 yards. There were six floors in addition to the basement, and each floor was divided into ten bays or compartments by nine wooden beams carrying the floor over them. The beams were laid east and west, their ends resting upon the east boundary wall, which was 2 feet thick, and on the west boundary 18 inches thick. Each beam was supported at its centre by a cast-iron column. In the whole warehouse there were about 1,208 square yards available for storage.



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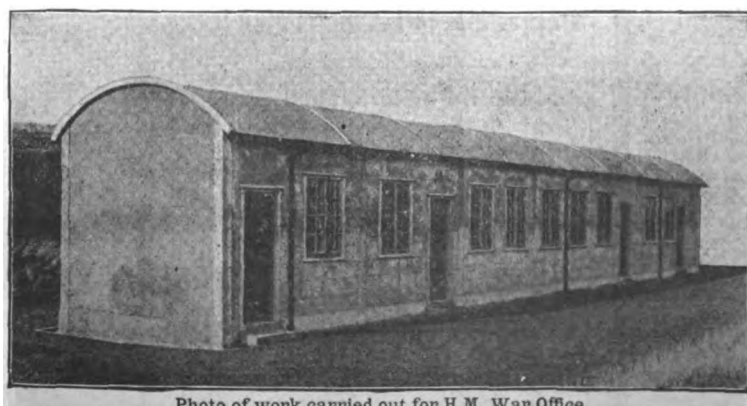


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The premises were let to Messrs. Watson, M'Coll & Co. by the Corporation in January last. On February 1 Mr. Goldstraw, acting on behalf of the Corporation, gave the Corporation a notice with regard to some repairs required, and that notice referred to the floors and the walls. The staircase walls were stated to be giving way, and the iron doors in the walls were loose. On February 2 an important notice or letter was sent by Mr. Goldstraw to Messrs. Watson, M'Coll & Co., referring to this warehouse, drawing attention to the fact that the present loads on the floors of the warehouse were excessive, and requiring them to lighten the loads to not more than 15 cwts. per square yard. On the evening before the collapse the load was 22 cwts. per square yard.

Mr. Wm. Chuck, architect and surveyor, said he visited the warehouse on the morning of June 15 at the request of Messrs. Watson, M'Coll & Co. On examining the place he found an iron column in the basement broken, and after his examination he advised that the hydraulic apparatus should not be used and that nothing should be done which would in any way cause vibration. He told them that the upper floor should be lightened, and that nobody must go into the cellar. Messrs. Watson, M'Coll & Co. told him to return to the warehouse and see that everything was done that could be done and to obtain any assistance which he considered necessary.

Questioned by the Coroner as to the cause of the collapse, witness said he was of opinion that faulty ironwork was in the main responsible, and that column No. 3 broke during the night. It would break suddenly and would give a jerk to the building which would cause the beam to go. He also was of opinion that another column in the cellar had broken before the collapse, otherwise the building might have stood the first one breaking. He believed from outward appearances the warehouse was not overloaded. Having now the knowledge of the hidden defects, he did not think that the warehouse would have been safe with a load of 15 cwts. per square yard.

Mr. James M'Carthy, of the building surveyor's department, said that on January 31 last he received information that the two warehouses, Chapman's "A" and "B," were being loaded excessively. The next morning he went to the warehouse and found it was being loaded with sugar.

In consequence of what he saw he made a calculation that it would be safe if loaded at 15 cwts. to the square yard, and directed a letter to be sent to that effect. Witness was not aware that that amount had been exceeded. The collapse, he asserted, was due to defective columns. The defects could not be found out by any ordinary examination.

Mr. William Goldstraw, city building surveyor, said that the warehouses were placed on the register in 1844. He examined the stanchion after the accident and found that the fracture had occurred at a defective place, which had been filled up before it had originally left the foundry. In one place it was like an eggshell. Witness was of opinion that the defect was the primary cause of the fall of the building. The beams in the warehouse were quite strong enough, and there was no evidence that they had failed before the collapse. He thought 22 cwts. per square yard was too much to put in the building. Witness said he had carefully examined the defective column, and there were indications of filling with a sort of cement. If he had known of the defects he would not have liked to put 15 cwts. per square yard in the building.

Mr. Henry Hartley, architect, stated that the day after the accident he visited the warehouse at the request of Messrs. Watson, M'Coll & Co. The walls were good and the beams were excellent. With regard to the iron stanchion he agreed with the remarks made by the previous witnesses. His opinion as to the cause of the collapse was that the column from some cause—primarily from its weak character—was fractured, and when that took place the column and cap would drop. For sugar storage 25 cwts. per square yard was the maximum amount of storage, and as far as the appearance of the warehouse was concerned the load in it was a perfectly safe one. Knowing now of the defects in the column he did not think that 15 cwts. per square yard would have been a safe quantity.

After retiring for some minutes the jury returned a verdict of "Accidental death," caused by the collapse of the warehouse, due to the excessive weight of sugar in the building and also to a defective column in the basement of the building. They recommended that better supervision of warehouses should be exercised by the Corporation, whether they were their own property or that of others.

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IRISH ARCHITECTS AND IRISH BUILDERS.

THE following letter has been addressed, says the *Irish Builder*, by the hon. secretary of the Master Builders' Association to the Royal Institute of Architects, Ireland:—

Sir,—Your letter of the 19th inst. has been under the consideration of my committee, who have requested me to inform you that since 1899 your Council and my committee have been in communication, with the object of agreeing on new conditions of contract for the whole of Ireland, instead of the great variety of forms at present in use, at our request, and also to meet your views as expressed in your letter of June 2, 1900, which states, "It is desirable in such a vital matter that uniformity throughout the kingdom should be secured."

When a settlement was arrived at in 1903 between the members of the R.I.B.A. and the Federation of Master Builders of Great Britain and Ireland we at once wrote offering to accept the new conditions for the whole of Ireland, which conditions were then understood to be acceptable to your members. Before adopting this suggestion you referred it to your sub-committee, but we were not informed of the result of their deliberations, though we wrote you several times, until in January last, when we learned that your Council had approved of new conditions of contract and had sent them on to a general meeting of your Institute for adoption, without any reference or consultation whatever with us. Further inquiry revealed the fact that your Council intended to adopt and put into use these new conditions without any such reference or consultation with the Master Builders, and only on receipt of a strong representation from us on January 26 last did you send us a copy of the new conditions, which had already been approved by your Council some two months previously, and which then only awaited the approval by your general meeting.

On receipt of the copy of the new conditions on February 10 last we at once communicated with the other Builders' Associations in Ireland, and sent them copies for their consideration and views (as the new form was intended to apply to the whole of Ireland).

The Belfast Builders' Association had the matter under their consideration when they learned that the Ulster

Society of Architects had declined to approve of the new conditions which you had prepared. The Ulster Society subsequently prepared new conditions of their own, a copy of which only reached us a few days ago.

Our committee were then face to face with the difficulty for the first time that a uniform form of contract for Ireland, as contemplated and hoped for, was thus rendered impossible, and though your Council were aware of this serious development, we learned to our surprise from the public papers that your members had adopted these conditions at their meeting on the 30th ult. without any further communication with us.

It is more than two years since you informed us that this matter had been referred to your committee, and because the Master Builders' Associations in Ireland, for the reasons already given, have not been able to get through the details of this very long and intricate document, and send you their views inside sixteen weeks, these conditions have been adopted without any notice or further comment whatever.

In England and Scotland the mode of procedure adopted was that in each instance committees were formed consisting of both architects and builders, who went into the matter clause by clause with the assistance of their legal advisers on both sides, and eventually in each case, after much labour, succeeded in approving of conditions that are acceptable to both parties and a credit to those associated with their preparation; while in Ireland we are asked to accept conditions that have been prepared without such consultation with the builders and their legal advisers, and which, as far as we know, have not had the approval of any eminent counsel conversant with building contracts.

Reference is made to the action of our members in agreeing to sign the conditions at present in use in our city, and those as issued by the R.I.B.A., while the arbitration clauses are so different. The reason for this is the desire on our part that no interruption should for the present be caused in dealing with those who do not wish to use the R.I.B.A. conditions; but my committee are strongly of opinion that a form of arbitration clause, such as that recommended and issued by the R.I.B.A., is absolutely necessary in the interests of equity, and to bring building contracts into line with all other commercial transactions.

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We trust that these remarks will enable your members to see the necessity of such consultation on the lines referred to as will lead to an equitable agreement on the conditions of contract to be used in the future. My committee will be glad to co-operate in any arrangement to this end.—I remain, yours faithfully,

JOHN GOOD, Hon. Secretary.

55 Great Brunswick Street, Dublin :

June 27, 1906.

R. Caulfeild Orpen, Esq., Hon. Secretary, Royal Institute of Architects, Ireland, 13 South Frederick Street.

BUILDERS' BENEVOLENT INSTITUTION.

THE fifty-ninth annual general meeting of the above Institution was held at 31 and 32 Bedford Street, Strand, W.C., on Wednesday, July 11. Mr. J. W. Chessum was elected to take the chair. The minutes of the last annual general meeting were read, confirmed and signed. The committee of management submitted the following annual report, which was adopted:—The committee has the pleasure to submit its fifty-ninth annual report. Thanks to the kind support of old and new subscribers, the funds of the Institution for the past year did not suffer quite so much as was feared through the continued depression in all branches of the building trade. The appeal of the president (Mr. Benjamin Hannen) in November 1905 was responded to so generously that Mr. Hannen had the satisfaction of announcing a record list of benefactions at the last annual dinner. The President and committee take this opportunity to tender their sincere thanks to the donors and subscribers, and would much like to see the names of many more master builders among them. The committee exercises the greatest care and economy in administering the funds of the Institution, and investigates thoroughly all claims upon them. Elections of pensioners were held in November 1905 and in May 1906, at which four men and four women were placed upon the list. Contested elections were again avoided, and the committee is still of opinion that in the interests of all concerned this is the wisest policy to pursue. There are now thirty-three male and thirty-four female pensioners who

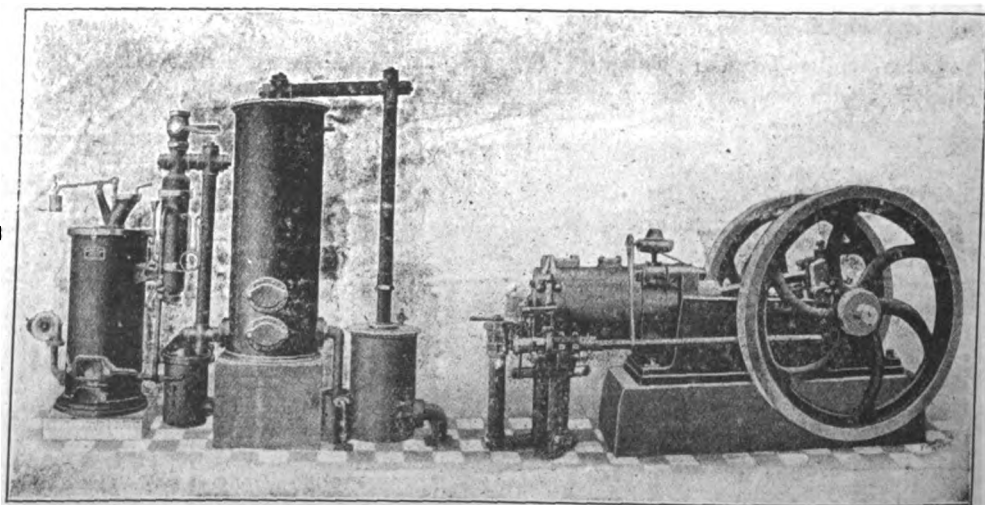
receive respectively 42*l.* and 30*l.* per annum in monthly payments. Seven pensioners died during the past year, and burial allowances of at least 5*l.* were granted in each case. Widows of pensioners, if eligible under the rules, are placed on the Pensioners' List. The committee wishes to place on record its sincere regret at the loss by death of two generous contributors in the persons of the late Mr. Benjamin Hannen (father of the president) and Mr. G. J. Lough. The warmest thanks and gratitude of the committee are due to the president (Mr. Benjamin Hannen) for his generosity and that of his personal friends; to the trustees (Sir Arthur Charles Lucas, Bart., Mr. J. Howard Colls, Mr. T. Stirling, Mr. F. J. Dove, Mr. J. T. Bolding and Mr. T. F. Rider); to the honorary auditors (Mr. J. T. Bolding and Mr. R. J. Ward, F.C.A.); and to the dinner stewards for their services; and to the Worshipful Company of Tylers and Bricklayers for placing one of its almshouses at the disposal of the committee for the benefit of one of the pensioners. The committee is glad to announce that Mr. J. W. Chessum (Messrs. J. Chessum & Sons) has accepted the presidency for the coming year. The annual dinner will be held in the Whitehall Rooms, Hotel Métropole, on Thursday, November 22 next, when the committee hope the friends of the Institution will give the chairman their heartiest support. The audited accounts for the year ending July 7, 1906, were read and adopted.

The following officers, &c., were elected:—President, Mr. J. W. Chessum (Messrs. J. Chessum & Sons); treasurer, Mr. J. Howard Colls; executive committee (re-elected), Messrs. C. Ansell, W. Brass, T. Hall, Hy. Holloway, J.P., W. Nicholson, Alfred E. Parker, Joseph Randall, W. Shepherd, T. Stirling and Colonel G. Haward Trollope, V.D.; (elected) Mr. Benjamin Hannen and Mr. H. Arthur Bartlett; hon. auditors (re-elected), Mr. Robert J. Ward, F.C.A., and Mr. J. T. Bolding.

Votes of thanks were passed to the past president, Mr. Benjamin Hannen; the hon. treasurer, Mr. J. Howard Colls; the trustees, Sir Arthur C. Lucas, Bart., and Messrs. J. Howard Colls, F. J. Dove, T. F. Rider, T. Stirling and J. T. Bolding; the committee of management and dinner stewards; the vice-presidents; the hon. auditors, Mr. Robert J. Ward, F.C.A., and Mr. J. T. Bolding. A vote of thanks to the chairman closed the proceedings.

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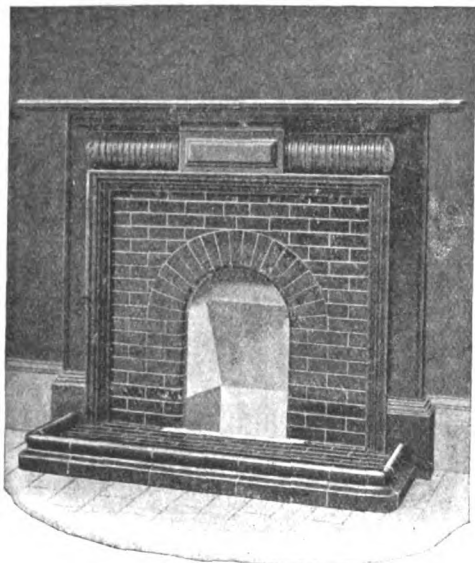
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REPORT

(See page 25 of Supplement in issue of June 8).

As a final result of the whole of the tests the Examiners find that of the grates submitted those of

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and of two other makers are the best, showing practically equal results. The amount of coal consumed by these grates was found to be moderate in comparative proportion with temperature obtained; the fires were bright and clear.
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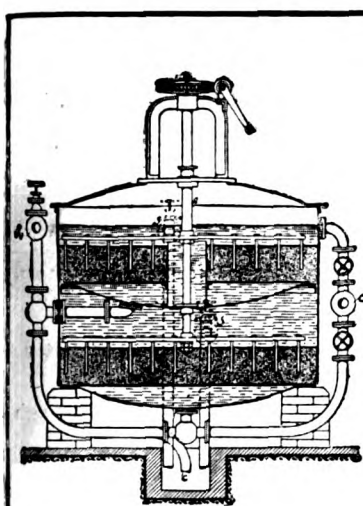
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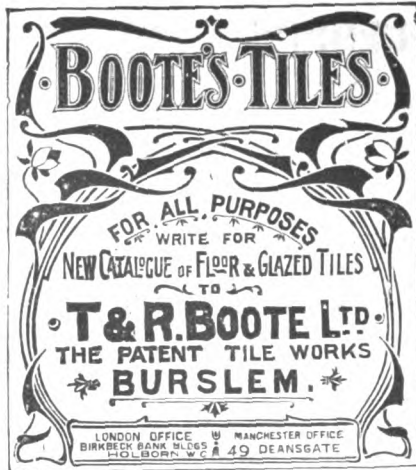
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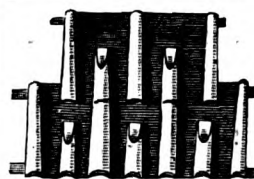
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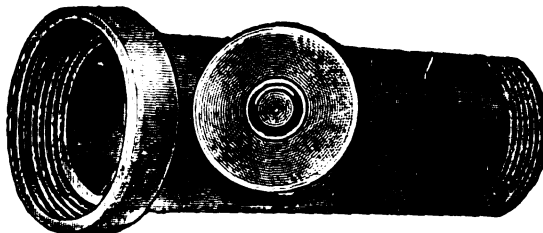
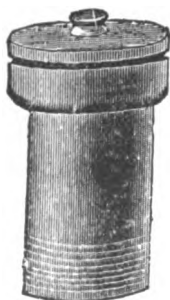
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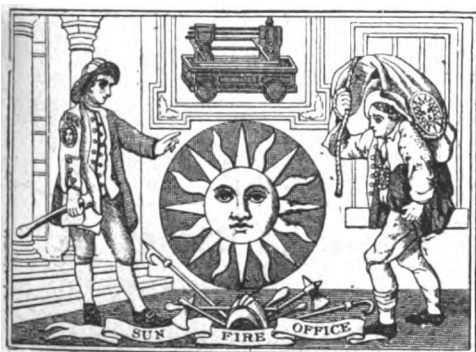
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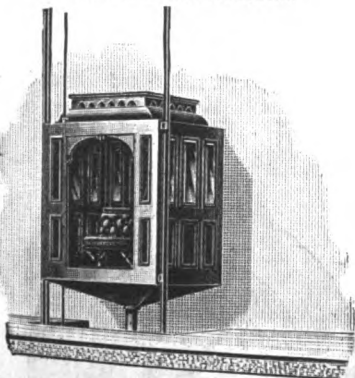
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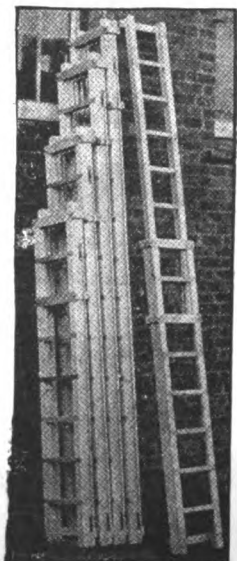
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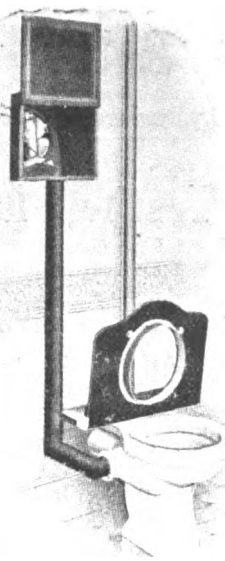
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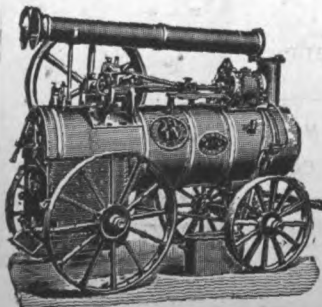
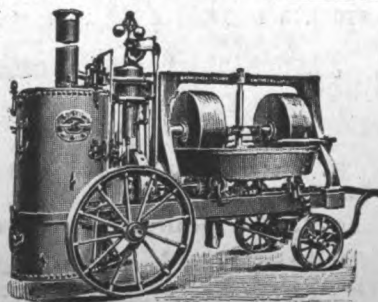
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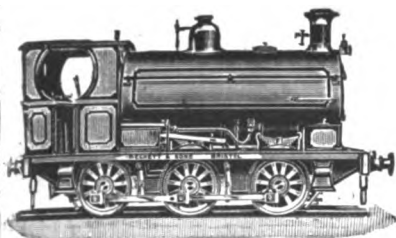
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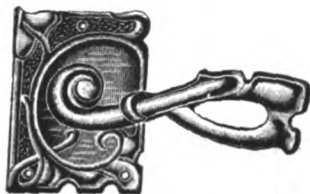
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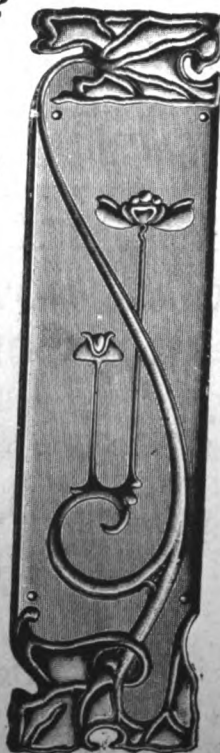
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All business communications to the Managing Director,

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further

answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

TENDERS, ETC.

* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

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MAESTEG.—Aug. 18.—For the extension of the Bethania hall and chapel. Mr. Thos. Rees, secretary, 16 Bank Street Maesteg.

STEWARTON.—Aug. 21.—For the proposed cemetery and caretaker's house at Stewarton, Scotland. Mr. James Kerr, F.S.A.A., clerk to the Parish Council, Parish Council Offices, Stewarton.

CONTRACTS OPEN.

ALNWICK.—Aug. 2.—For the erection of residence. Mr. George Reavell, jun., architect, Alnwick.

ASPATRIA.—July 30.—For the restoration of the National school, Aspatria. Rev. T. Hackworth, the Vicarage, Aspatria.

AYLESBURY.—Aug. 2.—For repairs to Holman's Bridge, Buckingham Road; also for taking-down and rebuilding the stone wing walls to the north arch of Ickford Bridge, near Thame. Mr. R. J. Thomas, county surveyor, County Hall, Aylesbury, Bucks.

BRISTOL.—July 28.—For alterations and additions at Mina Road Council school. Mr. Peter Addie, the Council House.

CRADLEY.—Aug. 7.—For the erection of a corrugated iron goods shed, offices, &c., on the Spinner's End goods branch, for the Great Western Railway Co. The Engineer Wolverhampton Station.

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CRUMPSALL.—For any of the trades required in the erection of eight houses. Mr. Jesse Horsfall, architect, 4 Chapel Walks.

DAIRYCOATES.—July 30.—For the erection of a signal cabin at Dairycoates, near Hull, for the directors of the North-Eastern Railway Company. Mr. W. J. Cudworth, the company's engineer, York.

DEEPTHWAITE.—For the waller, plasterer, plumber and painter and glazier's work required in the erection of a house at Deepthwaite, near Milnthorpe. Mr. W. A. Nelson, architect, 98 Stricklandgate, Kendal.

DERBY.—July 31.—For enlargement of the branch post office at Midland Road, Derby, for the Commissioners of H.M. Works and Public Buildings. Deposit 1*l.* 1*s.* Secretary, H.M. Office of Works, &c., Storey's Gate, London, S.W.

FETTERESSO.—July 30.—For the mason, carpenter, slater, plumber, plasterer and concreter's work of the restoration of the farm steading destroyed by fire, and of a bothy at the farm of Blairs, Fetteresso. Mr. George Gregory, architect, David Street, Stonehaven.

GLASGOW.—July 30.—For the construction of a sponge cloth laundry at St. Rollox Stores, for the Caledonian Railway Company. Deposit 2*l.* 2*s.* The Engineer, Buchanan Street station, Glasgow.

GLUSBURN.—July 28.—For the erection of a stable, &c., at Glusburn, for the Skipton Rural District Council. Mr. Ascough Rodwell, surveyor, Skipton.

GOSFORTH.—July 31.—For taking-down and setting-back the boundary wall of the South Gosforth Council school, Station Road, undersetting the north wall of the school building and forming the added width of roadway. Mr. Geo. Nelson, surveyor, Council Chambers, High Street.

HAILE.—July 31.—For the erection of a dwelling-house. Mr. James Cowan, surveyor, Egremont.

HAYLE.—Aug. 4.—For the erection of stable buildings, &c., at Hallankean, Hayle, Cornwall. Mr. S. Lawrey, Helnoweth, Gulval.

HOPKINSTOWN.—Aug. 1.—For erection of chapel and schoolrooms for the English Baptist church at Hopkinstown, Pontypridd. Mr. Arthur Lloyd Thomas, architect and engineer, Pontypridd. Rev. Samuel P Davies, Oakfield, Pwllgwaun, Pontypridd.

HUNSLET.—July 31.—For the erection of engine-house and pump-room at workhouse, Rothwell Haigh. Mr. W. E. Richardson, architect, Rothwell, near Leeds. Mr. Fred W. Mee, clerk, Hunslet, near Leeds.

IRELAND.—For the erection of a curate's residence, with out-offices, &c., at Boola, co. Waterford. Messrs. J. Hodnett & Son, solicitors, Youghal.

IRELAND.—Aug. 4.—For the erection of open-air shelters at the Down county infirmary. Mr. D. Smith, registrar.

IRELAND.—Aug. 6.—For building a doctor's residence and dispensary for the Anamoe dispensary district, for the Guardians of the Rathdrum Union. Mr. George T. Moore, engineer and architect, 1 and 2 Fester Place, College Green, Dublin.

KINGSTON-ON-THAMES.—Aug. 7.—For making alterations to two houses, Rhymney and Briarfield, Wolverton Avenue, for the Guardians. Mr. Jas. Edgell, clerk to the Guardians, Union Offices, Kingston-on-Thames.

LEEDS.—For the erection of a weaving-shed in Whitehall Road, Leeds. Mr. Stephen Ernest Smith, 12 South Parade, Leeds.

LEEDS.—For proposed mining and metallurgical laboratories of the University of Leeds. Mr. Paul Waterhouse, architect, Staple Inn Buildings, Holborn Bars, W.C.

LEEDS.—July 30.—For the whole or any of the following trades, viz.:—Bricklayer and mason, carpenter and joiner, plumber and glazier, ironfounder, painter, slater and plasterer's work required for the building of additional storeys to warehouse premises in Skinner Lane; also for brick-setting No. 1 Lancashire boiler. Names to Messrs. Thomas Winn & Sons, architects, 84 Albion Street, Leeds.

LITTLEOVER.—July 30.—For the rebuilding of a brick culvert situate on the Burton Road, near The Pastures, Littleover, for the Derbyshire County Council. The County Surveyor, St. Mary's Gate, Derby.

LONDON.—July 31.—For the construction of filter beds at Barn Elms, in the western district, for the Metropolitan Water Board. Deposit 5*l.* District Engineer, Commercial Road, Pimlico.

LONDON.—Aug. 1.—For the erection of workshops at their workhouse in the Harrow Road, W., for the Padding-

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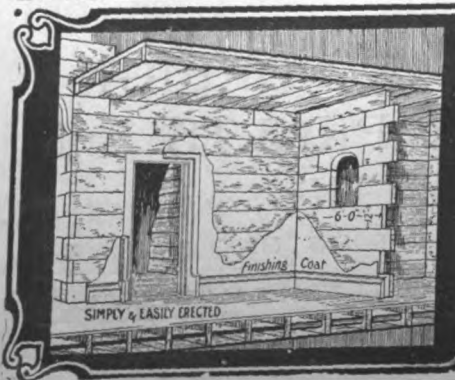
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LOSTOCK HALL.—Aug. 15.—For the erection of a school at Lostock Hall, near Preston. Deposit 2*l*. Mr. Henry Littler, architect, Preston.

MAWNAN.—July 31.—For the erection of a farmhouse at Lower Tregarne, in the parish of Mawnan, Cornwall. Mr. Oliver Caldwell, architect, Victoria Square, Penzance.

NORWICH.—July 28.—For the erection of a warehouse for the General Steam Navigation Company. Messrs. Wright & Turner's Wharf, Mountergate Street, Norwich.

OAKBANK.—For the erection of a dwelling-house at Oakbank, Whitehaven. Mr. J. S. Stout, architect, 36 Lower Street, Whitehaven.

PENZANCE.—July 28.—For the erection of a villa residence at Lescudjack. Mr. Oliver Caldwell, architect, Victoria Square, Penzance.

RICHMOND.—Aug. 1.—For the erection of branch premises at Richmond, Yorkshire. Mr. L. G. Ekins, architect, Co-operative Wholesale Society, West Blandford Street, Newcastle-upon-Tyne.

RIGG.—Aug. 2.—For the various works in connection with recreation hall at Rigg, Gretna. Particulars obtained at Mount Pleasant School.

ROBIN HOOD'S CHASE.—Aug. 1.—For the erection of Baptist mission hall, Robin Hood's Chase, Nottingham. Mr. W. Beddoe Rees, architect, 3 Dumfries Place, Cardiff.

ROYSTON.—For building an institute and gymnasium at Royston, Yorks. The Engineer, New Monckton Collieries, near Barnsley.

ST. ANNES-ON-SEA.—July 28.—For the erection of a technical school at St. Annes-on-the Sea, Lancs. Deposit 2*l*. Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

ST. HILARY.—Aug. 4.—For the erection of a cattle-house at Roseudian, in the parish of St. Hilary. The Farm-house at Roseudian.

SCOTLAND.—July 28.—For the erection of a timber beacon at the entrance to Irvine harbour. The Irvine Harbour Trustees, the Harbour Office, Irvine.

SCOTLAND.—July 30.—For carpenter, painter and slater's work on the public schools and schoolhouses at Drumlithie and Brae of Glenbervie, for the Glenbervie School Board. Mr. Stewart A. Smith, clerk to the Board, Pitdrichie.

SCOTLAND.—Aug. 2.—For the widening of Union Bridge by the addition on each side of a steel arch rib, and by extending the existing masonry abutments, and all other works in connection therewith, for the Aberdeen Town Council. Deposit 5*l*. Mr. W. Dyack, M.I.C.E., burgh surveyor, Aberdeen.

SEACOMBE.—For the erection of a Primitive Methodist Sunday school, Poulton Road. Mr. H. Harper, architect, 54 Long Row, Nottingham.

SEAFORD.—Aug. 11.—For the erection of a boarding-house. Deposit 3*l*. 3*s*. Mr. William Lambe, Estate Office, Claremont Road, Seaford, Sussex.

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SETTLE.—July 30.—For the building of about 13 rods of stone fence wall adjoining the approach road to the new reservoir, and the taking-down and rebuilding of about 9 rods of stone fence wall between the waterworks land and Springfield Farm. Mr. T. A. Foxcroft, surveyor, Town Hall, Settle.

SHEFFIELD.—Aug. 21.—For the work required in connection with underground conveniences adjoining the town hall in Surrey Street. Deposit 1*l*. 1*s*. Mr. C. F. Wike, city surveyor, Town Hall, Sheffield.

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SLAPTON.—Aug. 1.—For erection of a v'carage house. Mr. W. F. Tollit, architect, 10 High Street, Totnes.

WAKEFIELD.—Aug. 4.—For works in connection with alterations to Wales Kiveton Park provided school. Deposit 1*l*. Mr. J. Vickers-Edwards, county architect, County Hall, Wakefield.

WALES.—July 28.—For restoring and repairing the parish church of Mynyddislwyn, near Abercarn. Deposit 2*l*. 2*s*. Mr. E. M. Bruce Vaughan, architect, 21 Dumfries Place, Cardiff.

WALES.—July 30.—For three shops, altering present shop and erecting new offices at Pontardulais. Messrs. Williams & Henton, architects, Bank Chambers, Heathfield Street, Swansea.

WALES.—Aug. 1.—For the erection of a large chapel and schoolrooms for the English Baptist church at Hopkinstown, Pontypridd. Mr. Arthur Lloyd Thomas, architect, Church Street Chambers, Pontypridd.

WALES.—Aug. 3.—For the erection of stables at the Railway inn, Tonmawr, near Pontrhydyfen. Mr. T. Roderick, architect, Ashbrook House, Aberdare.

WALES.—Aug. 3.—For the erection of a drying-room at the workhouse, Merthyr Tydfil; and also for the erection of a boiler-house and cooking kitchen at the training school, Aberdare, for the Guardians of the Merthyr Tydfil Union. Mr. Thomas Roderick, architect, Clifton Street, Aberdare.

WEST HARTLEPOOL.—July 31.—For the construction of steps leading from the Longhill subway to the proposed road. Mr. Nelson F. Dennis, borough engineer and surveyor.

WHITEHAVEN.—July 31.—For alterations and additions to the old infirmary at the workhouse. Deposit 5*s*. Mr. George Boyd, 33 Queen Street, Whitehaven.

WITHERNWICK.—Aug. 3.—For carrying-out additions and alterations to the offices, &c., at the Council school. The Building Surveyor, County Hall, Beverley.

WOLVERHAMPTON.—July 31.—For the erection of additions to the administrative block at the fever hospital in Green Lane. Deposit 1*l*. 1*s*. Mr. George Green, borough

TENDERS.

BATH.

For painting and decorating at the pump-room and baths. Mr. ALFRED J. TAYLOR, architect, Bath.

Sheppard & Son	£178	0	0
Pratt	174	0	0
Hayward & Wooster	155	5	0
Stapleford	142	17	0
Cotterell Bros.	137	10	0
J. LONG & SONS, Bath (accepted)	124	13	0

BECKENHAM.

For alterations to Crescent Road Congregational church. Messrs. GEORGE BAINES & SON, architects, 5 Clement's Inn, Strand, London, W.C.

Estimate A.

Palmer	£79	10	0
Copeland & Son*	73	10	0

Estimate B.

Palmer	48	10	0
Copeland & Son	43	5	0

Estimate C.

Palmer	34	0	0
Copeland & Son	25	5	0

Estimate D.

Palmer	20	0	0
Copeland & Son	11	5	0

Estimate E.

Palmer	4	14	0
Copeland & Son	4	10	0

* Accepted, with modifications.

For alterations and additions to Bromley Road schools.

Gee	£7,676	8	10
Heathfield	6,121	0	0
Nightingale	5,967	0	0
Green	5,893	10	0
Jones & Andrews	5,798	0	0
Crossley & Sons	5,683	0	0
Lonsdale	5,651	0	0
F. & G. Foster	5,591	0	0
J. & E. Bowyer	5,555	0	0
Hawley & Oldman	5,465	0	0

BRIGHTON.

For repairs, painting, &c., to schools. Messrs. T. SIMPSON & SONS, surveyors, Brighton.

Recommended tenders.

Electric light—York Place boys' school, Reed & Sons	£175	10	0
York Place girls' school, Gates & Sons	170	0	0
Pelham Street schools, Barnden	168	0	0
Richmond and Sussex Street schools, Barnden	165	0	0
Repairs to heating apparatus—Finsbury Road schools, Grundy	67	0	0
Queen's Park and St. Luke's Terrace schools, Gates & Sons	65	0	0
Laboratory fittings—Pupil Teachers' Centre, Sattin & Evershed	64	0	0
Preston Road and Hanover Terrace schools, Lockyer	57	15	0
Stanford Road schools, Bell & Sons	52	13	6
Middle Street infants' school, Bell & Sons	29	13	6

CHARD.

For extension of Holyrood Mill. Messrs. SYMES & MADGE, architects, Chard.

Contract No. 1.

Casse	275	0	0
Parsons Bros. & Dunster	206	10	0
Poole	206	0	0
SPILLER & SONS (accepted)	190	0	0
Munford	188	0	0
Harris & Woolcott	171	17	6

Contract No. 2.

Gleed Bros.	£2,426	19	3
Ellis & Sons	2,394	16	0
Ham Hill and Doulting Stone Co.	2,297	15	0
Casse	2,260	0	0
Munford	2,171	16	10
Poole	2,098	0	0
Harris & Woolcott	2,070	10	6
Parsons Bros. & Dunster	1,970	0	0
SPILLER & SONS, Taunton (accepted)	1,938	0	0

COLWYN BAY.

For the erection of county buildings.

Williams	£11,355	0	0
R. & J. Williams	11,355	0	0
Jones & Son	10,950	0	0
J. B. Jones & Son	10,200	0	0
Exors. of Clegg	10,055	0	0
Vernon & Sons	10,025	0	0
Brown & Backhaus	9,350	0	0
Davies Bros.	8,970	0	0
Allen	8,810	0	0
E. Jones & Sons	8,800	0	0
Buller Bros.	8,748	0	0
J. T. Jones	8,697	0	0
Holme & Green	8,595	0	0
R. Jones	8,022	0	0
Davies & Jones	7,980	0	0
Roberts	7,970	0	0
Evans & Son	7,909	0	0
Wood & Co.	7,685	0	0
Myers & Son	7,498	0	0
Thorp & Sons	7,495	0	0
Emmett	7,400	0	0
Kelly & Co.	7,297	0	0
JONES & PRITCHARD, Abergele (accepted)	5,900	0	0

COVENTRY.

For erecting a motor manufactory and office, Foleshill Road. Mr. F. FOSTER, architect, Coventry.

Whitehouse & Son	£12,947	0	0
Worwood	12,845	0	0
Kelley & Son	12,355	3	0
Haywood	12,250	0	0
Griffiths	12,239	0	0
Parnell & Sons	12,227	0	0
Isaacs & Sons	12,004	0	0
Hill	11,990	0	0
Orr Bros.	11,772	0	0
Garlick	11,690	0	0
R. & A. R. Cleaver	11,550	0	0
Wincott	11,526	0	0
Gibbs	11,475	0	0
HARRIS, Coventry (accepted)	11,450	0	0
Hopkins	11,300	0	0

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For Index of Advertisers, see page x.

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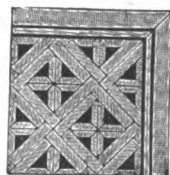
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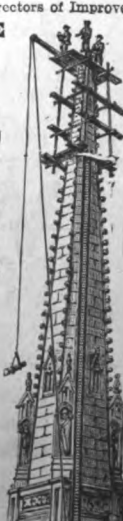
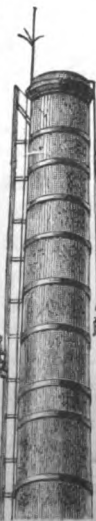
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"Blackburn, Nottingham."
Telephone No. 288,
Nottingham.FULL LIST, and dates when they appeared,
of THE CATHEDRALS which have been
published on Application to The Publisher.

BRIGG.

For the erection of three dwelling-houses in Grammar School Road. Mr. W. H. BUTTRICK, architect, Scunthorpe.

Bilton	£1,554	11	0
Clark	1,377	15	0
MANDERS, Barnetby (accepted)	1,117	0	0

COWES.

For reconstruction of shop, offices and stores. Mr. J. W. BESSANT, architect, Cowes.

Barton & Co.	£1,087	10	0
Day	1,057	0	0
Meader	982	0	0
BALL, Cowes (accepted)	946	0	0

DEVONPORT.

For alterations and additions to 40 and 41 Fore Street. Mr. EDGAR M. LEEST, architect, Devonport.

Wakeham Bros.	£2,494	0	0
Palmer	2,390	0	0
May & Son	2,355	0	0
Pearce Bros.	2,297	0	0
Coles	2,297	0	0
Jenkin & Son	2,295	0	0
Pearn Bros.	2,254	0	0
Allen	2,024	0	0
ROBERTS, Plymouth (accepted)	1,950	0	0

ECCLES.

For the erection of Carnegie library. Messrs. POTTS, SONS & HENNINGS, architects, Manchester.

HARDMAN & JONES, Eccles (accepted)	£7,200	0	0
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EXETER.

For alterations and additions to premises at Summerlands. Mr. R. M. CHALLICE, architect.

Castle	£712	0	0
Ham & Passmore	661	0	0
Coles	624	0	0
Zelley	620	0	0
Westcott, Austin & White	592	0	0
SMALE, Exeter (accepted)	578	0	0

HEADINGLEY.

For the construction of new filter-beds, for the Leeds waterworks committee.

BUSHBY & SONS, Darlington (accepted)	£31,705	4	10
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HARTLEY WITNEY.

For providing and laying about 2,800 yards of 6-inch cast-iron main, together with the provision of a 10 h.p. oil-engine, 6-inch rising main and three-throw pump. Messrs. BELSHAW & Co., engineers, Westminster.

Britannia Engineering Co.	£2,996	5	0
Young	1,754	10	0
Hewett & Sons	1,699	4	0
Pool & Sons	1,663	3	0
Meredith	1,572	17	6
Wooldridge	1,525	17	10
Jenkins & Son	1,502	16	7
Turner	1,393	17	5
Ell	1,340	12	0
STREETER & Co., Godalming (accepted)	1,368	6	3

HINDHEAD.

For the erection of Council schools. Messrs. JARVIS & RICHARDS, architects, 36 Victoria Street, S.W.

J. & M. Patrick	£3,183	0	0
Potter	2,540	0	0
Drowley & Co.	2,499	0	0
Wood	2,469	0	0
Pink	2,430	0	0
Milton	2,410	0	0
Crosby & Co.	2,383	0	0
Mardon	2,347	0	0
Goddard & Sons	2,338	0	0
Chapman & Lowry	2,330	0	0
Haslemere Builders	2,317	0	0
Kemp	2,298	0	0
Hawkins & Co.	2,284	11	8
Tompsett & Co.	2,281	0	0
Mitchell Bros.	2,260	0	0
Martin, Wells & Co.	2,155	0	0
CHUTER (accepted)	2,135	12	2

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**TUBES
AND
FITTINGS**



HORSHAM.

For the erection of a cottage at the waterworks, for the Urban District Council.

George Potter, £300; if porch omitted, £3 allowed; if bay window omitted, £5; and if barge-boards omitted, £1 10s. allowed. Hillman & Murrell, £295; deduction for porch, £5 7s. 5d.; bay window, £6 18s. 9d.; barge-boards, £1 15s. 3d. H. Linfield & Son, £285; porch, £3; bay window, £2 5s.; boards, 15s. Potter Bros., £315; porch, £5 1s. 3d.; bay window, £5 4s. 6d.; boards, £1 10s. Murrell Bros., £350; porch, £6 10s.; bay window, £2 6s.; boards, £2 18s. T. Redford & Sons, £320; porch, £4 10s.; bay window, £2; barge-boards, £3. William Potter, £350; porch, £5; bay window, £2 10s.; barge-boards, £2. Referred back for consideration.

KING'S NORTON.

For the construction of the permanent way and road bed, and the paving and bonding of the Moseley and King's Heath tramways, and the extension to Alcester Lanes End.

UNDERWOOD & BROTHER, Dukinfield (accepted) £29,462 0 0

For supply of the necessary overhead equipment.

BRUSH ELECTRICAL ENGINEERING CO. (accepted) £4,115 0 0

LEWISHAM.

For kerbing, channelling and making-up roadways at Lewisham.

George Lane.

Mowlem & Co.	£1,150	0	0
Martin	1,229	0	0
Pearce	1,126	0	0
Woodham & Sons	1,113	0	0
FRY BROS. (accepted)	1,059	0	0

Bargery Road.

Martin	950	0	0
Woodham & Sons	926	0	0
Wheeler	920	0	0
Fry Bros.	912	0	0
Mowlem & Co.	895	0	0
W. PEARCE (accepted)	824	0	0

LEWISHAM—continued.*Dunoon Road.*

Wheeler	£512	0	0
Fry Bros.	498	0	0
Mowlem & Co.	425	0	0
Martin	415	0	0
W. PEARCE (accepted)	388	0	0

For paving footways.

Bargery Road.

Patent Victoria Stone Co.	£303	2	6
Mowlem & Co.	294	0	0
Empire Stone Co.	286	5	0
Imperial Stone Co.	271	0	0
Harvey Bros.	247	0	0
Atlas Stone Co.	244	17	9
PEARCE (accepted)	237	0	0
Apthorpe & Co.	233	19	9

Dunoon Road.

Patent Victoria Stone Co.	173	1	6
Empire Stone Co.	173	1	6
Mowlem & Co.	166	0	0
Imperial Stone Co.	159	0	0
Harvey Bros.	152	12	0
Atlas Stone Co.	148	15	0
Apthorpe & Co.	143	5	8
PEARCE (accepted)	135	0	0

George Lane.

Patent Victoria Stone Co.	415	8	0
Mowlem & Co.	407	0	0
Empire Stone Co.	369	14	6
Imperial Stone Co.	361	0	0
Pearce	346	0	0
Atlas Stone Co.	339	15	6
Harvey Bros.	331	16	0
APTHORPE & CO. (accepted)	324	14	6

LONDON.

For alterations at the South-Western hospital, for the Metropolitan Asylums Board.

HAWKINS & Co., 109 Victoria Street (accepted) £1,562 0 0

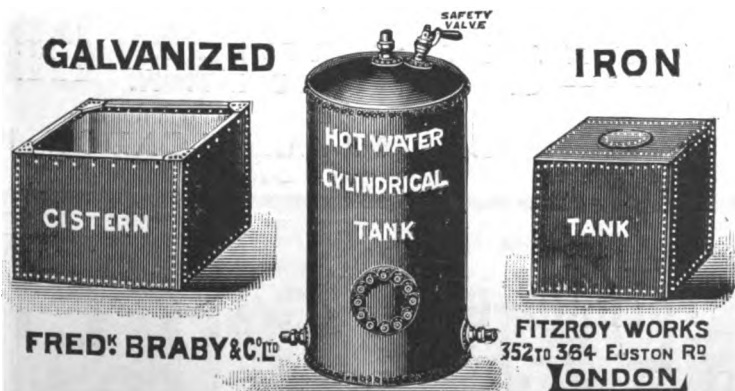
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LONDON—continued.

For the erection of colour works at Homerton. Mr. H. TANNER, architect. Quantities by Messrs. STRUDWICK.

Foster & Dicksee	£7,705	0	0
Mowlem & Co.	7,700	0	0
Colls & Son.	7,496	0	0
Chessum & Co.	7,474	0	0

For painting exterior of County Council schools.

Walton Street, Chelsea.

King & Son	£214	0	0
Foxley	192	0	0
Ronald	180	0	0
Richards & Co.	155	0	0
Lole & Co.	153	0	0
Sims, Horseferry Road (accepted)	121	0	0

Blundell Street, Islington.

Reason	399	0	0
Williams & Son	367	0	0
McCormick & Sons	315	0	0
Kirby	269	0	0
Stevens & Sons	238	10	0
HARRIS & Co., Barnsbury (accepted)	230	0	0

Westbourne Road, Islington.

Williams & Son	180	0	0
Chappell	158	0	0
Grover & Son.	149	0	0
Harris & Co.	137	0	0
STEVENS & SONS, Yonge Park (accepted)	136	0	0

Upper North Street, Poplar.

Newell & Lusty	149	0	0
Haydon & Sons	146	0	0
Derby	146	0	0
Symes	145	0	0
Press, Robinson & Co.	131	10	0
Vigor & Co.	129	0	0

WOOLLASTON & Co., Limehouse (accepted)

Hammersmith School of Art.

Bristow & Eatwell	40	10	0
Richards & Co.	39	10	0
Soole & Son	37	0	0
JOHNSON, 37 Dalling Road (accepted)	27	0	0

LONDON—continued.

For the enlargement of Paddington District Post Office, for H.M. Office of Works, &c.

Clayton	£56,760	0	0
Simpson & Son	38,985	0	0
Foster & Dicksee	38,909	0	0
Ansell	38,906	0	0
J. & W. Drake	37,107	0	0
Aldin Bros. & Davies	37,000	0	0
Speechley & Smith	36,900	0	0
Edwards & Medway	36,800	0	0
Barker & Co.	36,052	0	0
Nightingale	35,770	0	0
Smith & Sons	35,983	0	0
Spencer, Santo & Co.	35,466	0	0
Lawrence & Son	35,274	0	0
Taylor & Co.	35,147	0	0
Lorden & Son	35,000	0	0
Vigor & Co.	34,970	0	0
Johnson & Co.	34,783	0	0
Perry Bros.	34,777	0	0
Wall, Ltd.	34,697	0	0
Patrick	34,439	0	0
Garrett & Son	34,183	0	0
King & Son	34,248	0	0
Martin, Wells & Co.	34,069	0	0
Killby & Gayford	34,050	0	0
Mowlem & Co.	33,970	0	0
Williams, Ltd.	32,520	0	0
Chessum & Sons	32,439	0	0
Galbraith Bros.	31,947	0	0
Wisdom Bros.	31,485	0	0
Fairhead & Son	31,000	0	0
ALLEN & SONS (accepted)	29,990	0	0

For the erection of colour works (No. 3) at Homerton. Mr. H. TANNER, architect. Quantities by Messrs. STRUDWICK.

Waring, White & Co.	£6,731	0	0
Colls & Son	6,468	0	0
Holland & Hannen	6,451	0	0
Carmichael	6,425	0	0
CHESSUM & Co. (accepted)	6,145	0	0

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LONDON—continued.

For the erection of school for sixty mentally defective children in Janet Street, Poplar.

	Original Specification.	Amended Specification.
Griggs & Son	£4,172 13 3	£4,102 0 3
Parker	4,123 4 2	3,831 16 4
Staines & Son	4,040 0 0	3,775 10 0
Elvy & Son	3,943 0 0	3,679 4 0
Clemens	3,714 4 8	3,613 5 10
F. & T. Thorne	3,640 0 0	3,447 6 6
J. & M. Patrick	3,529 0 0	3,307 0 0
Hyde	3,416 0 0	3,202 14 0
Martin, Wells & Co.	3,408 0 0	3,266 11 9
J. & C. Bowyer, Upper Norwood (recommended)	3,299 0 0	3,118 10 11
Architect's estimate	3,302 0 0	—

For redividing rooms and rearranging stepping in the boys and girls' departments of the Gloucester Grove East school, Kensington, and for rearranging stepping in the infants' department, forming doorways, providing tobis tubes, skylights, &c.

Martin	£1,300 0 0
Johnson	893 10 0
Spencer & Co.	791 0 0
Godson & Sons	790 0 0
Lathey Bros.	770 0 0
Lole & Co.	770 0 0
General Builders, Ltd.	747 0 0
Richards & Co.	710 0 0
Johnson & Co.	709 0 0
Christie, 2 Richmond Road (recommended)	622 0 0
Architect's estimate	690 0 0

For redividing certain classrooms on each floor of the Slade school, Woolwich, forming doorways, re-stepping rooms, &c.

General Builders, Ltd.	£620 0 0
Bulled & Co.	610 0 0
Spencer & Co.	610 0 0
Groves, Greenwich (recommended)	588 0 0
Kent	586 0 0

LONDON—continued.

For providing additional heating surface at the Capland Street school, Marylebone, W.

Davis	£212 0 0
Stevens & Sons	158 0 0
Wontner-Smith, Gray & Co.	154 18 0
Paragon Heating Co.	154 10 0
J. & F. May	153 10 0
Christie	137 18 6
Jeffreys & Co.	137 0 0
Yetton & Co., Limehouse (recommended)	121 3 0
Architect's estimate	143 0 0

For redividing and resteping certain rooms at the Colls Road school, Peckham.

Ford	£559 0 0
Marsland & Sons	555 0 0
Goad	535 0 0
Triggs	525 0 0
Lascelles & Co.	518 0 0
Sharpington	488 0 0
Holliday & Greenwood	485 0 0
J. & C. Bowyer	429 0 0
Galbraith Bros.	425 0 0
Tucker	421 0 0
Line, 81 Peckham Rye (recommended)	410 0 0

For construction of brick sewer in John Street, Bedford Row.

Bentley & Locke	£1,750 0 0
Pedrette & Co.	1,192 0 0
Johnson & Langley	1,100 0 0
Mowlem & Co.	859 0 0
Jackson	822 0 0
Parry & Co.	765 0 0
Adams	694 18 2
Patterson	677 0 0
Killingback & Co.	660 0 0
NEAVE & SON, Kensal Rise, W. (accepted)	594 0 0

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LONDON—continued.

For the extension of Hampstead general hospital. Messrs.
YOUNG & HALL, architects, 17 Southampton Street,
W.C.

Willett	£12,531	0	0
Gough & Co.	12,444	0	0
Perry & Co.	12,359	0	0
Patman & Fotheringham	12,210	0	0
Godson & Sons	12,111	0	0
Johnson & Co.	11,730	0	0
Holliday & Greenwood	11,640	0	0
Spencer, Santo & Co.	11,610	0	0
Kirk & Randall	11,516	0	0
Allen & Sons	11,435	0	0
McCormick & Sons	11,392	0	0
Davey, Ltd.	11,387	0	0
Nightingale	11,188	0	0
Barker & Co.	11,014	0	0
Laurence & Sons	10,998	0	0
WALLIS & SONS, Maidstone (accepted)	10,949	0	0

MARLEY.

For erection of house. Mr. J. H. HOWARD, architect, Hasle-
mere.

Milton	£1,592	0	0
Smith	1,350	0	0
Chapman & Lowry	1,300	0	0
Fry	1,198	0	0
HASLEMERE BUILDERS, LTD. (accepted)	1,185	0	0

RUSHDEN.

For the erection of a new church.

Wilmott	£4,925	0	0
Goodman & Murkett	4,865	0	0
Bayes	4,859	0	0
Henson & Son	4,836	0	0
Swindall	4,710	0	0
Packwood	4,643	0	0
Brown & Son	4,619	0	0
Stevens	4,551	0	0
Berrill & Green	4,445	0	0
MARRIOTT, Rushden (accepted)	4,423	0	0

SALTASH.

For erection of premises in Fore Street. Mr. EDGAR M.
LEEST, architect, Saltash.

May & Son	£759	0	0
Pearce Bros.	467	17	0
Alford	436	4	0
ROTHERY, Saltash (accepted)	426	0	0

SEVENOAKS.

For alterations and additions to union workhouse. Messrs.
LLEWELLYN & PAWLEY, architects, Sevenoaks.

Bentley	£256	0	0
Durtnell & Sons	245	0	0
Banks	219	0	0
Smith & Son	198	0	0
Wallis	197	0	0
CANFIELD, Sundridge (accepted)	157	10	0

SHREWSBURY.

For the enlargement of Highley Council school, for the
Shropshire education committee.

GRIFFITHS, Stourbridge (accepted) £1,070 0 0

For reflooring Oswestry Council school.

HAYES, Shrewsbury (accepted) £245 0 0

SOUTH STONEHAM.

For the erection of the cook's room at the workhouse.

Cawte	£232	10	0
Haines Bros.	204	12	0
Witt Bros.	194	10	0
Marshall	194	0	0
Kimber	190	0	0
Fry	180	0	0
Small	170	0	0
JUKES (accepted)	168	0	0

WESTON-SUPER-MARE.

For alterations and additions to matron's house at hospital
Mr. HUGH NETTLETON, surveyor.

Rossiter & Sons	£356	0	0
Dyer	325	0	0
FORSE & SONS, Bristol (accepted)	309	0	0

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WELLINGTON.

For the erection of Sunday school at Tan Bank, for the Primitive Methodist Trustees. Mr. ELIJAH JONES, architect, Hanley.

Challoner	£2,026	19	9
Godwin	1,641	0	0
Holder	1,590	0	0
Jones	1,578	0	0
Pearce	1,569	0	0
Carver	1,559	0	0
Roper	1,478	0	0
Skelhorne	1,448	0	0
Blakemore & Son	1,389	0	0
Bright	1,373	0	0
HOLMES, Wellington (accepted)	1,355	0	0

WINTERBOURNE.

For the restoration of St. Martin Church. Mr. C. E. PONTING, F.S.A., diocesan architect, Marlborough.

Merrick & Son	£1,157	0	0
Green	1,052	0	0
Norman	988	0	0
Davis & Son	865	19	9
Childs	861	10	0
Hoskings	830	0	0
Kite	798	0	0
COOPER, Bridport (accepted)	751	1	6

WRAYSBURY.

For the erection of infants' school for about 100 children and alterations to existing school.

	New School.	Repairs.
Gray	£1,690	0 0
Francis	1,688	0 0
Richardson	1,632	0 0
Hollis & Sons	1,619	0 0
Burfoot & Son	1,589	0 0
Lock Bros.	1,570	0 0
Lovell	1,550	0 0
Bowyer	1,495	0 0
Hendry	1,490	0 0
Cox & Sons (accepted)	1,485	0 0
		£110 0 0
		159 0 0
		98 10 0
		98 0 0
		104 0 0
		108 19 0
		46 10 0
		92 6 0
		88 0 0
		92 0 0

(Received too late for classification.)

DOWNE.

For erecting the Downe Council school for the Kent Education committee.

PODGER & SON (accepted)	£1,515	15	1
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MAIDSTONE.

For the Staplehurst drainage.

WICKENS (accepted)	£192	10	0
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TONBRIDGE.

For erecting new building as a cottage hospital. Mr. J. W. LITTLE, architect.

Martin & Co.	£1,845	0	0
Baker	1,762	0	0
Strange & Son	1,731	0	0
Punnett & Son	1,697	0	0
Jarvis & Son	1,689	0	0
Jarvis	1,679	0	0
BEALE & SON (accepted)	1,594	0	0

Owing to the success of the past years, Mr. Montgomery has decided to utilise Olympia for next year's exhibition, as it will give him more opportunities to satisfy his numerous supporters.

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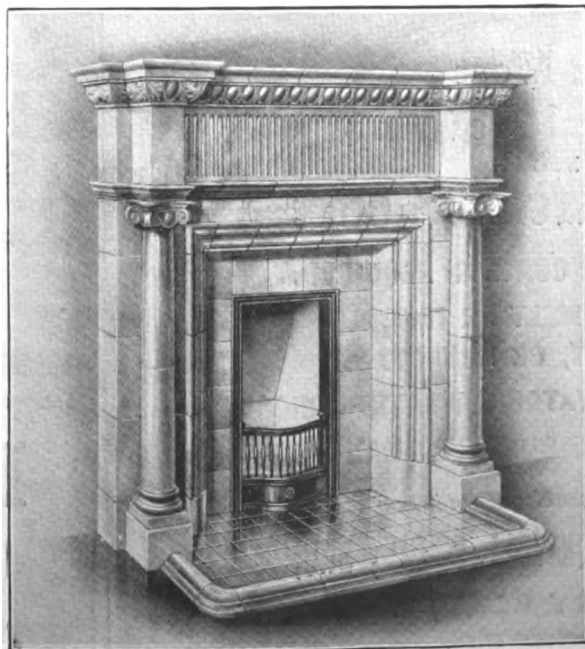


Figure 7.

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ELECTRIC NOTES.

THE Selby Urban District Council will proceed at once with their application for a provisional order authorising them to supply electricity under the Electric Lighting Acts. Messrs. Medhurst, Page & Lloyd, electrical engineers, are to prepare a scheme for carrying out the work.

THE Brighton Corporation, owing to the freedom from serious mishaps experienced hitherto on their electric tramway system, have decided not to renew their insurance policy against third party accidents, but to set aside yearly a sum of 600*l.* to meet any claims that may arise.

MR. A. G. DURNFORD, R.E., inspector of the Local Government Board, held an inquiry at West Bromwich into the application of the Corporation for sanction to borrow 5,150*l.* for the purpose of carrying out extensions at the generating station at Black Lake, in order to meet the increasing demand for electricity.

TRINITY HOUSE states that it is incorrect to say that they are adopting the incandescent oil burner at all the lighthouses under their charge. Nor has the incandescent oil burner superseded the electric light at the Lizard or any of their other electric lighthouse stations in this country. They do not consider the incandescent oil burner an illuminant superior to the electric light during fog.


THE electric-lighting committee of Edinburgh Town Council recommend the Council to have lighted with electricity common stairs whose houses have an electric installation. The rate was fixed at 20*s.* per 5 candle-power lamp per annum, including maintenance. With regard to the realised balance of 16,361*l.* it was agreed to recommend that 10,000*l.* be placed to reserve and 5,000*l.* to reduction of capital debt, leaving 1,361*l.* to the Council for disposal.

THE *Feuille Fédérale Suisse* contains the text of concessions granting:—1. M. Othmar Kluser, of Brigue, the right to construct and work a narrow-gauge railway (partly funicular) between Stalden and Saas Fée. The estimated cost of the installation is about 116,000*l.*, of which about 9,000*l.* is to be spent on rolling stock. 2. Messrs. C. Niess

and L. Flesch, both of Lausanne, and M. F. Buchs, of Ormont-dessus, the right to construct and work a narrow-gauge electric railway between Ormont-dessus and Gstaad. The estimated cost of the installation is about 80,000*l.*, of which about 5,728*l.* is to be spent on rolling stock. 3. Messrs. Haag & Grenlich, of Bienne, the right to construct and work a narrow-gauge electric railway from Grindelwald to the Mer-de-Glace. The estimated cost of the installation is about 92,000*l.*, of which about 19,100*l.* is apportioned for the purchase of rolling stock and hydro-electric plant and the construction of a generating station.

VARIOUS new cotton mills in Lancashire have been or are being fitted for electric driving, but the mills of Messrs. Ashworth, Hadwen & Co. at Droylsden are, according to the *Manchester Guardian*, the first in which electric driving has been substituted for an existing steam plant for spinning and weaving. The mills contain 39,000 spindles and 818 looms, and the steam-power installation, which had been in use for a couple of generations and included long lines of main shafting and much heavy gearing, was practically worn out. The electric installation, which is already partly at work and will be completed in a few weeks, includes steam turbines of 700 horse-power, super-heaters, electric pumps and all the most improved appliances, and the complete change from steam to electric driving will, it is claimed, have involved not a single hour's stoppage of the mills. A considerable increase of output and decrease in working cost are anticipated.

The town clerk of Edinburgh has prepared a report bearing on the decision of the House of Lords committee on the Tramways Bill, and advising the Town Council as to the policy to be followed in carrying out the powers obtained with regard to the Broughton and Gilmore Place routes. In considering future extensions or additional tramways, the Corporation, while keeping in mind that these should be either practicable in themselves or be connected with other systems, will probably have regard to the capabilities and advantages of electric systems. Those



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lines which may hereafter be proposed may either be constructed by the Corporation—and worked by the lessees—or formed and worked by companies (especially where continuations into the county are involved) on such conditions as the Corporation may consider sufficient to safeguard the public interest, and to fit in with possible comprehensive new arrangements at the termination of the present lease. It was inevitable that tramway extensions in many directions must take place within and around the city in the immediate future, and the recent proceedings, subject to the explanations already given, had shown that the Corporation were entitled to make such new or additional tramways, either cable or electric, as they considered necessary in the public interest without interfering with the rights of the lessees under the lease.

BUILDING AND BUILDERS.

THE Acton District Council have approved of plans for new municipal buildings estimated to cost 35,000*l.* This is an alternative scheme to that rejected by the Local Government Board, which was estimated to cost 100,000*l.*

THE Plumbers' Company have presented to the London County Council a number of books, specially bound, and bearing the company's arms, for the use of students attending the plumbing classes at the School of Building.

THE finance and town hall committee of the Birkdale Urban District Council have decided to erect a new wing at the back of the town hall, to include a new council chamber and large committee-room. The estimated cost is 1,450*l.*

MR. JOHN FYFE, a well-known Aberdeen granite merchant, died in his seventy-seventh year on the 18th inst. at Aberdeen. He was responsible for the pier foundations for the Forth, Kew, Putney and Tower bridges, the Thames Embankment, as well as numerous buildings in Aberdeen, and a host of dock and harbour works.

THE death has occurred of Mr. Samuel Biggins, Edge, Malpas, who (says the *Liverpool Courier*) conducted an important builder's business, and some of the finest and best

work on local estates was entrusted to him. The excellence of his work was a local byword. The principals of the firm, themselves skilled craftsmen, invariably conducted the building operations, which were expeditiously performed.

BEFORE Judge Owen at Newport County Court, the action Knowler *v.* Williams to recover 85*l.* os. 3*d.* on a building contract was again down for hearing. It was agreed at the last court to submit the matter to arbitration in order to decide what was due. Mr. J. W. Hunt, the arbitrator, found that the formality of a counterclaim had not been duly made, and therefore reduced his award to 50*l.* 1*s.* 11*d.*, leaving the remaining 30*l.* to be fought over in a new action. The plaintiff asked for costs. His Honour ultimately allowed costs on the action on Scale C, as the amount claimed was above 50*l.*, and judgment was accordingly entered for plaintiff for the amount of the award and costs of the action.

THE medical officer of health for East Sussex, in dealing in his annual report with the suggested advisability of some modification of the building by-laws in force in many rural districts, states that it would appear that the chief defect in existing by-laws of the urban type when applied in rural districts is to be found in the restrictions compelled with regard to building material. Regulations which provided against dampness of the house, and which insured free access of sunlight to and proper ventilation of dwelling-rooms, cannot be enforced with too much stringency. But with regard to general structural details, very much more liberty than is allowed at present should be possible. The medical officer says the absurd tyranny of the more restrictive kind of by-laws cannot be better illustrated than by pointing out that in many country districts the well-to-do individual would not be allowed to provide for his own use a convenient residence constructed on the same principles as, for example, the buildings, excellent from the hygienic point of view, which the Admiralty, after taking the best available expert advice, have provided for the cadets at the Royal Naval College at Osborne. By-laws in these rural districts appear to have been formulated with a view of insuring for the labourer's cottage a monumental permanency which is neither necessary nor even desirable.

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VARIETIES.

THE Metropolitan Water Board have approved an estimate of 85,000*l.* for the construction of six filter-beds at Ditton, on a site belonging to the Board.

THE new free library at Northampton is to be carried out under the supervision of and from the designs of the borough engineer and surveyor.

THE City Corporation is about to spend 40,000*l.* at the Metropolitan Cattle Market, Islington, on the construction of public slaughter-houses.

THE Mersey Docks and Harbour Board have agreed to the proposals to extend and improve the Brocklebank and North Carriers docks at an estimated cost of 279,500*l.*

THE London, Edinburgh and Glasgow Assurance Company, Ltd., are about to erect new premises at the corner of Euston Road and Euston Square. The designs have been prepared by Professor Beresford Pite.

THE Cardiff asylums committee have decided not to proceed with the erection of a clock on the tower of the new city asylum at Velindre. The recommendation of the architect was of a clock with three dials, each being of 8 feet diameter, and the total cost was estimated at 400*l.*

MESSRS. WARWICK & HALL, the architects, estimate that for the erection of the new municipal buildings for the borough of Holborn the amount will be under 20,000*l.*, the land would cost 21,000*l.* and furniture and additions 8,000*l.*, making a total cost of 49,000*l.*

MR. DIMOND GORDON, one of the Local Government Board auditors, has intimated to a deputation of Hammer-smith ratepayers that in his audit of the Guardians' half-yearly accounts he intends to disallow 3,000*l.*—an item connected with the expenditure on the new workhouse—which will be surcharged to the Guardians.

AN ideal place to spend a holiday is the beautiful golf course of the Hadelot Golf Club, near Boulogne. The spot is an ideal one, and the club, which has been established there in connection with the Société d'Hadelot, by which Society the district is being developed, is a flourishing one. There are plenty of other pastimes to be indulged in—tennis, croquet, archery, boating, fishing and shooting. Mr. John R. Whitley, the founder of the exhibitions at Earl's

Court, is the promoter of Hadelot, and the success he has met with is well merited.

THE Lord Provost's committee of Edinburgh Town Council have decided that a register of historical buildings in the city should be prepared. They have also approved of the site for the monument to the Black Watch on the Bank of Scotland ground at the corner of the Mound and Market Street.

THE American consul at Birmingham reports to the Department of Commerce at Washington, U.S.A., that in British mercantile and engineering circles they are sometimes mildly sarcastic about the ease with which catalogues can be obtained from American manufacturers, disclosing designs and even giving best discounts.

PLANS for bringing a water supply to the city of Athens from Lake Stymphalos, a distance over sixty-two miles, are nearly complete. The aqueduct will consist of masonry, where necessary, and of iron pipes. A company will be formed with a capital of nearly 1,250,000*l.*, and there will be an additional loan by the company of 705,000*l.* guaranteed by the Greek Government.

A FREEHOLD building site at the corner of Piccadilly and St. James's Street, W., covering an area of 5,312 feet, exclusive of an area of vaults of 1,973 square feet under the pavement, was put up for auction at the Mart. Competition at the sale was fairly good up to 155,000*l.*, but as there was no advance on this figure, a bid of 165,000*l.* was made on behalf of the vendor, and the site withdrawn to be dealt with privately.

IN view of the transfer of the North Metropolitan Tramways Company's undertaking to the London County Council, the employés are to be placed on the Council's standard conditions of labour. The cost of making these alterations including the employment of additional men, who will be required in consequence of shortening the hours of labour, will amount to about 15,658*l.* a year.

A SCULPTURED figure of Lord Armstrong, the founder of the Elswick Works, has been placed in the grounds of Newcastle Natural History Museum at a cost of over 5,000*l.* The base of the monument is semicircular in form, with two wing walls, and above it rise a massive pedestal of Heyworth stone and the statue in the centre. The figure,

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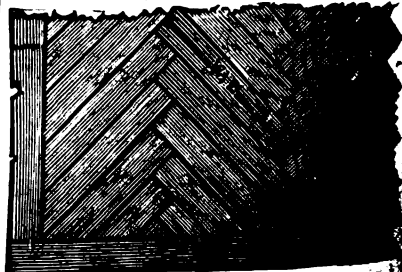
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9" x 3" x 2" ...	4s. 9d.	P. Pine
12" x 3" x 1 1/2" ...	4s. 6d.	P. Pine
9" x 3" x 1 1/2" ...	3s. 6d.	P. Pine

Flooring with

which stands 9 feet high, was sculptured by Mr. Hamo Thornycroft.

THE London County Council have approved of the plans for the erection of buildings on the eastern and western sides of Regent Street between the Quadrant and Oxford Circus. The scheme involves the ultimate rebuilding of nearly the whole of the houses and shops on both sides of the street. A considerable area of ground at present covered by one-storey projections will be built upon to the height of the main buildings, and the area now occupied by buildings will be reduced by about 3,400 feet.

"THE Workmen's Compensation Act may be an endowment to lawyers in one sense," said Sir William Selje during the hearing of an accident case at Brompton, "but it is a great blessing to the working people of this country." His Honour added that the Home Office estimated that 150,000 accidents occurred yearly in the occupations to which the Act applied, and statistics showed that not more than 1,500 of these cases on an average ever came into court.

THE Uruguayan Government propose to make a considerable addition to the port works now in course of construction at Monte Video. The proposal is to build a new dock, 180 metres wide at base, to be completed on the western side by a solid mole 67 metres wide and 370 metres long, with space for sheds, &c., and a large open space for the movement of vehicles. This will mean an addition to the port works of nearly 1,000 metres of wharf line. The cost is estimated at 800,000 dols., or over 170,000*l.*

THE Premier of Western Australia states that the total wooded area of the colony is estimated at 98,000,000 acres, and the extent of merchantable timber has been reckoned to be, approximately, as follows:—Jarrah, mainly (with black butt and red gum interspersed), 8,000,000 acres; Karri, 1,200,000 acres; Tuart, 200,000 acres; Wandoo (white gum and allied timbers), 7,000,000 acres; York (gum, yate, sandalwood and jamwood), 4,000,000 acres; total, 20,400,000 acres. This represents a forest area of merchantable timber four times greater than the whole area of Wales. The total value of timber exported from Western Australia for the ten years ended 1904 was 4,800,000*l.*

IN the competition for the Wesleyan church, Wallington, Surrey, the committee have awarded first place to the design of Mr. Frank Windsor, of Croydon, whose design has been accepted from a selection of thirty-two submitted names of architects, with a final selection from drawings submitted by six. The second premiated design was awarded to the late Mr. W. D. Church, of South Place, and the third premiated design to Mr. H. A. Woodington, of Jermyn Street. Accommodation is provided for 600 sittings, and the plan has large central nave with ambulatories. Exterior work to be carried out in Kentish rag, and the architect's estimate without tower is 6,640*l.*

REPRESENTATIVES of local authorities in Monmouthshire have held a conference to consider the question of the conservation of the water sources of the county. It was resolved:—"That in the opinion of this conference it is desirable, in the interests of the county, and especially its industrial districts, that the present sources of water supply should be conserved, and all measures taken for preventing outside companies or bodies from abstracting water to which the inhabitants of this county have a natural claim; that the County Council should promote a Bill in Parliament in the ensuing session with the view of securing a good and ample supply of water for the benefit of the county."

MR. GEO. A. PHILLIPS, deputy county surveyor, has reported to the Glamorgan roads and bridges committee that the experiment of tarring a section of the main road at Bridgend for dust-laying was commenced on June 12. The length of road treated was 923 lineal yards. The effect so far is considered satisfactory. It was, he said, perhaps a little early to base any recommendation upon the short experience of this method of treating the roads, but the method certainly presented itself as one of the most efficient and economical ways of dealing with the dust nuisance, complaints of which had been received from Pontardawe, Pontardulais and other parts of the county. The cost was 29*l.* 18*s.* 11*d.* It is expected the road will require treating once every year.

THE Cleveleys Cottage Exhibition was opened on Saturday. The exhibition has been built on the Thornton portion of the landed property of the Fleetwood Estate, Ltd. The estate is 2,300 acres in extent; competitors are allowed to erect houses of any cost, but must state the full cost and also the sum for which duplication would be made for customers. Money prizes are offered in several classes—for the best and most economical detached cottage, with not less than three bedrooms; for the best and most economical pair of cottages; for designs and specifications, and for the best laid-out gardens. These will be awarded by a committee of architects and builders. In all forty-four houses and bungalows have been erected or are in course of erection. The exhibition is to remain open three months.

AN unusual bridge project is now under way for bridging the Mississippi river at St. Louis. By a recent public vote the project of a free municipal bridge was approved by a large majority. Under this ordinance a sum of 3,500,000 dols. becomes available for "the construction and maintenance of a municipal bridge for public use by railroads, street-cars, vehicles of all kinds and pedestrians over and across the Mississippi river, and for the purchase of land to be used for approaches thereto."

MR. ARTHUR C. PAIN, of Westminster, has, as requested by the Middlesbrough Corporation, submitted a report and recommendations as to the means of improving the communication across the river Tees between Middlesbrough and Port Clarence. In his opinion only two methods claim serious consideration, viz. a tunnel or a transporter bridge. Of these two he advises the adoption of the latter. It would be practically on the lines of the old ferry landing, and therefore as short as possible. The transporter car would be 40 feet long by 33 feet wide, capable of carrying a freight of 71 tons, or about 600 passengers. The cost of construction he estimates at 55,580*l.*, with the usual 10 per cent. for contingencies and the Parliamentary and engineering expenses; total, 67,195*l.* His estimate of the working expenses is 1,740*l.* per annum, as compared with an average working cost of the present ferry of 3,102*l.* The question is under consideration.

HIS Honour Judge Ellicott gave judgment at the Cheltenham County Court in the case of Brooker v. Warren, which was a claim for compensation by a widow for the loss of her husband, who was killed while engaged in sawing larch poles at a circular saw at the defendant's saw mill. The facts were not in dispute, the defence to the claim being that the deceased man had been guilty of such serious and wilful misconduct as to disentitle his relatives to recover anything. His Honour found that Brooker was disobedient and wilfully so in not using the guard provided by his employer, but did not consider the disobedience was of so serious a character as to take the case out of the Compensation Act.

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tion to Workmen Act. It was a case of a skilled and experienced sawyer backing his opinion against that of the factory inspector, and he had paid the penalty for one single disobedient act by his life. But the facts negated recklessness. His Honour gave judgment for the widow for the full amount of the claim, viz. 150*l*.

A LARGE deposit of clay has been discovered in Monterey co., California, says *Scientific Experiments*, from which can be manufactured an absolutely fireproof brick. A house built of these bricks cannot catch fire from the outside and flames inside are quenched by a vapour that rises from the brick when heat is applied to it. The brick is an excellent non-conductor, and remains cold an inch below the surface while a hot flame from a gasoline torch is directed against it. Experiments have been made with the new brick, of which a report has been presented to the Merchants' Association of Monterey. The deposits of clay from which the brick is made are very extensive and the brick can be manufactured cheaply. The Merchants' Association will conduct further experiments, and, if the bricks prove to be satisfactory, the building of fireproof structures will be revolutionised.

THE report of the manager of the artisans and labourers' dwellings owned by the Corporation of Liverpool, which has just been published, shows that on December 31, 1904, the total number of tenements under the control of the committee was 1,670 (comprised in twelve separate blocks of dwellings), affording accommodation for 7,892 persons. There were also at the same date fifteen shops. During the year ended December 31, 1905, 150 additional tenements were opened, providing accommodation for 828 persons, thus bringing the aggregate number of tenements to 1,820, containing 4,359 rooms capable of accommodating 8,720 persons. At the close of the year 1905 the total gross annual rental of the tenements and shops amounted to 17,799*l*. 12*s*. 8*d*. The total receipts for 1905 amounted to 14,602*l*. 17*s*. 10*d*. The expenditure for the year was 7,290*l*.

THE Manchester City Council on the 18th inst. approved of the following resolution:—"That having regard to the continued increase in the consumption of water and the length of time it will take to carry out the work, it is necessary that arrangements should now be made for laying

the third pipe in connection with the Thirlmere aqueduct, and that the Council approve of this proceeding and authorise the committee to appoint the engineers and take all requisite steps in this matter." A part of the cost of laying the new pipe was anticipated in the laying of the second pipe. When making passages through rock they sometimes made the passage wide enough to admit of a third pipe without further blasting. The estimated cost of the third pipe is about 750,000*l*. The committee possess borrowing powers to the extent of 650,000*l*, and the balance will be the subject of an application to Parliament hereafter. An aqueduct connected with the third pipe to carry water from Little Hulton to the reservoirs at Audenshaw has already been sanctioned.

METAL CASEMENTS.

EXPERIENCE has proved that for some classes of buildings metal casements have advantages over those of wood. Those manufactured by Mr. William Hatton have peculiar advantages. They can be fitted with gun-metal handles, screw and swivel stays and condensation gutters, or with wrought-iron handles, stays and gutters. The former are slightly more expensive, but there is a graduated scale which is adhered to by the maker. The title "French casements" is not inapplicable, for the handles, stays, &c. are as excellent in style as any to be obtained in Paris. They are, however, produced by Mr. Hatton at prices below those prevailing in France.

TRADE NOTES.

THE Pulsometer Engineering Co., Ltd., of Reading and London, have requested us to announce that they have given up their Manchester agency and have opened branch offices instead at 206 Corn Exchange Buildings, Cathedral Street, and appointed Mr. George Thompson, manager.

THE Drill Hall in Bristol, which was selected for the exhibition of the Royal Sanitary Institute, like other buildings of its class, could not be considered as attractive. But by the application of Duresco its appearance was trans-

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formed, and enabled all the goods displayed to be seen under advantageous circumstances. At the stall and specimen bath-room shown by Messrs. Rowe Bros. & Co., the district agents, it was possible for public officials, architects, surveyors, as well as the public, to observe the value of Duresco in decoration as well as the other merits of this excellent water paint, which in Bristol has proved its value when emergencies arise and time and economy must be respected. It may be added that 40,000 square yards were covered with Duresco at the Royal Victoria hospital, Newcastle-on-Tyne.

NEW CATALOGUES.

MESSRS. NORTON & GREGORY, LTD., have published a new edition of their catalogue of drawing and surveying instruments, drawing materials, stationery, &c. It has the great advantage of being divided into sections, and there is also a complete index. Any article desired can be instantly referred to. From their position in Westminster the firm are well acquainted with the requirements of architects, engineers and contractors. Their supply is therefore comprehensive, and, what is no less important, can be obtained at cheap rates. Recent improvements in instruments are exhibited in the pages.

THE inconvenience which arises from sash lines and chains or from the pulleys is known to most occupants of houses, for whenever an accident arises they immediately come to the conclusion that all parts of the house are equally fragile. Messrs. Harcourts, Ltd., of Birmingham, have been established for over a century, and they make a specialty of chains, pulleys, hooks and weights, entitling them to be considered as domestic benefactors. They manufacture copper chains of rivetted links having a breaking-strain, according to the size, varying from 250 lbs. to 1,200 lbs. They have been used in the City Hall, Belfast, the General Hospital, Birmingham, and other hospitals, in barracks, club-houses, offices and works. They have also patented sash hooks which are bent with the grain and are superior to forged hooks. If preferred, they have a bolt and plate attachment. Their axle pulleys, which are an important factor in easy working and the

avoidance of breakage, are made only in one quality. The face and wheel are brass and the bushings iron or gunmetal.

A NEW RADIATOR.

THE necessity for having efficient means of heating affords continual opportunities for the display of American inventiveness. They prefer radiators to our open fires, and they possess a surprising variety of forms. In England objections are raised against the American systems on account of the general use of cast-iron. The new Kinnear pressed radiators will overcome any prejudice which that material created, because in them wrought-iron has been substituted for cast-iron. If conductivity were alone considered the advantage is with wrought-iron, for investigators say it has one-tenth more of that power. But other advantages follow. It is not necessary to have so much thickness in the parts, and consequently with additional strength there is one-fourth less weight. Less water or steam is needed, which means economy in fuel, and the liability to accident from freezing may be said to be entirely removed. Great care is taken with all the joints and connections. Both inside and outside is coated with zinc, by which the radiator is impervious to the impurities which are found in some waters. A test of 35 lbs. to the square inch under hydraulic pressure is also applied to each radiator. With these precautions the durability is vastly increased. Architects will, of course, prefer to exercise their own judgment, and the Kinnear pressed radiators may now be seen at the premises of Messrs. Arthur L. Gibson & Co., Tower Street, Upper St. Martin's Lane, W.C.

CHUBB'S "99" STEEL VAULT.

At the invitation of Sir George Hayter Chubb, Bart., and his co-directors, a large and distinguished company visited the extensive works of Chubb & Son's Lock and Safe Company, Ltd., in Glengall Road, Old Kent Road, S.E., on Tuesday last, to inspect the strongest steel vault or treasury in Great Britain, built for the Royal Bank of Scotland, which has taken a year to construct and is a unique production.

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THE "SECO" FLOOR SPRING

Will resist immersion in water.

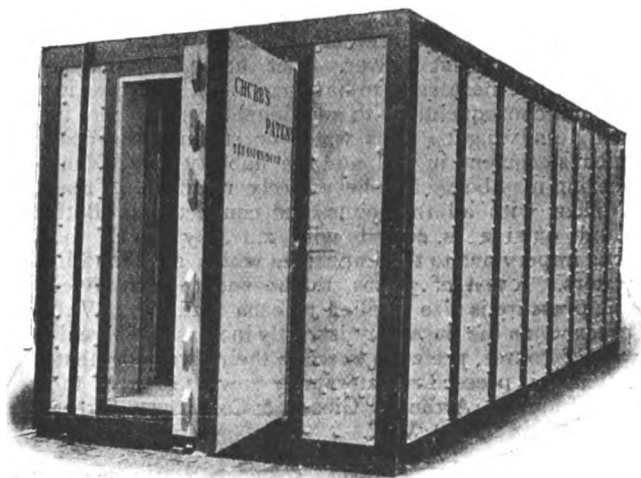
TONKS'
PATENT
WATERTIGHT
COVER.



ADJUSTABLE
SPRING
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SHOES.

Its dimensions are 9 feet 3 inches wide, 8 feet 10 inches high and 23 feet 8 inches long, the gross weight with door and fittings being 50 tons.

The walls, roof and floor consist of a series of slabs of steel which are rivetted and bolted together, so as to make one continuous piece, the thickness of the slabs being 2 inches, and at the joints this is increased up to a thickness of $3\frac{1}{2}$ inches. The strength of the room may be said to lie in the plates of Cammell's '99 alloy steel, made specially for Messrs. Chubb, as the result of most exhaustive experiments, and the most characteristic quality of which is toughness. As a backing to this steel, alternate sheets of welded armour plate make up the thickness of 2 inches.



The outer plate of the treasury door is a solid slab $4\frac{1}{2}$ inches thick of the best armoured plate, specially prepared for this particular work, and the peculiar feature is the absence of any spindle or keyhole, thus insuring extra security. The patent diagonal bolts are secured by a triple time lock, a keyless combination lock, and also a special anti-explosive lock, protected by a heavy manganese steel

casting within the room. The hinges, being adjustable and on ball bearings, enable the door, which weighs 4 tons, to be moved with comparative ease.

When this treasury, which is believed to be the strongest ever constructed in Europe, is finally placed in position, it will stand on a bed of armoured concrete 2 feet thick, and will be surrounded by walls of hard Stafford blue bricks 18 inches thick, having bars of 2-inch steel built in the alternate courses.

CONTINENTAL HOLIDAYS.

In order to accommodate holiday makers, tickets at reduced fares available for eight days will be issued by the Great Eastern Railway to Brussels August 1 to August 4 inclusive and August 6, and to Zurich, *via* Harwich and Antwerp. Dining and breakfast cars are run between London and Parkeston Quay, Harwich, on the Antwerp service. Passengers leaving London in the evening reach Brussels next morning. For visiting The Hague, Scheveningen (the Dutch Brighton) and Amsterdam for the dead cities of the Zuyder Zee special facilities are offered. From the Hook of Holland through carriages run in the North and South German express trains to Cologne, Bâle and Berlin, reaching Cologne at noon, Bâle and Berlin in the evening. Tickets dated in advance can be obtained at the Liverpool Street station continental inquiry and booking offices.

A SERIOUS fire broke out on Wednesday evening at Leeds. The premises of Messrs. Hotham & Whiting and the Great Northern hotel were destroyed. The damage is estimated to be at least 100,000l.

The General Post Office has offered the Brighton Town Council 49,000l. for the telephone undertaking, and the telephone committee recommend acceptance of the offer.

The West Ham Local Board are about to apply for a Local Government Board loan of 75,650l. for the electricity undertaking.



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MANUFACTURERS OF EVERY DESCRIPTION OF LIMITED.

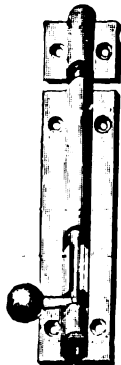
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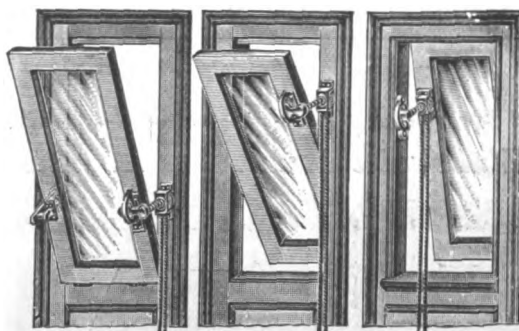
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in
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all
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ADJUSTMENT
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FANLIGHTS.
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1751 $\frac{1}{2}$ 1/3 each
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Hinged at Bottom,
Opening In.
Brass 1751 5/6
Iron 1752 4/-

For
Pivot Sashes.
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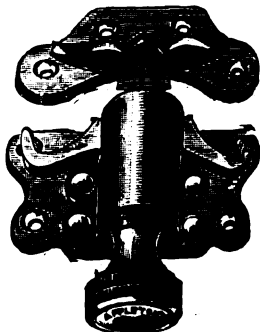
Hinged at Top,
Opening Out.
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Iron 1754 4/-

The advantages of this invention will be appreciated by Builders, Architects, and others, as being a perfect Fanlight Opener, without the disadvantage of any unsightly part projecting into the room, to the impediment of blinds, &c. It is equally suitable for sashes hang at top, bottom, or pivot sashes.

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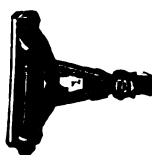
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Action. 5753 Iron.
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5355 Iron.
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THE DEVELOPMENT OF CADIZ.

THE British Consul, in his report on the trade of the district of Cadiz, says the construction of the electric tramway line to San Fernando from Cadiz, 14 miles, is nearly completed. It is intended to continue the line to Chiclana, Tarifa and eventually Algeciras. The line will be a great boon to Cadiz, whose population is unused to travel, the majority having seldom gone beyond the narrow neck of sand which connects this historic city with the mainland. Cadiz is almost an island, a fortress surrounded on all sides by a wall through which there is a gateway into the town. Beyond this entrance stretches a long, narrow belt of sand, dividing the Atlantic from the bay. As circumstances now are it is impossible, within town limits, to extend the available building area. It has been, to quote an oft-written local expression, "a long cherished dream" of the people of Cadiz to demolish a certain portion of these picturesque, but now useless, walls in order to obtain space for erecting factories and developing the business portion of the town. This "dream" is not without interest to the foreign traveller, since it includes the laying out of gardens and building of modern hotels. It is proposed to utilise the material obtained in lengthening existing piers and reclaiming land from the sea, thus enabling vessels to load and discharge cargo alongside of wharves instead of as now by means of lighters in the often ruffled waters of the bay. The advantage of this to the desired revival of trade in Cadiz cannot be overestimated.

In the prevailing distress through lack of employment local authorities and influential merchants have found opportunity to bring forward their scheme, and with such energy have they pushed it that at the time of writing the report the walls are being demolished, and all who desire work can obtain it at a certain fixed wage. However, it is a task of greater magnitude than can be accomplished by those unused to such form of manual labour, and there is little doubt that the work in all its branches will be handed over to the contractors of the harbour works, for whom the material obtained from the walls is ultimately intended.

The past year witnessed the completion of new station buildings, and Cadiz now possesses a railway terminus, perhaps the finest in this part of Spain.

THE NEW YORK LIBRARY.

A CORRESPONDENT of the *Glasgow Herald*, in describing the development of the American library, furnishes some particulars of the new building in progress in New York. Credit must be given, he says, to Boston for the new departure in library construction, which dates from the Copley Square Library. The departure can be described in a few words. It simply meant the complete abandonment of the long accepted plan of shelving the contents of the library in the main reading-room, and providing stack-rooms for books and a large hall to be used exclusively as a reading-room. At Boston the stack-rooms are apart from the rooms which are open to the public. They are fire-proof, of course, like the other parts of the building, but internally they are as free from ornamentation as a factory. They are simply warehouses for books; and as only the members of the library staff need have access to them, the gangways between the shelves are narrow, so as to admit of every available foot of floor space being turned to account. Window light is not absolutely essential for all parts of a stack-room, as electric lights are placed in the gangways, and can be used at any part of the shelves when a book is taken down or returned.

With the adoption of the stack-room plan there followed almost necessarily the electric carrier for conveying books between the stack-rooms and the reading-room and the delivery tables in the circulation department, and also pneumatic carriers for conveying the slips of readers to the library assistants who are assigned to the stack-rooms. All these new departures were embodied in the internal and administrative economy of the Boston public library, and just as soon as they were seen in service people who work much in libraries wondered how it came about that the old plan with the books shelved about the reading-room had survived so long. The gain from these departures accrues to all who use the library—especially to students who work in the reading-room—and they add enormously to the efficiency of the library staff. For students in the reading-room they get rid of the noise and disturbance due to the running up and down stairs of the library assistants. For

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the library staff they save much of this running to and fro about the reading-room, and the electrical carrier system is so arranged that books can be returned to convenient tables in the stack-rooms for redistribution to the shelves. There is a gain also from the point of view of the wear and tear of the books, because bindings are not nearly so much exposed to light and dust as when books are shelved about the reading-room. The Boston plan was followed in the building of the Congressional Library, and it has been adopted in smaller cities, such as Providence, Rhode Island, which have built new public libraries since the Boston Library was opened.

In the new library now building for New York there are innovations on the Boston plan. The plan is adopted in its main lines, but it is carried a stage further so as to secure even more quiet and the least possible disturbance for students at work in the reading-room. In the New York Library the main reading-room is on the top floor—the third floor—and above the stack-rooms. This plan quite removes it from the more public departments of the library, such as the newspaper and periodical rooms, the permanent art collections—for which the New York Library is famous—and the circulation department, and admits of the reading-room being lighted from the south, west and north, as well as from inner courts on the east and by top lights. Incidentally, this plan also admits of one range of windows overlooking Bryant Park. At the Congressional Library the administrative department of the reading-room is circular, on the plan of that at the British Museum, for at Washington, as at Bloomsbury, the reading-room is under the dome and is circular in form. Bates Hall, the reading-room at Boston, is rectangular, and the administrative department is at the south end, and is cut off from the reading-room by a partition. At the New York Library the administrative department—where the catalogues are consulted and where slips are filed for books and books received and returned—is in a room apart. It opens on to the reading-room and also on to the hall, and by this arrangement the entire floor space in the reading-room, which will give table accommodation for 800 readers, will be freed from the intrusion on work which follows from the consulting of catalogues by readers and the delivery and collection of books by the library assistants. The plan as it now stands represents

the furthest development in library economy in the United States—the greatest development in a department of public service, in which Boston, Washington and New York have gone beyond the achievements of any of the old-world cities.

The new building at Fifth Avenue and Forty-Second Street is to house the Astor, Lenox and Tilden libraries, which were consolidated in 1895. It is to cost 5,000,000 dollars, not including any outlay for the land. The site, which is the most commanding in uptown New York, is the gift of the city to the Trustees of the Public Library. The building has a frontage of 366 feet on Fifth Avenue, and is 246 feet deep from east to west. It is 68 feet high from the ground line to the top of the cornice on the centre of the Bryant Park front, and 98 feet high at the centre of the Fifth Avenue front. There are two open courts each 81 feet square. The main stack-room is 274 feet long by 72 feet wide and 52 feet 6 inches high. It is of seven floors, and will give shelfroom for 1,250,000 volumes. The lending department is on the basement floor, the lending delivery-room being at the bottom of the north court. It is 81 feet square and is lighted from above, and communicates directly with the lower tier of the main stack-room. On the first floor there are three large reading-rooms, a children's-room 118 feet by 42 feet; a periodical room, 118 feet by 42 feet, and a newspaper-room, 92 feet by 38 feet. Besides these three reading-rooms and the public reading-room on the upper floor there are special reading-rooms for scholars and special students on the second floor. These include a room for public documents, a room for Oriental literature, a room for sociology and economics, a room for mathematics and physical and chemical sciences, a map-room, a music-room, a Bible-room, and six special study-rooms, these being about 15 feet square. The east front of the upper floor is to be occupied with picture galleries, the Stuart room and other exhibition-rooms, which are to be freely open to the public. The rooms for administrative offices are grouped on the south side of the building. They include printing office, bindery, packing and shipping-rooms on the basement floor; receiving and checking-rooms, business superintendent's offices, on the first floor; directors' offices, order-room, catalogue-room and accession-room, on the second floor.

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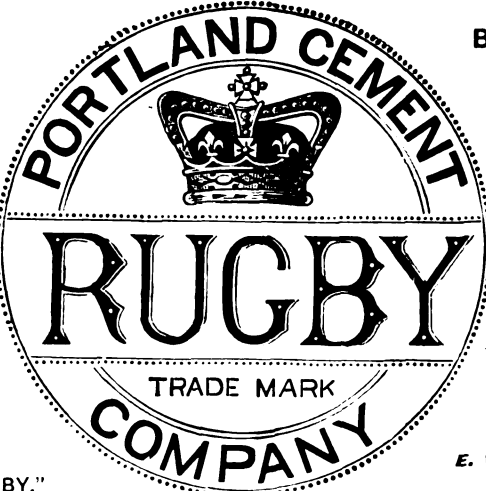
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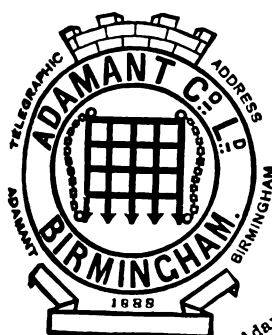
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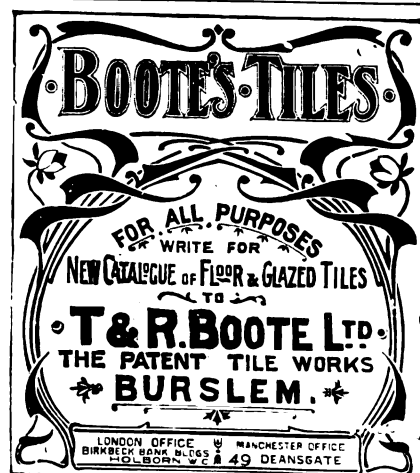
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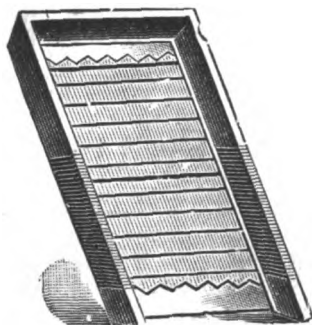
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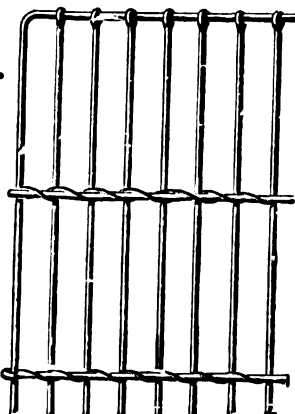
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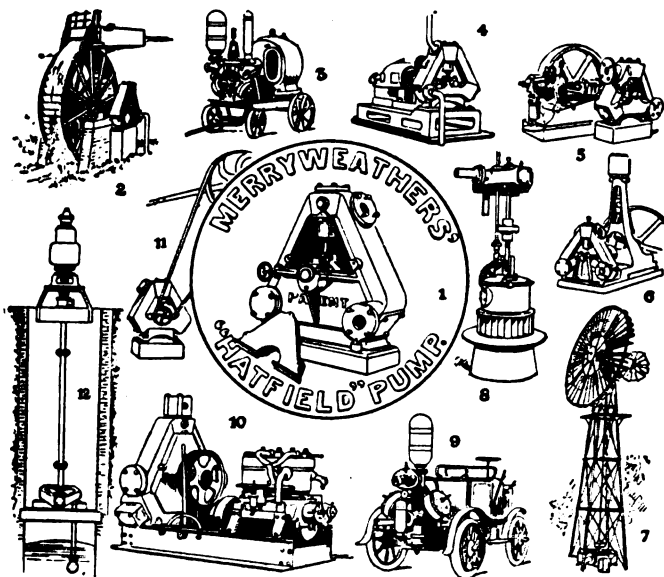
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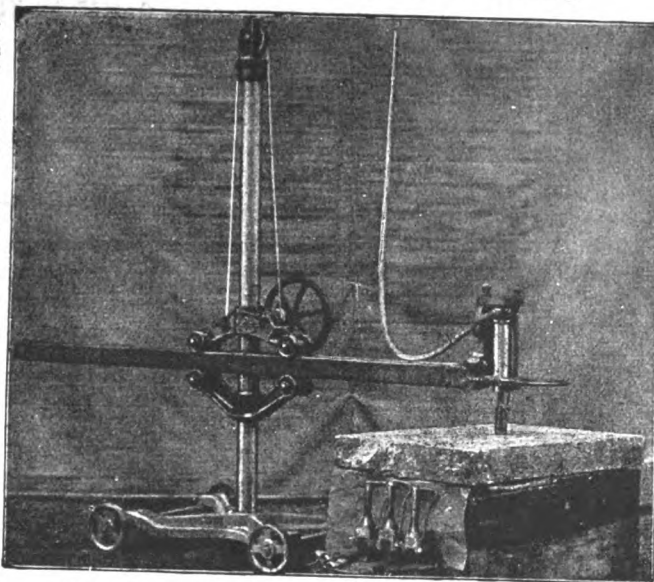
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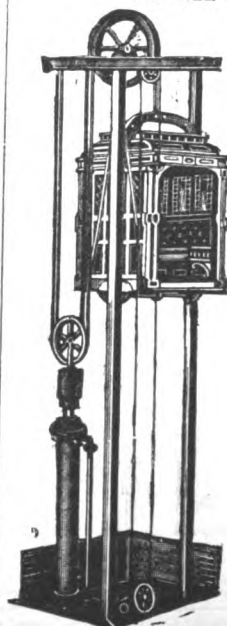
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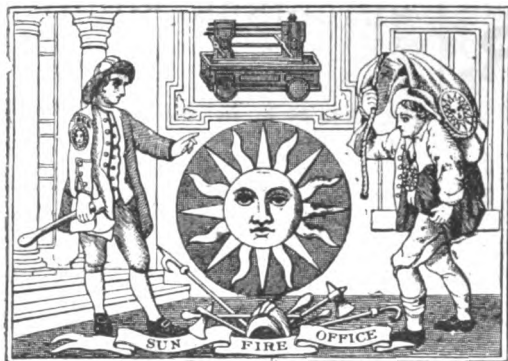
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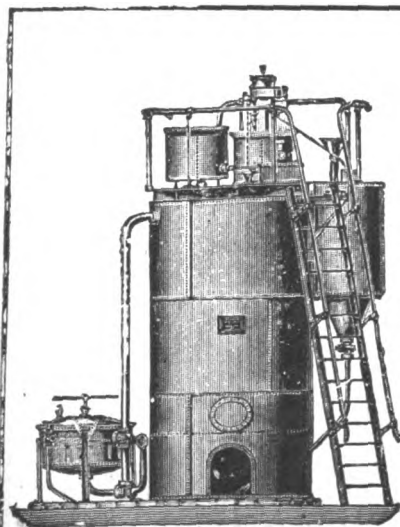
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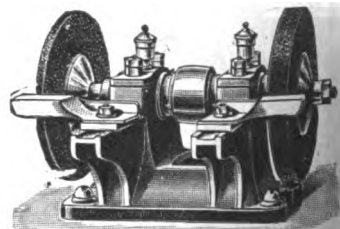
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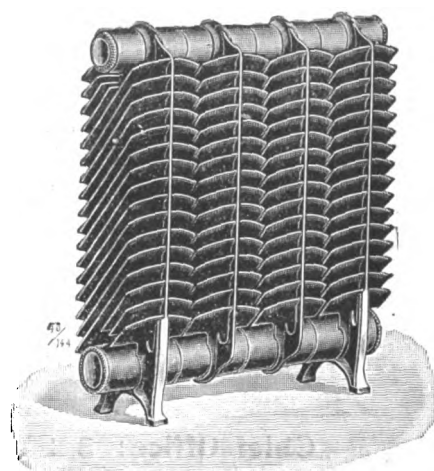
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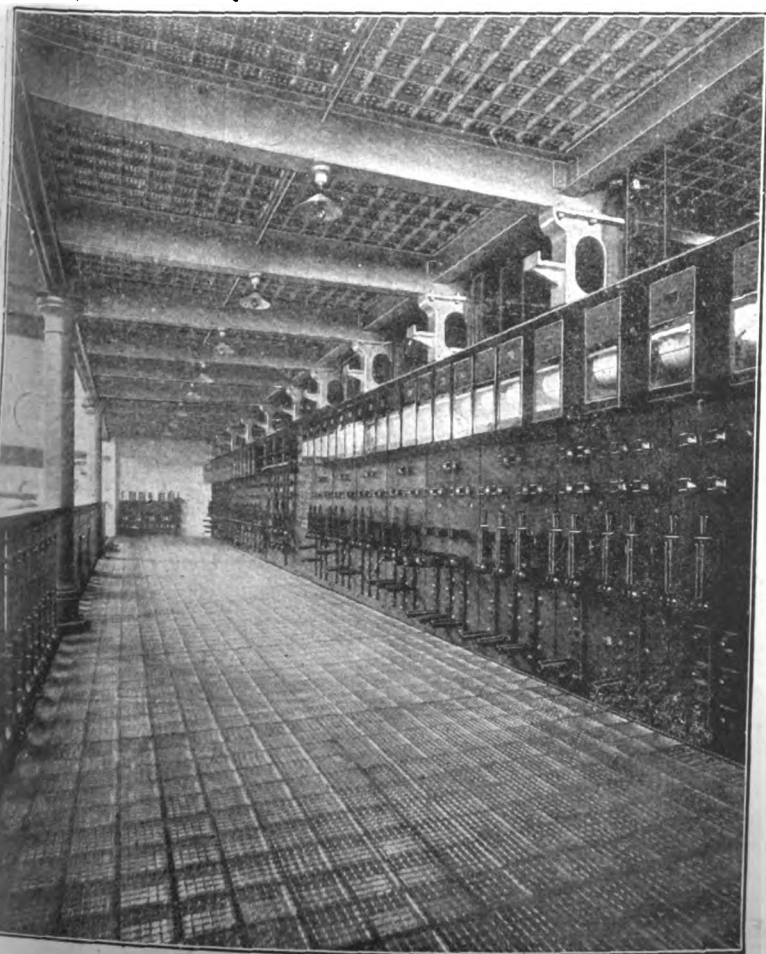
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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further

answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

TENDERS, ETC.

* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

BRISTOL.—Aug. 23.—The Bristol Corporation offer premiums of fifteen, ten and five guineas for sketch designs for residential buildings on their country estate. Limited to architects practising in Bristol. Mr. E. T. Taylor, town clerk.

MAESTEG.—Aug. 18.—For the extension of the Bethania hall and chapel. Mr. Thos. Rees, secretary, 16 Bank Street, Maesteg.

MONTEVIDEO.—Dec. 14.—La Comision Nacional de Caridad require competitive plans for new foundling hospital with approximate cost. Plans and report, under mottoes, and, in sealed envelope, name and address of competitor. The four selected plans will receive 212l. each, and will be asked to further compete. Further particulars from the Consulate-General for Uruguay, 5 and 6 Clement's Inn, Strand, W.C.

STEWARTON.—Aug. 21.—For the proposed cemetery and caretaker's house at Stewarton, Scotland. Mr. James Kerr, F.S.A.A., clerk to the Parish Council, Parish Council Offices, Stewarton.

CONTRACTS OPEN.

ASHTON-UNDER-LYNE.—For the construction of brick channels, &c., at Bardsley sewage works. Mr. H. H. Turner, surveyor, 250 Oldham Road, Waterloo, near Ashton-under-Lyne.

BARROW.—Aug. 13.—For the erection and completion of two cottages in Buccleuch Street, for the abattoir attendants. Borough Engineer and Surveyor, Town Hall.

BARRY.—Aug. 18.—For the erection of public offices in Holton Road. Deposit 5l. Messrs. Hutchinson & Payne, architects, 29 John Street, London, W.C.

BRANTHWAITE.—Aug. 13.—For the erection and completion of a branch store at Branthwaite. Messrs. W. G. Scott & Co., architects and surveyors, 2 Park Lane, Workington.

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BREAGE.—Aug. 4.—For the erection of farm buildings at Rinsey farm, Breage, Cornwall; also for the erection of a slaughter-house at Rinsey. Mr. Charles Staples, 12 Tolver Road, Penzance.

CHEPPING WYCOMBE.—Aug. 17.—For a refuse destructor, for the Corporation. Deposit 2*l*. Mr. I. J. Rushbrook, borough surveyor and waterworks engineer, 77 Easton Street, High Wycombe.

CRADLEY.—Aug. 7.—For the erection of a corrugated iron goods shed, offices, &c., on the Spinner's End goods branch, for the Great Western Railway Co. The Engineer Wolverhampton Station.

CUCKFIELD.—Aug. 9.—For lining the existing filters at Balcombe waterworks with bitumen sheeting protected by brick walls and concrete floor, for the Cuckfield Rural District Council. Mr. D. Rankine, waterworks engineer, Waterworks Offices, Hayward's Heath.

DUNDALK.—Aug. 8.—For building and completing shop and dwelling-house in Bridge Street (corner of Fair Green), and for alterations to the adjoining house. Mr. John F. M'Gahon, architect, Roden Place, Dundalk.

FAIRFIELD.—Aug. 28.—For the construction of a concrete storage reservoir at Turner Lodge, Fairfield, near Buxton, to hold 4,000,000 gallons. Deposit 2*l*. 2*s*. Messrs. Swan & Brady, engineers, Town Hall, Chapel-en-le-Frith, *via* Stockport.

HAYLE.—Aug. 4.—For the erection of stable buildings, &c., at Hallankean, Hayle, Cornwall. Mr. S. Lawrey, Helnoweth, Gulval.

IRELAND.—Aug. 4.—For the erection of open-air shelters at the Down county infirmary. Mr. D. Smith, registrar.

IRELAND.—Aug. 6.—For building a doctor's residence and dispensary for the Anamoe dispensary district, for the Guardians of the Rathdrum Union. Mr. George T. Moore, engineer and architect, 1 and 2 Fester Place, College Green, Dublin.

IRELAND.—Aug. 8.—For altering, repairing and making additions to the Coleraine Court-house (not to exceed 2,886*l*.), for the proposal committee of the County Council. County Surveyor's Office, County Court House, Londonderry.

KINGSTON-ON-THAMES.—Aug. 7.—For making alterations to two houses, Rhymney and Briarfield, Wolverton Avenue, for the Guardians. Mr. Jas. Edgell, clerk to the Guardians, Union Offices, Kingston-on-Thames.

LEADGATE.—Aug. 7.—For the erection of a dwelling-house, containing five rooms and the usual conveniences, at Pont View, Watling Street. Mr. W. B. Barron, 3 West View, Blackhill.

LLANFOIST.—For the erection of four cottages at Llanfoist. Messrs. Alfred Swash & Walter J. Prichard, joint architects, Midland Bank Chambers, Newport, Mon.

LOGIE-BUCHAN.—Aug. 4.—For the mason, carpenter and slater's work of alterations on farm steading at Rainneston, Logie-Buchan, on the estate of Esslemont. Mr. Wm. Davidson, architect, Ellon.

LONDON.—Aug. 8.—For iron staircase, verandahs, &c., to be erected at buildings now in progress at Isleworth, for the Guardians of Brentford Union. Mr. W. H. Ward, architect, Paradise Street, Birmingham.

LONDON.—Aug. 20.—For the supply, delivery and erection complete, at the depôt, Queen's Road, Wimbledon, of a cart shed, about 165 feet long by 30-feet span, with open sides and consisting of galvanised corrugated iron roofing, steel roof trusses and rolled steel stanchions. The Borough Engineer and Surveyor, Town Hall, Wimbledon.

LOSTOCK HALL.—Aug. 15.—For the erection of a school at Lostock Hall, near Preston. Deposit 2*l*. Mr. Henry Littler, architect, Preston.

LYMINGE.—Aug. 8.—For carrying-out alterations and repairs at the sanatorium, Each End Hill, Lyminge, for the Elham Rural District Council. Mr. H. Ames, surveyor, Elham.

MANCHESTER.—Sept. 5.—For alterations and additions to the Abbot Street Municipal school, Rochdale Road. Deposit 2*l*. 2*s*. The Education Offices, Deansgate, Manchester.

MANCHESTER.—Sept. 5.—For the erection of the Domett Street Municipal school, Blackley. Deposit 2*l*. 2*s*. The Education Offices, Deansgate, Manchester.

PENBERTON.—For building about 150 yards rubble fence wall round new burial-ground at St. John's Church, Penberton. The Wardens.

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PIRTON.—For a Wesleyan church to be erected at Pirtton, Hitchin. Messrs. George Baines & Sons, architects, 5 Clement's Inn, Strand, London, W.C.

ST. AUSTELL.—Aug. 17.—For erecting secondary schools at St. Austell, Cornwall. Mr. B. C. Andrew, architect, Biddick's Court, St. Austell.

ST. HILARY.—Aug. 4.—For the erection of a cattle-house at Roseudian, in the parish of St. Hilary. The Farm-house at Roseudian.

SCOTLAND.—Aug. 8.—For the mason, plumber, slater, plasterer, painter and glazier's work of latrines, shelters and dykes to be erected at Kingussie school. Mr. Alex. Cattannach, architect, Kingussie.

SCOTLAND.—Aug. 11.—For executing the mason, carpenter, smith, slater, plumber, plasterer, glazier and painterwork, electric-light wiring and fittings, electric bells and window blinds of rebuilding of the west wing of the Five Arms hotel, Braemar. Messrs. Kelly & Nicol, architects, 367 Union Street, Aberdeen.

SEAFORD.—Aug. 11.—For the erection of a boarding-house. Deposit 3*l.* 3*s.* Mr. William Lambe, Estate Office, Claremont Road, Seaford, Sussex.

SHEFFIELD.—Aug. 21.—For the work required in connection with underground conveniences adjoining the town hall in Surrey Street. Deposit 1*l.* 1*s.* Mr. C. F. Wike, city surveyor, Town Hall, Sheffield.

SHOTTON.—Aug. 11.—For the erection of coal storage bunkers, boiler seatings and coke ovens at Shotton Colliery. The Horden Collieries, Castle Eden, R.S.O.

TERRINGTON ST. CLEMENT.—Aug. 8.—For the erection and completion of a dwelling-house at Hay Green. Mr. H. T. Tilson, architect, 16 Railway Road, King's Lynn.

WAKEFIELD.—Aug. 4.—For works in connection with alterations to Wales Kiveton Park provided school. Deposit 1*l.* Mr. J. Vickers-Edwards, county architect, County Hall, Wakefield.

WALLASEY.—Aug. 17.—For the erection of public swimming baths at the Guinea Gap, Seacombe. Deposit 3*l.* Mr. W. H. Travers, engineer and surveyor, Public Offices, Egremont, Cheshire.

WALES.—Aug. 4.—For alterations to the Navigation hotel, Crumlin, near Newport, Mon. Messrs. Lansdowne & Griggs, architects, Metropolitan Bank Chambers, Newport.

WALES.—Aug. 4.—For the following works, for the Glamorgan County Council:—(1) Erection and completion of porches, folding partitions, &c., at the Cowbridge Council school; (2) alterations to the Beddau Council school, near Llantrisant. Mr. T. Mansel Franklin, clerk to the County Council, Glamorgan County Offices, Westgate Street, Cardiff.

WALES.—Aug. 7.—For the erection of a villa at Abersoch, on the Plas Llwyndu estate. Mr. Ellis F. White, architect and surveyor, 27 Bangor Street, Carnarvon.

WALES.—Aug. 7.—For the erection of a manager's house at Garth, Maesteg. Deposit 1*l.* Mr. Thomas Gibb, architect, Post Office Chambers, Port Talbot.

WALES.—Aug. 7.—For alterations, repairs, painting, &c., at 235 High Street, Dowlais. Mr. J. Llewellyn Smith, architect, Central Chambers, Merthyr Tydfil.

WALES.—Aug. 10.—For the erection of a house and surgery at Cwm, for the Ebbw Vale doctor's fund committee. Mr. Hy. Waters, architect, Beaufort, Mon.

WALES.—Aug. 11.—For the erection of hall at Aberfan, for the Methodist church. Mr. William Dowdeswell, architect, Treharris.

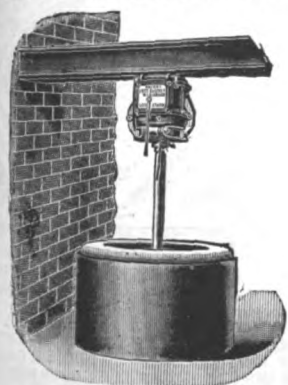
WALES.—Aug. 13.—For the erection of two houses at Farm Road, Pontllytyn. Mr. P. Vivian Jones, architect and surveyor, Hengoed, *via* Cardiff.

WALES.—Aug. 13.—For erecting a cloak-room, &c., to the Council school at Prendergast, Haverfordwest, Pembrokeshire. Mr. D. E. Thomas, 17 Victoria Place, Haverfordwest.

WEYMOUTH.—Aug. 7.—For the reconstruction of the viaduct carrying the Weymouth and Portland line over the backwater at Weymouth, and erection of new station adjacent thereto, for the Great Western Railway Co. Mr. G. K. Mills, secretary, Paddington Station, London.

WHITLEY.—Aug. 7.—For the extension of farm premises at Lane Top. Messrs. C. H. Marriot, Son & Shaw, Church Street Chambers, Dewsbury.

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Green	£2,960	1	8
Fidler, Ltd.	1,640	0	0
W. & A. Forsdike	1,580	0	0
Longden & Son	1,475	0	0
Boot & Son	1,450	0	0
Gray & Son	1,410	0	0
ASH, SON & BIGGIN (<i>accepted</i>)	1,345	0	0
Greenwood	1,342	0	0

BOURNEMOUTH.

For the erection of elementary schools in the Alma Road. Mr. F. W. LACEY, architect.

JONES & SEWARD, Westbourne, Bournemouth (*accepted*) £17,097 0 0

CHISELDON.

For erecting a pair of cottages at Middle Farm. Messrs. DREW & SONS, architects, Swindon.

Lay	£345	6	0
Leighfield	345	0	0
Tydemans Bros.	300	0	0
MOULDING & SON, Aldbourne, Wilts (<i>accepted</i>)	300	0	0

COWES.

For the construction and erection of steel bridge. Mr. JOHN W. WEBSTER, borough engineer.

Playfair & Toole	£1,612	0	0
Grace	1,600	0	0
Meador	1,588	0	0
Day	1,545	0	0
Neal, Ltd.	1,476	0	0
GOODENOUGH, Cowes (<i>accepted</i>)	1,395	15	0

DARTMOUTH.

For the erection of a water-tower and cottage residence at Parklands. Mr. E. H. BACK, architect.

Edgcumbe	£950	0	0
Watts	945	15	0
FERRIS & HAYDEN, Dartmouth (<i>accepted</i>)	920	10	0

DEVONPORT.

For the erection of administrative building at the infectious diseases hospital. Mr. J. F. BURNS, surveyor.

Pethick Bros.	£1,199	0	0
Jenkin & Son	1,094	0	0
Pearn Bros.	1,045	0	0
Pearce Bros.	1,045	0	0
May	1,027	0	0
Matcham & Co.	999	0	0
Andrews	990	0	0
Cockerell	959	0	0
Perkins	949	15	7
Stanbury	924	10	0
ROBERTS, Plymouth (<i>accepted</i>)	898	0	4

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For reconstructing and repairing open sewage channels at East Hetton.

Bevers & Clark	£229	3	11
OLIVER, Gilesgate Moor (<i>accepted</i>)	165	11	2

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OLIVER (<i>accepted</i>)	£365	0	0
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For the installation of a low-pressure hot-water heating apparatus in the Woden Road Council school.

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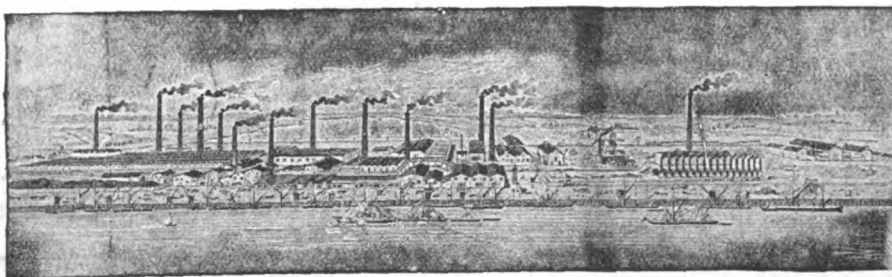
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Ellis	101 0 0
Luck	98 0 0
Hughes	97 2 6
Franks	88 10 0
Tribe & Robinson	88 0 0
KARN, Guildford (accepted)	83 10 0

B.

Blizzard	128 14 6
Foster	110 9 0
Rice	109 0 0
Tribe & Robinson	105 0 0
Franks	98 0 0
Gaze & Son	97 0 0
Luck	93 0 0
Mitchell Bros.	90 0 0
HIGLETT & SON, Guildford (accepted)	79 15 6

HEREFORD.

For the erection of sacristy and vestry. Mr. E. G. DAVIES, architect, Hereford.

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Section 2.

Taylor	£475 0 0	170 0 0
Friend	419 0 0	179 0 0
BOWERS & Co., Hereford (accepted)	400 0 0	151 0 0

For the erection of rectory at Byton. Mr. E. G. DAVIES, architect, Hereford.

Bolt	£1,300 0 0
Cadwallader	1,296 10 7
Barker & Sons	1,262 19 0
Griffiths & Mantle	1,161 0 0
Cooke	1,130 0 0
Friend	1,100 0 0
Powell	1,069 1 6
Wilks	1,030 0 0
DAVIES, Leominster (accepted)	989 18 6

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For supplying and laying of permanent way and overhead electrical equipment for $1\frac{1}{4}$ miles. Mr. A. W. Cross, engineer and surveyor.

Permanent way.

MacCormick	£40,031 13 10
White, jun.	34,281 5 1
Dick, Kerr & Co.	33,089 4 2
British Electrical Equipment Co.	32,383 16 11
Aird & Sons	32,265 7 4
Brush Electrical Engineering Co.	31,978 7 2
Griffiths & Co.	31,299 0 9
Freeman & Sons	30,936 1 1
Law	30,667 0 0
Trentham	30,428 7 9
Dobson	30,281 13 8
Holloway	29,539 18 4
UNDERWOOD & Bros., Dukinfield (accepted)	29,462 0 10

Overhead equipment.

MacCormick	6,432 8 7
Holloway	4,819 3 9
Dick, Kerr & Co.	4,695 4 0
Law	4,441 3 6
British Electrical Equipment Co.	4,158 11 10
BRUSH ELECTRICAL ENGINEERING Co. (accepted)	4,115 5 6

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Griffiths & Co.	£1,575 0 0
Kirk & Randall	1,387 10 0
E. & E. Iles	1,250 0 0
Mowlem & Co.	1,237 10 0
Docwra & Sons	1,162 10 0
Aird & Son	1,100 0 0
Nunn	1,100 0 0
Dobson	1,087 10 0
Davies, Ball & Co.	975 0 0
Anderson	950 0 0
Starkey	937 10 0
EGAN & SO: s, Manningham, Yorks (accepted)	825 0 0

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	Builders' Work.	Sanitary Engineering and Plumbing.
Doulton & Co.	£3,100 0 0	£306 0 0
Glendinning	3,060 0 0	400 0 0
Davis, Bennett & Co.	2,880 0 0	248 0 0
Winkle & Co.	2,870 0 0	245 0 0
Higgs & Randall	2,787 10 8	188 12 2
Hyde	2,545 0 0	328 0 0
Mellowes & Co.	2,519 0 0	178 0 0
Nightingale	2,450 0 0	292 0 0
Dearing & Son	2,411 0 0	235 0 0
Jennings	2,402 15 9	311 0 0
Wall	2,300 0 0	286 0 0
SPENCER, SANTO & Co. (accepted)	2,300 0 0	220 0 0
Musgrave & Co.	—	250 1 8

For improvements at the Dempsey Street school, Stepney (erected in 1882).

F. & F. J. Wood	£14,193 0 0
Todd & Newman	12,546 0 0
Gregar	12,420 0 0
Cubitt & Co.	12,071 0 0
Parsons	11,729 7 6
Symes	11,395 0 0
Killby & Gayford	11,381 0 0
Patman & Fotheringham	11,373 0 0
Perry & Co.	11,321 0 0
Lovatt	11,277 6 2
Lawrance & Sons	11,174 0 0
Lascelles & Co.	11,098 0 0
Grover & Son	11,073 0 0
J. & M. Patrick	10,802 0 0
Chessum & Sons	10,794 0 0
Treasure & Son	10,539 0 0
W. & B. H. Davey, Southend (recommended)	10,196 18 6
Architect's estimate	11,348 0 0

LONDON—continued.

For erection of school at Fountain Road, Wandsworth.

	Original Tender.	Amended Specification.
Holliday & Greenwood	£19,664 15 10	£20,870 0 0
Martin, Wells & Co.	19,551 0 0	20,567 0 0
Spencer, Santo & Co.	19,479 0 0	20,782 0 0
Appleby & Sons	19,390 0 0	21,114 0 0
Patman & Fotheringham	19,102 4 0	20,673 0 0
Lawrence & Son	19,078 17 3	20,316 0 0
Chessum & Sons	19,072 0 0	20,499 0 0
Lawrance & Sons	19,015 0 0	20,365 0 0
Barker & Co.	18,939 14 0	20,360 0 0
Hawkins & Co.	18,654 6 1	19,869 0 0
J. & C. Bowyer	18,573 15 5	19,677 0 0
Triggs	18,522 0 0	19,785 0 0
Wallis & Sons	18,477 0 0	19,570 0 0
Garrett & Son	18,438 17 0	19,642 0 0
Johnson & Co.	18,289 0 0	19,768 0 0
Nightingale	18,135 0 0	19,812 0 0
A. F. Vigor & Co., Westminster (recommended)	18,135 0 0	19,644 0 0

For alterations, &c., at the Colls Road school, Peckham.

Ford	£559 0 0
Marsland & Sons	555 0 0
Goad	535 0 0
Triggs	525 0 0
Lascelles & Co.	518 0 0
Sharpington	488 0 0
Holliday & Greenwood	485 0 0
J. & C. Bowyer	429 0 0
Galbraith Bros.	425 0 0
Tucker	421 0 0
Line, 81 Peckham Rye (recommended)	410 0 0

For new valves and grids at the Abbey Mills pumping-station.

Hathorn, Davey & Co., Ltd.	£575 0 0
Fleming & Ferguson, Ltd.	450 0 0
Yates & Thom, Ltd.	390 10 0
Thames Ironworks Co.	355 0 0
Hunter & English	305 0 0
Hunter & English (recommended)	275 0 0

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For wiring and supply of fittings for electric-light installation at the Lee Green fire station.

Hooper, Neary & Co.	£220	0	0
Defries & Co.	214	0	0
Barlow & Young	195	0	0
Johnson	183	0	0
Oliver, Clark & Co.	176	0	0
Dawson, Ltd.	173	0	0
Grant & Taylor	165	0	0
Coleby & Co.	157	10	0
Durell & Co., 58 Fenchurch Street, E.C.			
(recommended)	134	0	0

For alterations at the South-Western fever hospital.
Messrs. T. W. ALDWINCKLE & SON, architects.

W. Johnson & Co.	£2,010	0	0
Johnson & Co.	1,906	0	0
Coleman & Co.	1,848	13	4
Hyde	1,820	0	0
F. & H. F. Higgs	1,810	0	0
Barker & Co.	1,797	10	0
Reason	1,790	0	0
Martin, Wells & Co.	1,769	0	0
Nightingale	1,723	0	0
Gale	1,720	11	3
Bragg & Sons	1,707	9	4
Wall, Ltd.	1,707	0	0
Lawrence & Son	1,674	10	0
Streather	1,575	2	2
HAWKINS & Co., Westminster (accepted)	1,562	3	0

For the reconstruction of Lee and Lee Green bridges in connection with tramways.

Thorne	£4,279	4	6
Tilbury Contracting Co.	3,542	18	4
Hay & Co.	3,334	19	0
Butterley Co.	3,208	10	4
Fasey & Son	3,008	7	9
Kirk & Randall	2,981	15	8
Muirhead & Co.	2,899	18	6
Greig & Matthews, London (recommended)	2,869	9	9
Engineer's estimate	3,595	11	3

LONDON—continued.

For supplying and fixing heating apparatus required at the Cannon Street fire station.

J. & F. May	£238	0	0
Clark, Hunt & Co.	189	0	0
Deane	179	14	0
G. & E. Bradley	174	10	0
Comyn Ching & Co., Castle Street, Long Acre			
(recommended)	171	5	0

For separate entrance and offices at buildings, Stanhope Street.

Sealey	£264	0	0
Sims	155	0	0
Marchant & Hirst	130	0	0
Peattie, 18 Dorset Street, Baker Street (recommended)	118	0	0

For work and materials required in the construction of the permanent way along Green Lanes. Mr. H. T. WAKELAM, county engineer.

Brush Electrical Engineering Co.	£134,892	15	0
Blackwell & Co.	84,078	17	1
Muirhead & Co.	77,434	2	10
Turner	76,731	11	6
Law	74,645	5	10
Ewart	72,123	2	0
Underwood & Co.	70,470	9	5
Griffiths & Co.	69,810	10	10
British Electric Equipment Co.	69,155	2	0
Wimpey & Co.	68,458	0	0
Mowlem & Co.	68,300	0	0
Zadig & Co.	67,889	18	2
Adams	67,094	7	10
Ford	65,910	2	2
DICK, KERR & Co. (accepted)	65,910	2	2
Dobson	63,314	11	2

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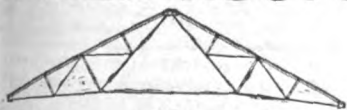
Bain & Co.	£1,885	0	0
Leather	1,654	0	0
Hawkins & Co.	1,580	0	9
W. Harbrow, Bermondsey (recommended)	1,440	0	0

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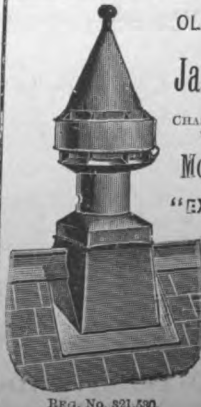
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General Reserve Fund, £200,000.

LONDON—continued.

For the erection of second portion of car-shed at Streatham.		
F. & F. H. Higgs	£7,880	0 0
Coles	7,757	19 8
Martin, Wells & Co.	7,699	0 0
Sharpington	7,658	0 0
Lovatt	7,600	0 0
Holliday & Greenwood	7,393	0 0
Kirk & Randall	7,234	0 0
Wall	7,220	0 0
F. & T. Thorne	7,169	0 0
J. & C. Bowyer (recommended)	7,145	0 0
Architect's estimate	6,900	0 0

For removing and re-erecting three iron buildings, with offices, &c., on the Franciscan Road site, foundations, drainage, &c.

McManus	£1,860	0 0
Leather	1,584	0 0
Bain & Co.	1,550	0 0
Harbrow	1,479	0 0
T. J. Hawkins & Co., Westminster (recommended)	1,447	0 0

For providing additional heating surface at the Capland Street school.

Davis	£212	0 0
Stevens & Sons	158	0 0
Smith, Gray & Co.	154	18 0
Paragon Heating Co.	154	10 0
J. & F. May	153	10 0
Christie	137	18 6
Jeffrys & Co.	137	0 0
Yetton & Co., Limehouse (recommended)	121	3 0

For improvements to heating apparatus at the Sandford Row school.

Wenham & Waters	£385	0 0
Wippell Bros. & Row	375	0 0
Stevens & Sons	367	0 0
Russell & Co.	367	0 0
T. & F. May	366	5 0
Jeffreys & Co.	349	0 0
Comyn Ching & Co. (recommended)	317	4 0

LONDON—continued.

For construction of electricity sub-station at Holborn.		
Munday & Son	£6,855	0 0
Lovatt, Ltd.	5,713	0 0
Wall, Ltd., Grays (recommended)	6,440	0 0
For alterations at the Gloucester Grove East schools.		
Martin	£1,300	0 0
Johnson	893	10 0
Spencer & Co.	791	0 0
Godson & Sons	790	0 0
Lathey Bros.	770	0 0
Lole & Co.	770	0 0
General Builders	747	0 0
Richards & Co.	710	0 0
Johnson & Co.	709	0 0
Christie, 2 Richmond Road (recommended)	622	0 0

LUTON.

For the erection of secondary school.

LEWIN & SONS, Kettering (accepted)	£7,857	0 0
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MAIDSTONE.

For the supply of condensing plant at the electricity works.

Paxman & Co.	£1,322	10 0
Allen & Son, Ltd.	1,232	10 0
Babcock & Wilcox	1,100	0 0
G. & J. Weir, Ltd.	1,080	0 0
MIRLEES, WATSON Co., LTD., Maidstone (accepted)	977	5 0

MONMOUTH.

For the erection of a residence in Redbrook Road. Mr. E. G. DAVIES, architect, Hereford.

Powell	£1,033	0 0
Pembridge	940	19 0
Morgan	925	0 0
Jones	910	0 0
Parry	899	1 8
Edwards & Son	835	0 0
SHAW, Usk, Mon (accepted)	800	0 0

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NEWARK.

For the erection of a workhouse.

Brown & Son	£3,377	0	0
SHORT, Nottingham (accepted)	3,295	0	0

NORWICH.

For the supply of boiler and fittings at the workhouse.

HEWITT, Bradford (accepted)	£1,175	0	0
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For the erection of a boiler-house.

LINCOLN, Norwich (accepted)	£980	0	0
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NOTTINGHAM.

For alterations at Bagthorpe workhouse. Mr. ARTHUR MARSHALL, architect.

Hanford	£411	0	0
Evans	397	0	0
Thompson	349	0	0
Short	312	10	0
Cuthbert	300	0	0
HUTCHINSON, Old Basford (accepted)	295	0	0

PETERSFIELD.

For work in the market square to meet the requirements of the Board of Agriculture.

Amended tenders.

Wright & Hurst	£241	11	6
Mould	236	0	0
HOLDER & SON (accepted)	229	1	5

PORTLAND.

For erecting Wesleyan Methodist church, Easton Square.

Messrs. LA TROBE & WESTON, architects, Bristol.

Trask & Sons	£7,198	0	0
Jesty & Baker	6,135	0	0
Wilkins & Sons	6,095	0	0
Lynham	6,035	0	0
Wallis, Ltd.	6,004	0	0
Hayes	5,835	0	0
Colborne	5,318	0	0
WAKEHAM BROS., Plymouth (accepted)	5,097	0	0

PRESTON.

For the erection of a secondary school for girls in Moor Park Avenue.

CROFT & SON (accepted)	£9,381	0	0
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RINGMER.

For certain works at Ringmer Council school, East Sussex.

PIPER, Lewes (accepted)	£264	0	0
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SOUTHAMPTON.

For reconstruction of the Steward's Arms, Marsh Lane.

Mr. A. A. BURNETT, architect, Southampton.

Exors. of Franklin	£2,070	0	0
Stevens & Co.	1,968	0	0
Golding & Ansell	1,940	0	0
Doggrell & Son	1,850	0	0
Wright & Son	1,798	0	0
Jenkins & Sons	1,785	0	0
Dyer & Sons	1,778	0	0
CAWTE, Southampton (accepted)	1,750	0	0

TONBRIDGE.

For rebuilding cottage hospital. Mr. J. W. LITTLE, hon. architect.

Martin & Co.	£1,845	0	0
Baker	1,762	0	0
Strange & Co.	1,731	0	0
Punnett & Son	1,697	0	0
Jarvis & Son	1,689	0	0
Jarvis	1,679	0	0
BEALE & SON (accepted)	1,594	0	0

UTTOXETER.

For the erection of a Council school for the Staffordshire education committee.

BAGNALL, Fenton (accepted)	£5,389	0	0
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For the hot-water heating apparatus.

ASHWELL & NESBIT, LTD., Leicester (accepted)	£359	0	0
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WOLVERTON.

For the erection of the Crauford Arms. Mr. CHAS. V. CABLE, architect, Hartley Wintney.

Freeman	£5,859	0	0
Barrett & Power	5,058	0	0
Henson & Son	4,476	0	0
Lawrence & Son	4,250	0	0
HAWTIN, Northampton (accepted)	3,889	0	0

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BOURNEMOUTH.

For the erection of a church in connection with the Convent of the Cross, Boscombe Park, Bournemouth. Mr. H. A. Whitburn, architect, 22 Surrey Street, London, and Woking. Quantities by Messrs. CAREW & FINN, surveyors, 22 Surrey Street, London.

Brown & Son	£10,800	0	0
Miller & Sons	10,315	0	0
George & Harding	10,263	0	0
Jones & Son	9,986	0	0
Harris & Son	9,800	0	0
Jones & Seward	9,687	0	0
Rashley & Co.	9,653	0	0
McWilliam & Son	9,329	10	0
Jenkins & Son	9,234	0	0
Knock	8,905	0	0

TRADE NOTES.

MESSRS. M'DOWALL, STEVENS & CO., LTD., Glasgow, have secured a contract from the Caledonian Railway Co. for the supply and erection of ornamental screenwork for the extension of the bridge over Argyle Street.

A new clock has just been erected in Yoxall Church, Staffordshire, by Messrs. John Smith & Sons, Midland Clock Works, Derby, which shows the time on one 8-foot dial, and is fitted with all the latest improvements and has been made to the designs of the late Lord Grimthorpe. The same firm made the clocks for the neighbouring churches of Barton-under-Needwood and Newchurch Needwood a few years ago.

MESSRS. GEORGE MILLS & CO., Globe Ironworks, Radcliffe, have received the following letter from Messrs. Wales, Ltd., Birmingham, respecting the action of their "Titan" sprinkler:—"Sirs,—We had a slight fire this morning (July 26) and your sprinkler installation acted admirably and with efficiency.—Yours truly, per pro Wales, Ltd., R. Thompson, Engineer."

THE Bournemouth Corporation having decided to instal two lifts for the purpose of carrying passengers from the cliff to the beach level, one opposite Meyrick Road and the

other by the side of Highcliffe hotel, the contract for them has been given to Messrs. R. Waygood & Co., Ltd., who erected in 1885 a similar lift for the Folkestone Lift Company, and another on the same principle also at Folkestone has been recently completed. The lifts are worked on the water-balance principle with tanks fitted beneath the cars, and sufficient water is admitted into the tank beneath the upper car to raise the load in the ascending car.

CORRESPONDENCE.

SIR,—We note with pleasure the notice in your issue of 27th ult. of the Kinnear radiator. We think it well, however, to point out an error in the statement of weight. In comparison with cast-iron, there is said to be one-fourth less weight. The statement should be that they weigh less than one-fourth.—Yours faithfully,

For ARTHUR L. GIBSON & Co.,
F. Pope.

19, 20 and 21 Tower Street, Upper St. Martin's Lane,
London, W.C. : August 1, 1906.

BUILDING AND BUILDERS.

THE Tylers and Bricklayers' Company have placed one of their almshouses at the disposal of the Builders' Benevolent Institution for the benefit of a pensioner of the charity.

THE Preston Town Council have decided to proceed with the erection of new baths. The present baths, which were erected in 1853, were condemned as insanitary and providing insufficient dressing accommodation.

THE Newbury Town Council have adopted a recommendation that they should erect a new mixed school to accommodate 624 of the older scholars. The entire cost is estimated at 9,987*l.*, of which 8,358*l.* represents the outlay on the structure.

EDMONTON District Council recently repaired their three workmen's dwellings by direct labour, and provided 35*l.* in the estimate for the purpose. This amount has been exceeded by 16*l.*, 46*l.* having been spent in utilising 5*l.* worth of material. This sum exceeds the total rent of the cottages for the year.

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CATHEDRAL SERIES.—ST. DAVIDS: THE CHOIR AND PARCLOUSE SCREEN FROM N.E.—THE LADY CHAPEL.

The London Municipal Society claim that contractors are doing work in London at a very much lower rate than the works department of the County Council. A number of undertakings are quoted for which the contractors' tenders amounted to 1,841,238*l.*, while the estimates on which the department worked came to 342,667*l.* more, equivalent to 15.69 per cent. excess over the sum for which private firms would have done the work. It is pointed out that "London will never know what it has had to pay through the London County Council works department, and that there will never be a fair test of the relative merits of contract and works committee work until the works department is forced to tender in competition with contractors for London County Council work."

The Acton Council have adopted the amended scheme for the erection of municipal buildings at a cost of 35,000*l.* The architect, in submitting this schedule of accommodation, states that the estimate of cost works out at just under 35,000*l.*, if cubed at 1*s.* 4*d.* per foot, which is the figure the original scheme worked out at, priced on the lowest tender received. But the committee are of opinion that if the buildings are finished in a suitable manner without any unnecessary elaboration, the total cost of the buildings would probably be under the amount named. The present intention is simply the erection of the municipal offices and council chamber, but there is ample room left for the erection of a town hall as a separate building at some future period should the Council desire it.

The works committee of the London County Council in their half-yearly return show the financial result of works

completed by them during the six months ended March last. The statement covers seventeen works, and although the cost in two cases has exceeded the final certificate, the net balance of cost below certificate value is 52,589*l.*, the items being as follows:—Final certificate, 338,239*l.*; actual cost, 285,649*l.* In the two cases where the amount of cost is above the final certificate the excess only amounts to 335*l.* The turnover of the department for the year 1905-6 was 650,000*l.*, and the number of estimated works referred to the committee for execution and not yet included in the half-yearly statements of completed works submitted to the Council is thirty-six, representing an estimated expenditure of approximately 1,456,000*l.* In addition, works to the estimated value of 20,000*l.* are in course of execution on the basis of actual cost. On the jobbing works reported upon, there has been a saving of 2,037*l.* on works estimated to cost 32,308*l.* The chief saving mentioned in the present statement has occurred over the work connected with the formation of the new street from Holborn to the Strand and the construction of the tramway subway.

ELECTRIC NOTES.

A LOCAL GOVERNMENT BOARD inquiry was held at the Guildhall, Derby, by Mr. J. Tulloch, in respect to an application by the Corporation for sanction to borrow 8,490*l.* for the purposes of electric lighting. The intention is to light Upper Dale Road from Normanton hotel to Cavendish hotel, along which road electric tramways have been constructed, in a similar way to that in which other tramway routes are illuminated.

The West Ham Corporation have decided to apply to the Local Government Board for sanction to borrow 75,651*l.* for their electricity undertaking. Some time ago an application to borrow 77,000*l.* was made, and at the inquiry the inspector elicited that the proceeds of a previous loan had been diverted. The application for 77,000*l.* has now been withdrawn in favour of one for 75,651*l.*, which sum is made up of 58,017*l.* for electrical purposes, and of two sums—4,308*l.* and 13,326*l.*—"excess expenditure" at the Abbey Mills and the Canning Town generating stations.

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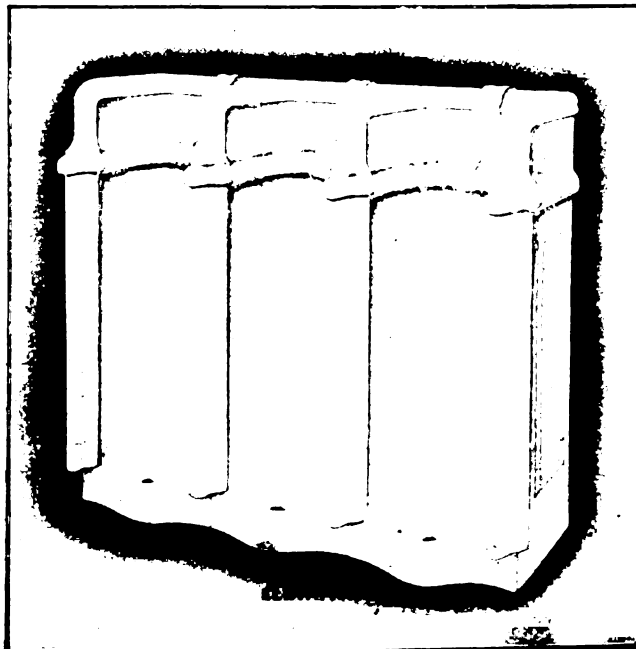


Figure 1502.—SEMICIRCULAR BACK URINALS.

London Offices & Showrooms: 2 & 3 NORFOLK STREET, STRAND, W.C.

DURING the year ended March last the London County Council's tramways on the south side of the Thames earned 782,210*l.*, 626,860*l.* being the receipts from the electric cars and 155,350*l.* from the horse cars. The working expenses amounted to 361,755*l.* The gross surplus of receipts over expenses was 220,454*l.* Debt charges amounting to 174,863*l.*, and a provision of 8,000*l.* for income tax, had been set against the 220,454*l.*, and 35,000*l.* had been transferred to the renewals reserve fund, leaving a net surplus of 2,319*l.* to be carried to the appropriation account. This compares with a net surplus of 7,054*l.* in 1904-5, when the same amount was set aside for renewals, and other special charges were made. The total receipts had been 100,114*l.* more than in 1904-5. The total number of passengers carried during the year was 183,512,421, and the number of car miles run was 15,578,793. The number of passengers is 18½ millions more than last year.

THE tramway committee of Edinburgh Town Council have considered offers from companies for the construction and working of tramway lines in the city. The committee unanimously approved generally of the policy of utilising outside companies as pioneers in erections where the present lessees are not prepared to go, but in order to have before them detailed information to enable them to judge of the matter fully they appoint a sub-committee of six, along with the town clerk, to consider and bring up a report upon the subject of the lines deemed necessary for linking up the present system, including the lines recently authorised, and for providing lines in or in connection with the districts around the city, and with that view to confer with any outside company or companies or with local authorities or other parties interested, and to ascertain terms upon which this might be arranged.

A SPECIAL correspondent of the *Pall Mall Gazette* says there are some extremely interesting developments taking place in Manchester in regard to the supply of electric current for power purposes from the Corporation generating station. The great locomotive building and engineering firm of Messrs. Beyer, Peacock & Co., Ltd., at Gorton, have been experimenting for some time past with a dual power supply—one obtained from a steam plant of their own, and the other, of 500 horse-power capacity, obtained by the transformation of high current got from the Corporation to

a serviceable voltage. The firm now have found the use of the Corporation current so economical that they have decided to abolish their steam plant entirely, and to take all their power from the Corporation. Other great firms are taking large supplies of electrical current from the Corporation. The Manchester electricity department is already far and away the biggest of its kind in the country. It sold seven million units for power purposes last year, and had a total output of over forty million units, which is larger than the output of any two other similar undertakings in the country, leaving out Liverpool (32 million units) and Glasgow. In the present year the extra demand for power has made already such a huge jump that the figures of last year are almost useless for comparison.

VARIETIES.

THE Kent education authority propose to erect a large secondary school for the education of girls.

THE first sod was cut last week on the site of new sewage works which are to be constructed for the Huddersfield Corporation at Cooper Bridge at a cost of 150,000*l.*

THE Herts County Council has decided to take over and maintain at the county's expense the obelisk at Barnet, which was erected in 1740 to commemorate the battle of Barnet, fought in 1471.

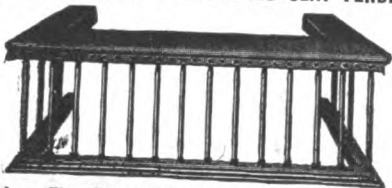
WORK in connection with the Avonmouth new dock has so far advanced that the building of the lighthouses is to be put in hand forthwith. The principal lighthouse will be on the north pier at the entrance to the dock.

M. MONOD, a French engineer, has prepared plans for the construction of a tunnel through Mont Blanc. The cost of the undertaking is estimated at 2,000,000*l.* Geneva will contribute 400,000*l.*, and the remainder will be guaranteed by French and Italian financial establishments.

THE Greenwich Borough Council at its next meeting will discuss a proposal to introduce ozone, electrically produced, into the sewers, together with sufficient movement and regulation of the sewer air by means of electric fans with a view to its purification.

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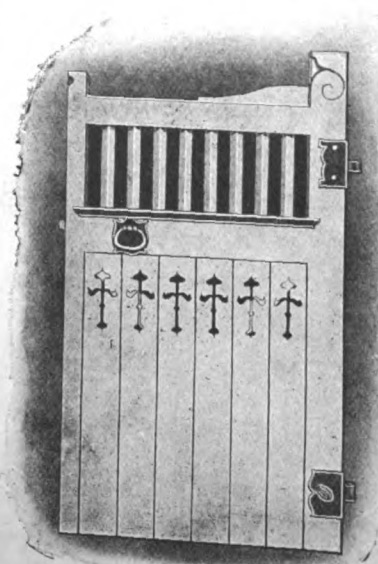
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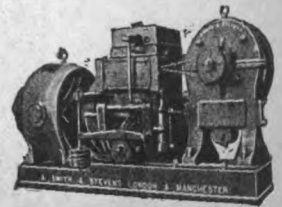
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MESSRS. HERBERT WALKER & SON have been instructed by the Louth Town Council to prepare a report as to the best system of drainage for the town. The fee is to be 25 guineas, the same to merge in the commission in case they are instructed to carry out the scheme.

THE General Post Office having offered the Brighton Town Council the sum of 49,000*l.* for the Brighton municipal telephone undertaking, the offer has been accepted. The total loss on the transaction to the ratepayers will be 2,500*l.*

THE annual report as to the progress of the Ordnance Survey mentions that three complete survey sections, composed of officers, non-commissioned officers and men of the Royal Engineers, are held in readiness for service with an army in the field to carry out such surveys as may be considered necessary during the progress of a campaign.

THE Court of Common Council have referred for consideration a letter from the London County Council asking whether, in the event of the Council agreeing to promote legislation to enable it to make regulations to govern the breaking up of streets, the Corporation would be prepared to support the Council in its application.

THE subways provided in the City of London for pedestrians have proved a failure, statistics showing that, except for passengers going to and from the tube stations that are concentrated at the point, the Mansion House subway is deserted. The Corporation has accordingly decided not to go forward with the construction of the contemplated subway under Liverpool Street.

THE Staffordshire education committee have decided that as the Duke of Sutherland has stated that he was not prepared to offer Trentham Hall to the county as a training college for women teachers, and having regard to the information contained in the director's report, they will not accept the offer of the hall as a college for technical and higher education.

At the Manchester town hall on the 31st ult. Mr. A. A. G. Malet and Dr. T. Thomson, Local Government Board inspectors, conducted an inquiry into the application by the City Council for sanction to borrow the sum of 83,737*l.* for the purposes of sewage disposal, the purchase

of land and the construction of second-contact bacteria beds in the township of Davyhulme.

THE Lincoln City Council, at a meeting on Friday, the 3rd inst., will consider two recommendations from the waterworks committee, namely, the construction of a water tower in the Above Hill district, capable of holding 300,000 gallons, at an estimated cost of 7,000*l.*, and the building of a new covered reservoir, capable of holding 8,000,000 gallons, on the top of the Cross o' Cliff hill, at an estimated cost of 31,500*l.*

A MOTOR-DRIVEN street sprinkler has been placed in service by the Metropolitan Park Commission of Massachusetts. The sprinkler tank is carried on a 3-ton Atlas motor truck equipped with a 24 h.-p. two-cylinder opposed gasoline engine, that carries fuel supply for 200 mile runs. The motor-driven sprinkler has demonstrated its ability to do as much work as three or four sprinklers drawn by horses.

THE South-Eastern Railway Company at their half-yearly general meeting, on the 31st ult., authorised the directors "to apply so much as may be necessary of the reserve fund to the payment of this company's proportion of the payment of 20,000*l.* to Mr. Cyril Maude in respect of his and other interests in the Avenue Theatre, and to any other payments in connection with the Charing Cross Station roof accident."

MR. HARRISON, borough surveyor to the Southwark Borough Council, has reported that the number of vehicles passing the Elephant and Castle during two periods of observation was on an average 2,154 per hour, or nearly forty a minute. The Council desire to construct subways at that point for the convenience of pedestrians. They have asked the County Council to contribute two-thirds of the entire cost, which is estimated at 13,000*l.*

MR. ARTHUR BAILY HAMMOND has been elected the master of the Carpenters' Company for the ensuing year. Mr. William Robertson, Lieut.-Colonel A. C. Preston and Mr. Maurice H. Pocock have been chosen as wardens. The Joiners' Company have elected the following officers:—Master, Mr. George Evan-Evans; upper warden, Mr. Benjamin Charles Turner; renter warden, Mr. Arthur Bedford; and clerk, Mr. Henry L. Bedford.

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SAMPLES ON APPLICATION.

THE memorial-stone laying ceremony of the Hertford Baptist church took place on the 26th ult. The church, which has been designed by Messrs. G. Baines & Son, 5 Clement's Inn, W.C., is being erected at a cost of 2,251l. by Messrs. F. Wood & Co., of Luton. It will accommodate about 471 persons. The building is designed in Late Gothic, freely treated. Vestries and offices are included in the scheme, also alterations to the existing school.

THE Secretary of State addressed last month a letter to the Birmingham town clerk, asking for the views of the Council as to the desirability of applying similar provisions to the rest of the country as were already in force in the City of London, enabling coroners to hold inquests into the origin of all serious fires. The Birmingham watch committee have instructed the town clerk to report in favour of the scheme.

THE Coventry Corporation require an increase of about 200,000 gallons a day to their present water-supply. Mr. C. Hawkesley, whose firm carried out the Whitley waterwork scheme for the Corporation, considers that an additional supply might be sought for in the neighbourhood of Weston-under-Weatherley. He anticipates that at least 1,000,000 gallons of water per day might be obtained, the distance from Coventry being about seven miles.

THE convener of the municipal buildings committee of the Glasgow Corporation, in answer to a question as to the total amount expended upon the repair and renovation of the Municipal Buildings up till May 31, 1906, how many years the contractors had been engaged in the work, and when it was expected the work would be finished, stated that the sum expended had been 25,500l. The contractors had been engaged in the work for five years, and there was a likelihood of it being completed within the next three months.

THE Bridlington Town Council have instructed Mr. Bowcroft, engineer, Hull, to prepare alternative plans and specifications for pumping machinery to provide for steam and suction gas-driven plant at an estimated cost of 8,500l.; also for deepening the well at the higher waterworks at an estimated cost of 650l. The borough engineer has been instructed to prepare plans and specifications of the engine-house and boiler-house at the higher works at an estimated cost of 2,350l.

THE Secretary of the British Iron Trade Association in his annual statistical report on the home and foreign iron and allied industries for the year 1905 records an improvement of British trade in almost every particular. Our production of pig-iron, Bessemer and open-hearth steel, finished iron and tinplates materially increased, and in the more important branches of the industries dealt with the output of materials exceeded that of any previous year. Our iron and steel imports in 1905 were the largest on record. The home consumption of iron and steel in the United Kingdom continues to increase.

THE Surrey County Council on the 31st ult. received the report of the county surveyor on the result of the experiments—conducted at a cost of 2,000l.—to grapple with the motor dust nuisance. On the whole, he said, they had not been satisfactory. Tarmac, aconia, and tarring the roads had been tried. The last appeared to be the best and most economical method. "I think roads through the country, such as the Portsmouth Road," said the surveyor, "will soon become locomotive tracks, and, apart from the intolerable nuisance caused by dust, the roads will be unsafe for the cars themselves, and absolutely dangerous for every other kind of traffic."

COLONEL W. R. SLACKE, an inspector appointed by the Local Government Board, held an inquiry at the public buildings, Oldbury, on the 30th ult., into the application by the Oldbury District Council for sanction to borrow 38,300l. for the improvement and extension of the Oldbury sewage-disposal works, including the execution of works in the Rowley district. Professor Frankland, in his evidence, said the Oldbury sewage was unique in the whole of the kingdom. It was very difficult to deal with because a large proportion of the sewage was made up of chemical trade waste, which was very dangerous to the bacteriological system. The sewage must be dealt with upon special lines, and this necessitated a considerable outlay. Experiments had been made since 1903, and the present system was considered to be the best.

THE ceremony of laying the foundation-stone of the new Tooting baths for the Wandsworth Borough Council took place on Saturday, the 28th ult., in the presence of the councillors and invited guests. The chair was taken by

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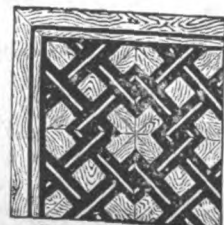
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Surgeon-Major Mark Robinson, and the stone was laid by the Rev. J. H. Anderson, M.A., rector of Tooting and ex-mayor of the borough of Wandsworth. Short speeches were also made by Councillor Alexander Glegg, J.P., the mayor, and by Sir Henry Kimber, the local member of Parliament. The architect is Mr. Henry Druery, M.S.A., and the consulting engineer, Mr. E. R. Dolby, M.Inst.C.E., and the cost of the scheme will be about 6,250*l*. The accommodation consists of eight first-class spray and twelve second-class spray baths for men, and eight second-class slipper baths for women.

THE eighteenth report issued by the Labour Department of the Board of Trade on strikes and lock-outs and on conciliation and arbitration boards in the United Kingdom deals with 1905, in which year 358 disputes were recorded, compared with 355 of 1904. The number of workpeople affected showed a slight increase, being 93,503 against 87,208 in 1904, but was lower than in 1905, or any year for which statistics exist. Nearly two and a half million working days were lost as a result of the disputes, of which about one-half were accounted for by the mining and quarrying trades. Questions of remuneration were the most important causes of disputes. The year being one of improving employment, the proportion of disputes arising out of demands for advances of wages showed an upward tendency in 1905. The results of the disputes of the year were, on the whole, in favour of the employers. Most of them were settled by the parties themselves or their representatives. In 1905 the various boards of conciliation and arbitration are known to have settled 839 cases, in very few of which a cessation of work took place.

THE Bill promoted by the London County Council to prohibit the erection of buildings upon a number of open spaces in London in private ownership came before the committee of the House of Commons which deals with unopposed Bills on Monday. Mr. Browne, the agent for the London County Council, explained that this was the third attempt with a measure of the kind. First the Council sought to make the Bill compulsory, but this failed without reaching committee. Then the next session another Bill contained a schedule of all such open spaces in London, and this was circulated among

owners with the intimation that if they wished to have their land struck out of the schedule, excluded it should be. A considerable number did express such a wish and the Bill was amended accordingly. A committee of the House of Lords, however, decided that it was not sufficient that an owner had not expressed dissent; there must be proof that he assented. The County Council, therefore, presented the present Bill, which contained a schedule of 68 gardens, squares or enclosures out of a total of some 400 in London, and upon these patches of land each owner had assented to a Parliamentary enactment forbidding the erection of buildings of any kind. Additions might be made hereafter in another Bill, but meanwhile every owner had consented to his property being scheduled. Formal proof being given, the Bill was ordered to be reported to the House for third reading.

THE Royal Commission on the working of motor cars, in their report dealing with the question of the best type of road, say that, generally speaking, the evidence suggests that the best type of macadam would probably be found to make the most effective and economical road for all kinds of traffic, including both heavy and light motors. Such roads should be made with solid foundations and surfaced with granite or similar hard stone, the binding material being of screened gravel or chippings of the stone used, and being properly rolled in. Roads so made would be able to carry all ordinary heavy traffic, and would produce far less dust than the average principal country roads of to-day. The system of armouring a metalled road surface with stone blocks, known in Germany as "Kleinpflaster," and in Liverpool as "Random setts," was well worthy of careful consideration by road authorities. One thing appeared to be certain, that in order to make the roads more suitable for the traffic of the present day and to maintain them, a considerable outlay was required. As to road administration, the Commissioners express approval of a proposal to devote revenues derived from motor cars to the improvement of roads, and express the opinion that increased license duties should be separately administered by a central department for road purposes, which should make grants to local authorities for road construction and for the reduction of loan liabilities.

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DUST PREVENTION ON ROADS.

THE surveyor to the Lancashire County Council, Mr. W. H. Schofield, has prepared a preliminary report on experiments in the prevention of dust which he has submitted to the main roads committee. He points out that "we have neither plant nor workmen directly under our control, and if we were either to purchase plant or employ men directly the grant of 500*l.* made by the County Council would quickly be exhausted, possibly on one or two experiments which might prove abortive. I am therefore forced to confine the expenditure to the trial of materials which have been placed on the market. The experiments which have been conducted throughout England can be classified under three heads:—(1) Palliatives, of which westrumite, akonia, dustroyd, &c., are perhaps best known; (2) painting the road surface with tar preparation; (3) some form of tar macadam or asphalte." He describes experiments made with each of these, and says:—

"Summarising the information which has been obtained up to the present, the use of palliatives such as westrumite, akonia, dustroyd, &c., would entail an additional expenditure of approximately 40*l.* per mile, and as we have 472 miles of macadamised main roads the additional cost to the county would be 18,880*l.* per annum. There are also 957 miles of macadamised secondary roads, which at 40*l.* per mile would mean an additional cost of 38,280*l.* The total additional cost of main and secondary roads together would therefore be 57,160*l.* per annum, and this would leave untouched a very large mileage of district roads, some of which are of considerable importance. The chief advantage of the use of palliatives is that they are generally easily applied, and long lengths of roadway can be dealt with quickly. Repeated applications are necessary, and there is no increased life given to the road to any appreciable extent. Tar painting can only be done successfully in dry warm weather; it is a comparatively slow process, and even if economical it would hardly be practicable to apply it to such a length as 1,429 miles of main and secondary roads. Again, to convert 1,429 miles of main and secondary roads to tar macadam is a task which could only be done gradually, and which must, for financial as well as for practical reasons, be spread over a very considerable number of years."

A BUILDER'S CHALLENGE.

At the last meeting of the Southampton Town Council a letter was read from Mr. John Smith, Avenue House, Southampton, to the Mayor. He said:—"I am very dissatisfied with the treatment I have received from your Corporation for several years past. I believe I have been served with something like forty or fifty summonses since the new by-laws came into force. In my opinion most of these were quite unwarrantable, and only issued to cause me annoyance, and to give the public a bad impression of my work. The last fourteen were of a most trivial character, and eight or nine of these were issued without any permission from your Council. The town clerk reported to the magistrates—no doubt to further prejudice my case—that the works committee wished him to say that I gave them an inordinate amount of trouble, a statement I think you will say was most unfair. I have been under the impression for a very long time—rightly or wrongly—that one member at least of the works committee has been treating me unfairly, and that he has seized, in my opinion, every opportunity to give the Corporation an unfavourable impression of me and my buildings. I should be extremely obliged to you if you can see your way to have the whole matter inquired into, because, if I have been doing bad work, it is only right for the public to know it, but if it is better done than the by-laws require, they should know this also. I beg to make the following offer:—If your worship would kindly appoint one—or more—independent surveyors to examine all the buildings for which I have been summoned, and if he—or they—should find any of them that I cannot prove to be worth 100*l.* at least more than a similar house I am allowed to build which shall strictly comply with the by-laws, I will pay to the unemployed fund of this town 100*l.* for each of such houses. I should be glad if this letter can be read at your next Council meeting, as well as at the works committee."

The town clerk said information was laid in Mr. Smith's cases as in every other case.

It was resolved that the letter should lie on the table.

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NOVEL TESTS OF ROAD MATERIAL.*

THE old idea that any stone was good enough to build a road of has been replaced by the knowledge that rocks, even of the same type, vary within wide limits in their physical properties, some of them being quite unsuited for road building. It is evident that in order to keep a road surface compact and in good order, not only must dust be continually worn off to take the place of that removed by various agencies, but also the dust which has formed must be capable of forming a bond between the larger stones which make up the aggregate.

The first attempt to develop a test for cementing value was made by L. W. Page in 1893, working in co-operation with the Massachusetts Highway Commission. In the earlier attempts, the fine dust which was worn off in the abrasion test, and which had passed a 100-mesh sieve was tempered with water and test pieces of varying sizes and shapes were moulded. It was found that neither compression nor tension tests gave satisfactory results, and the method finally adopted consisted in moulding test pieces in a cylindrical die under a definite pressure. The test pieces which were finally adopted were 25 mm. in diameter and 25 mm. high. These little cylindrical briquettes, after being thoroughly and carefully dried, were broken under the impact of a 1-kg. hammer falling 1 cm., the blow being repeated until failure occurred. The details of the method and the machine used have been published in several places and need not be repeated here. In later work the practice of using the dust from the abrasion test was discontinued, and a definite quantity of the stone was ground to a fine powder in a heavy iron ball mill. The fine dust resulting from this grinding was passed through a 100-mesh sieve and the test pieces moulded as described, a hydraulic press being used to apply a definite load at a definite rate.

In the earlier practice it was the custom to make a re-cementation test. The fragments of the briquettes from the cementation test were ground, again mixed with a definite quantity of water and immediately remoulded into briquettes.

* A paper read before the American Society for Testing Materials by Mr. Allerton S. Cushman, Assistant Director, Office of Public Roads.

This was done on the theory that the rock-dust on a road surface is continually being cemented, broken up and re-cemented under traffic. A very large number of tests showed that the re-cementing values in by far the larger number of cases were smaller than the corresponding cementing values. There were, however, a number of cases in which the reverse took place. This is shown in Table 1, in which the cementing and re-cementing values of a number of rock species are compared :—

Table 1.—Comparison of Cementing and Re-cementing Values.

Name.	Cementing Value.	Re-cementing Value.
Diabase (trap)	110	89
Ferruginous limestone	158	72
Dolomitic limestone	59	42
Novaculite (chert)	24	18
Limestone	95	29
Dolomite	32	23
Sandstone	54	23
Diabase (trap)	49	44
Limestone	8	13
Gravel	11	13
Limestone	22	34
Limestone	110	126
Dolomitic limestone	22	30
Hornblende schist	7	9

These anomalous results called for a thorough investigation of the whole question. As it is well known in clay working that the soaking and kneading of a clay for protracted periods increases not only the plasticity, but the binding power, it was suspected that the prolonged action of water on fine rock dust might well increase the binding power, at least up to some maximum value. Investigations were at once begun, to see if the underlying cause of the cementing power could be discovered. It is sufficient to say here that the conclusion was reached that the rock powders which have binding power invariably undergo decomposition under the action of water, the decomposition products forming soft more or less adherent films on the surface of the particles. On drying out this adherent bond locks the particles together. In the case of clays this bond is usually very strong, while with rock dust it is extremely

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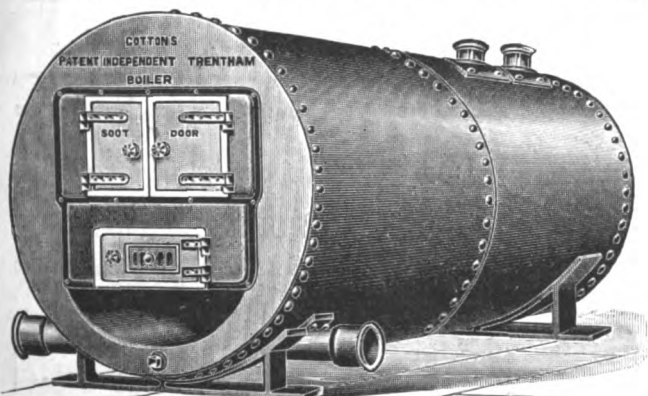
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variable, ranging from those which yield briquettes that break on the first blow to those which will sustain hundreds without failure.

After the observation had been made which led to the conclusion outlined above, it became evident that a modification was necessary in the manner of making the briquettes for the cementation test. Since the bond is developed under the prolonged action of water, it is manifestly unfair to wet the rock dust and immediately mould the test pieces. Moreover, as the action of water begins at once, and according to the laws of physical chemistry, it is more rapid at first, slowing down gradually as the point of completion of the reaction is approached, it is apparent that considerable errors in the results may be occasioned by small variations in time after the wetting of the dust takes place until the briquette is moulded. It will also be shown that with nearly all materials the amount of working or kneading which is done upon the wet mass will effect the softening of the particles, and hence the strength of the bond. These variations were sufficiently large in some cases to account for the anomalous results in the cementation and recementation tests; hence the recementation tests were immediately given up as being of no value, and methods were devised by which the cementation test was improved.

The finely ground and sifted rock dusts were mixed with a sufficient quantity of water, and were worked and kneaded until an even consistency of stiff dough was obtained. From these doughs series of briquettes were made at intervals and tested. There is invariably a rapid rise in binding power in the newly-made doughs, and after the lapse of twenty-four hours the value has, for the purpose of the test, become practically constant. This effect is, of course, more apparent in materials of high cementing value than in lower ones. Numerous experiments have shown that with powders, such as fine sand, which have no particles of a colloidal nature and therefore no binding power, soaking or kneading will not develop the slightest increase. In carrying out the cementation test the doughs were invariably aged for at least twenty-four hours, and the workman was trained to knead the dough always in the same manner for about the same length of time. Careful attention to these details resulted in a great improvement in the value of the test, both in a lessening percentage of

variation in different test pieces of the same series, and also in the agreement of the tests with the results of service.

Rocks are far from being homogeneous materials, and in addition the cementing power itself is such a variable quantity that it may be said that the test has served its purpose if it does no more than distinguish high binding material from that which is only fair, and this in turn from that which has little or no binding power.

Further experiments which were undertaken a little later showed that the binding power is still more increased if the dough or paste of rock dust is kneaded or worked by hand. This is plainly shown by the results obtained on a sample of dolomite, which is celebrated as a binding material in the locality in which it occurs. The most marked characteristic of this rock is the way that its binding power increases after it has been on the road for some time. The results shown in Table 2 were obtained by mixing the sifted dust with water and moulding briquettes of the paste at separate intervals; finally a new lot of the dust was made into a paste and well kneaded by hand for one hour.

Table 2.—Effect of Age of Rock Dust Paste.

	T.me.	Cementing Value.
At once	.	16
Dough 4 hours old	.	50
" 24 "	.	81
" 72 "	.	79
" 96 "	.	77
" 120 "	.	79
" 144 "	.	83
" 8 days old	.	81
" kneaded 1 hour	.	190

It now became apparent that a system of wet grinding would develop much higher values than could be obtained by grinding the sample dry and subsequently mixing with a given amount of water. In order to investigate this point a series of experiments was made in which kilogram charges of rock dust were ground with approximately 20 per cent. by weight of water in a ball mill for three hours. Without exception, the binding power has been increased by this method of procedure, as is shown in Table 3:—

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Table 3.—Relative Cementing Value of Various Rock Samples when Ground Wet and Dry.

Kind of Rock.	Dry Grinding.	Wet Grinding.	Increase.
Chert	6	23	17
Dolomite	28	31	3
Dialase	15	121	106
Sandstone	25	78	53
Limestone	9	28	19
Basalt	128	500	372
"	12	125	103
"	15	25	10
"	21	421	400
Sandstone	61	174	113
Gneissoid granite	1	35	34
Dolomite	32	174	142
Slate	14	43	29
Gneiss	2	52	50
Dolomite	13	43	30
Chert	1	22	21
Hornblende granite	1	29	28
Granite	1	53	52
Chert	12	106	94
Dolomite	5	48	43
Dolomitic limestone	2	18	16
Syenite	5	20	15
Dolomitic limestone	6	55	49
Limestone	17	55	38

It has been shown in previous publications that the binding power of rock dust depends upon the decomposition of the mineral constituents of the rock under the action of water. The decomposition products which are formed principally as films on the surface of the particles may not invariably cause a strong bond of cementation, as they are not all alike in this respect, but wherever a bond is formed it is certain that more or less decomposition has taken place. In view of this it is quite apparent that the effect produced by kneading and wet-grinding is due to the increased action of the water. Under the action of iron-shod traffic a road surface is frequently being acted on by a species of wet grinding, and it is precisely for the reason that automobile traffic has no such action that a new problem has arisen in highway maintenance. The action of water under the roller in aiding the formation of the original bond is well known to engineers, and in macadam construc-

tion the roadway is generally liberally sprinkled while the final consolidation is going on. It would appear from what has been said that in the case of most rocks the more wet rolling they are subjected to the better result.

Lately porcelain pebble mills have been substituted for the heavy cumbersome iron ball mills in carrying out the cementation test. At first some difficulty was experienced in grinding up the material with water to the maximum cementing values obtained in the iron mills. As now carried out the rock dust which has been ground dry in a disk grinder to about 8 to 40 mesh size is transferred to a porcelain pebble mill with sufficient water to make a slip rather than a paste. The mills are about 8 by 10 inches internal dimensions, and are capable of grinding about 1.2 kg. of material. Four kilograms of flint pebbles are used in assorted sizes ranging from about the size of a bantam's egg to that of a boy's playing marble. The mills are revolved at the rate of 50 r.p.m. for four hours. At the end of this time the slip or slime is transferred to a pan and quickly dried to the consistency of a paste suitable for the moulding of briquettes. The great ease with which a large battery of these small mills can be worked at the same time makes it possible to carry on both the routine tests and investigation work with much greater facility.

The latest experiments which have been made have developed a field of investigation which promises to be of great interest both on the theoretical and practical sides. It appears that the addition of lime or limestone will greatly increase the cementing value of an acidic rock like granite.

The results that are shown in Table 4 were obtained by mixing together equal quantities of limestone and granite rock powders of known cementing value and grinding the mixture with water:—

Table 4.—Cement Values of Mixed Rock Dusts.

Limestone.	Granite.	Combination.
20	6	82
26	7	53
22	9	56
13	10	22
27	3	110
26	7	38

JENNINGS' PATENT "TIP-UP" AND LIFT-OUT LAVATORIES

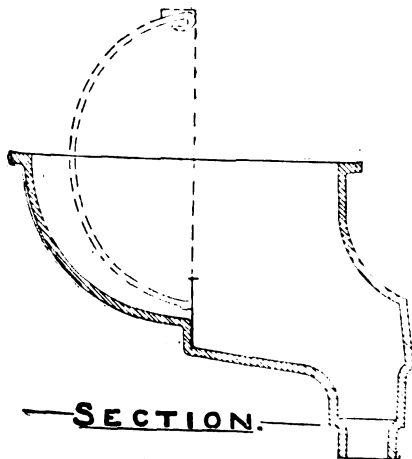
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This system has been adopted in Buckingham Palace, Windsor Castle, Marlborough House, and in the Residences of Royalty, the Nobility and Gentry, the principal Clubs, Hotels, Schools, &c., throughout the world, and as a guarantee of efficiency bears the name and address of the Patentee.



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PARTICULARS ON APPLICATION.

3

It is well known to agricultural chemists that the addition of lime and plaster to a soil hastens the decomposition of the natural silicates, thus setting the mineral plant foods free. It would now further appear that the scientific road builder should seek to blend his material whenever such a thing is possible, so as to bring about the greatest amount of decomposition possible among the rock particles on which he depends for the formation of the bonded surface of his road.

MUNICIPAL HOUSING IN LIVERPOOL.

THE housing committee of the Liverpool Corporation have prepared a report in favour of putting into effect the full provisions of the Housing of the Working Classes Act, 1890, and instructing the committee to prepare a scheme for the erection of houses in the outlying districts of the city on land at present in possession of the estate committee or on any other suitable sites. It is stated that the committee have ascertained that during the last five years about 2,000 houses at rentals ranging from 12% to 18% per annum and about 4,500 houses at rentals ranging from 18% to 25% per annum have been erected by private enterprise in the outlying districts. The inability of the Corporation to compete with private enterprise as regards the cost of building for ownership properties of the class proposed, and the fact that both interest and sinking fund charges have to be provided out of revenue, cause the committee to have serious doubts as to the Council being able to offer inducements in respect of rental if the undertaking proposed is to be conducted on a commercial basis. The stringency of the building by-laws in the city has from time to time been increased, and the committee is of opinion that if anything in the direction of more air-space is necessary, it is a matter for the health committee to deal with. Failing a want of accommodation, the committee do not recommend the Council to enter into competition with private enterprise in the direction suggested. The city surveyor also presents a report as to building in the outskirts, which is not favourable to the scheme suggested by Mr. Morrissey. On this question notice of motion has been given by Councillors Lloyd, Kyffin-Taylor and Morrissey to the effect that the housing

committee be instructed to prepare by way of experiment a scheme for building artisans and workmen's dwellings (not necessarily for the dispossessed) in the outskirts of the city, allowing more land, light and air than has been usually provided by private enterprise.

EFFLORESCENCE ON BRICK WALLS.

THE subject of efflorescence has been investigated by Mr. J. C. Jones, of the University of Illinois, who finds the causes of this unsightly appearance to be:—1. Soluble salts contained in the clay as mined. 2. Soluble salts developed in the clay by weathering. 3. Soluble substances formed in the clay during burning, partly by chemical changes among the ingredients of the clay itself, and partly by interaction between the materials of the clay and kiln gases. 4. Soluble salts in the mortar used to bind the bricks in the wall. 5. Soluble substances developed by reactions between the ingredients of the mortar and those of the clay. 6. Soluble salts in the water used in the manufacture of brick or mortar. 7. Soluble salts in the soil or substances lying against the wall. He finds that efflorescence usually is made up of sulphates and carbonates with occasionally salts of other acids which are carried to the surface of the bricks by the evaporation of water which has entered them. The suggested cures are:—1. The use of clay which has not been weathered. 2. To weather the clay and then wash out all soluble salts. 3. To change soluble into insoluble salts by introducing some precipitating agent as barium. 4. To remove efflorescence which has been formed in the kiln by alternating oxidising with reducing conditions during the latter part of the burn. 5. To coat the bricks as they come from the machine with some organic substance. 6. To burn the bricks so that they will absorb the smallest possible amount of water. 7. To coat those portions of the wall below the ground with waterproof paint. 8. To see that the gutters and flues which carry water or steam pipes are so constructed that water cannot reach the walls. 9. To make mortar joints as thin as possible and use mortar which is free from sulphur or nearly so.

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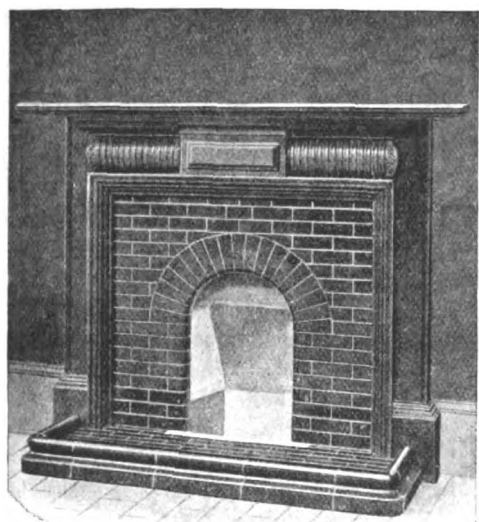
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REPORT

(See page 25 of Supplement in Issue of June 8).

As a final result of the whole of the tests the Examiners find that of the grates submitted those of

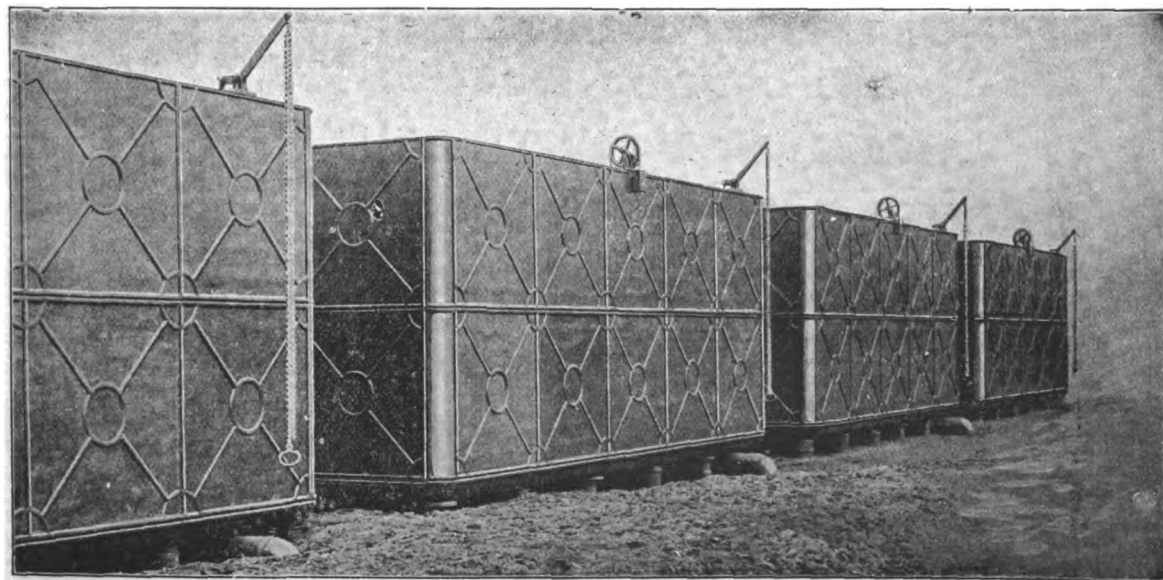
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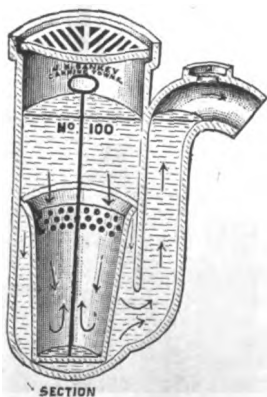
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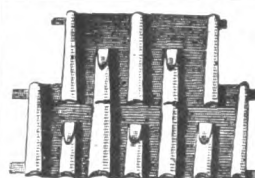
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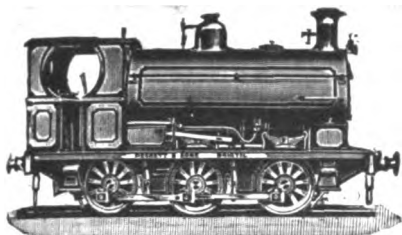
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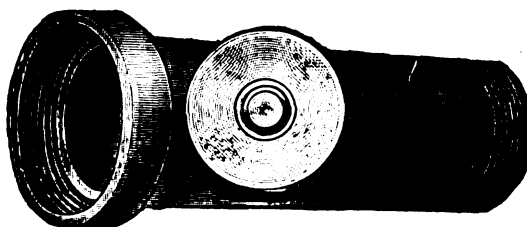
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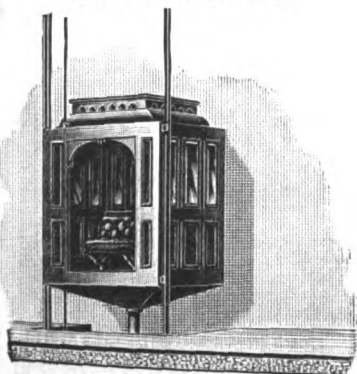
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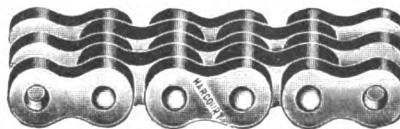
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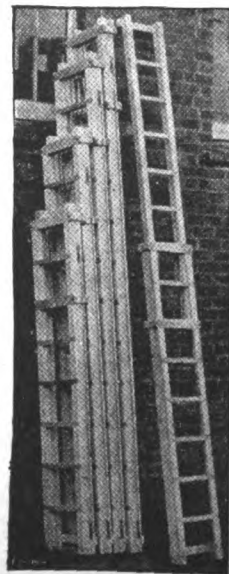
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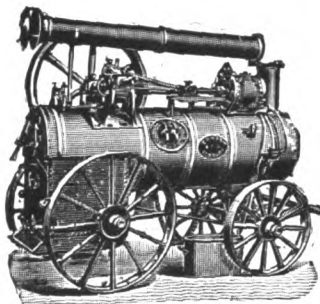
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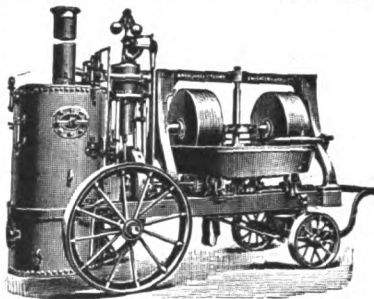
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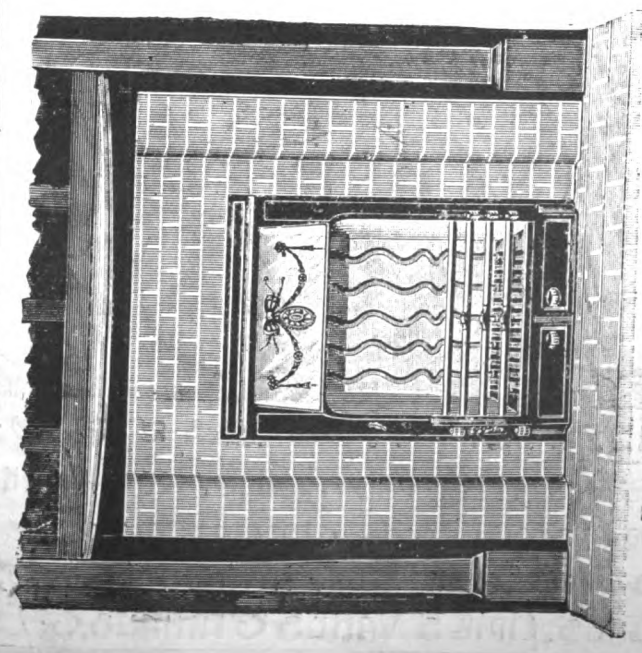
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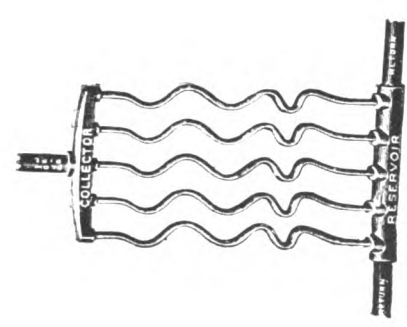
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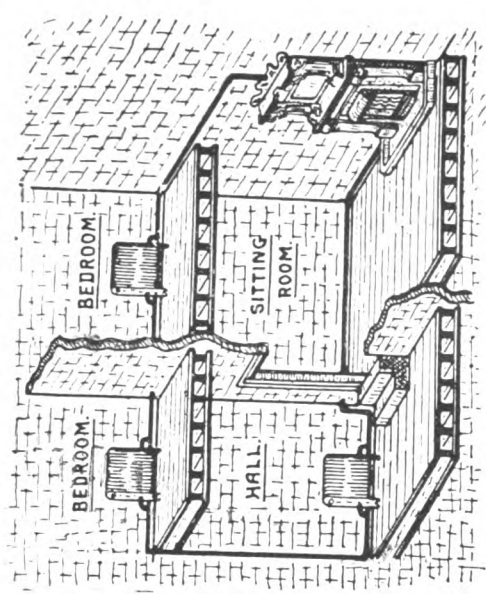


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EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further

answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

*** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

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MONTEVIDEO.—Dec. 14.—La Comision Nacional de Caridad require competitive plans for new foundling hospital with approximate cost. Plans and report, under mottoes, and, in sealed envelope, name and address of competitor. The four selected plans will receive 212*l.* each, and will be asked to further compete. Further particulars from the Consulate-General for Uruguay, 5 and 6 Clement's Inn, Strand, W.C.

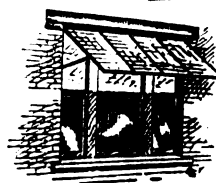
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BARRY.—Aug. 18.—For the erection of public offices in Holton Road. Deposit 5*l*. Messrs. Hutchinson & Payne, architects, 29 John Street, London, W.C.

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DODDINGTON.—Aug. 16.—For the alteration and enlargement of the Council school at Doddington, near Faversham, Kent, to provide accommodation for about eighty-eight children. Deposit 1*l*. Mr. Wilfrid H. Robinson, architect to the committee, 44 Bedford Row, London, W.C.

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HEYWOOD.—Aug. 13.—For the erection of a residence in Manchester Road. Messrs. Holgate & Spivey, architects and surveyors, Market Street, Colne.

HENLEY-ON-THAMES.—Sept. 10.—For converting the school buildings adjacent to the workhouse at Henley-on-Thames into an infirmary, for the Guardians of Henley union. Names before August 15 to Messrs. Charles Smith & Son, architects to the Board, 164 Friar Street, Reading.

IDLE.—Aug. 14.—For additions to and alterations of conveniences, &c., at the Springfield Mills, Idle. Mr. James T. Cordingley, architect, Boothroyd, Town Lane, Idle, Bradford.

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LONDON.—Aug. 20.—For the supply, delivery and erection complete, at the dépôt, Queen's Road, Wimbledon, of a cart shed, about 165 feet long by 30-feet span, with open sides and consisting of galvanised corrugated iron roofing, steel roof trusses and rolled steel stanchions. The Borough Engineer and Surveyor, Town Hall, Wimbledon.

LOSTOCK HALL.—Aug. 15.—For the erection of a school at Lostock Hall, near Preston. Deposit 2*l*. Mr. Henry Littler, architect, Preston.

MADRON.—Aug. 11.—For the building of an addition to the Wesleyan Sunday school at Tregavara. Mr. James Caldwell, Victoria Square, Penzance.

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MEARE.—Aug. 11.—For repairs at the Council school, Meare, Somerset. Messrs. Samson & Cottam, Bridgwater.

MIDSOMER NORTON.—Aug. 16.—For the erection of schools and vestries at Stone's Cross. Rev. J. G. Cushing, Rosslyn, North Road, Midsomer Norton, Somerset.

MILFORD HAVEN.—For the erection of a detached dwelling-house in Hamilton Terrace. Dr. Davies, Observatory Hall, Milford Haven.

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PORTSMOUTH.—Aug. 15.—For constructing, completing and maintaining in thorough repair for six calendar months from the completion thereof the following works, that is to say, a six-stall urinal and two w.c.'s at the North End recreation ground. The Borough Engineer, Town Hall.

ST. AUSTELL.—Aug. 17.—For erecting secondary schools at St. Austell, Cornwall. Mr. B. C. Andrew, architect, Biddick's Court, St. Austell.

SCOTLAND.—Aug. 11.—For executing the mason, carpenter, smith, slater, plumber, plasterer, glazier and painterwork, electric-light wiring and fittings, electric bells and window blinds of rebuilding of the west wing of the Five Arms hotel, Braemar. Messrs. Kelly & Nicol, architects, 367 Union Street, Aberdeen.

SCOTLAND.—Aug. 17.—For the mason, carpenter, slater, plasterer, plumber, painter and glazier works of police station to be erected in Fraserburgh. Messrs. Reid & McRobbie, architects, Saltoun Chambers, Seaforth Street, Fraserburgh.

SCOTLAND.—Aug. 24.—For the construction of a timber jetty about 435 feet long and 30 feet wide, and relative works on the south side of Albert Basin, within the port of Aberdeen, for the Harbour Commissioners. Deposit 2*l*. 2*s*. Mr. R. Gordon Nicol, engineer, Aberdeen.

SEAFORD.—Aug. 11.—For the erection of a boarding-house. Deposit 3*l*. 3*s*. Mr. William Lambe, Estate Office, Claremont Road, Seaford, Sussex.

SHEFFIELD.—Aug. 21.—For the work required in connection with underground conveniences adjoining the town hall in Surrey Street. Deposit 1*l*. 1*s*. Mr. C. F. Wike, city surveyor, Town Hall, Sheffield.

SHOTTON.—Aug. 11.—For the erection of coal storage bunkers, boiler seatings and coke ovens at Shotton Colliery. The Horden Collieries, Castle Eden, R.S.O.

SOUTH SHIELDS.—Sept. 28.—The South Shields education authority invite preliminary schemes and estimates for the warming and ventilation on the Plenum system of a block of four school departments, accommodating a total of 1,950 scholars, to be erected on the site of the Mowbray Council school, South Shields. Mr. Henry Grieves, architect, Albany Chambers, King Street, South Shields.

SUTTON-ON-SEA.—Aug. 23.—For the demolition of the existing lifeboat-house adjoining the promenade, and the construction of an enlarged boathouse on the same site. Mr. W. T. Douglass, engineer and architect to the Royal National Lifeboat Institution, 15 Victoria Street, Westminster, London, S.W.

TIVERTON.—Aug. 13.—For executing certain repairs at the workhouse. Deposit 3*l*. Mr. J. Follett Pugsley, clerk, Tiverton.

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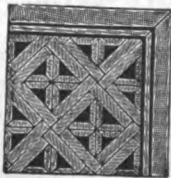
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WALLASEY.—Aug. 17.—For the erection of public swimming baths at the Guinea Gap, Seacombe. Deposit 3*l*. Mr. W. H. Travers, engineer and surveyor, Public Offices, Egremont, Cheshire.

WALES.—Aug. 11.—For the erection of hall at Aberfan, for the Methodist church. Mr. William Dowdeswell, architect, Treharris.

WALES.—Aug. 11.—For alterations to the working-men's club, High Street, Neath. Mr. J. Cook Rees, architect and surveyor, Church Place, Neath.

WALES.—Aug. 13.—For the erection of two houses at Farm Road, Pontlottyn. Mr. P. Vivian Jones, architect and surveyor, Hengoed, *via* Cardiff.

WALES.—Aug. 13.—For erecting a cloak-room, &c., to the Council school at Prendergast, Haverfordwest, Pembrokeshire. Mr. D. E. Thomas, 17 Victoria Place, Haverfordwest.

WALES.—Aug. 15.—For the erection of additions and alterations to the English Baptist chapel, Briton Ferry. Mr. W. Beddoe Rees, architect, 3 Dumfries Place, Cardiff.

WALES.—Aug. 15.—For the erection of a villa and repairs to cottages on the Holyhead Road, Llangollen. Mr. E. Vaughan-Edmunds, architect and surveyor, Llangollen.

WALES.—Aug. 20.—For the erection of proposed villa residence at Rhymney. Messrs. James & Morgan, architects, Charles Street Chambers, Cardiff.

WALES.—Sept. 12.—For additions and improvements to Bethesda Congregational chapel, Merthyr Tydfil. Mr. John Thomas, 90 Brecon Road, Merthyr Tydfil.

WHITBURN.—Aug. 11.—For the erection of a house, for the Marsden Industrial and Provident Society. The Secretary, Marsden Stores, Marsden.

WORKINGTON.—Aug. 16.—For erection and completion of mission buildings at Westfield. Mr. J. N. Singleton, architect, 110 Scotch Street, Whitehaven.

THE Cheshire County Council have ordered that schemes shall be prepared for the addition of an infirmary annexe to Upton lunatic asylum, and for the accommodation of 100 additional patients in the Parkside lunatic asylum.

TENDERS.

ABERDEEN.

For the widening of Union bridge by means of steel arch ribs introduced on each side of the bridge, supported upon masonry abutments.

HALL, Aberdeen (*accepted*) £6,518 2 11
There were six tenders.

ASHFORD.

For the erection of a boundary wall about 1,200 feet long in Kentish ragstone, at the cemetery. Mr. WILLIAM TERRILL, surveyor.

Bowles £940 0 0
C. Howland 668 0 0
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Loach 3,558 5 0
Barry 3,409 15 6
Thraves & Son 3,373 0 0
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Harris Bros. 3,200 0 0
Wood, Leeds (*accepted*) 3,115 0 0

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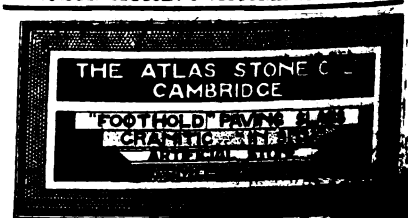
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TEALL (accepted) . . . £2,440 0 0

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Mitchell Bros. . .	10,849 0 0
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Kent . . .	10,686 0 0
Cropley Bros. . .	10,488 0 0
Williams & Taylor . . .	10,294 10 0
Martin, Wells & Co. . .	10,290 0 0
HAWKINS & Co. (accepted) . . .	10,011 0 0

GREENWICH.

For demolition of Bexley House and erection of branch library. Messrs. WILLS & ANDERSON, architects, 4 and 5 Adam Street, Adelphi, W.C.

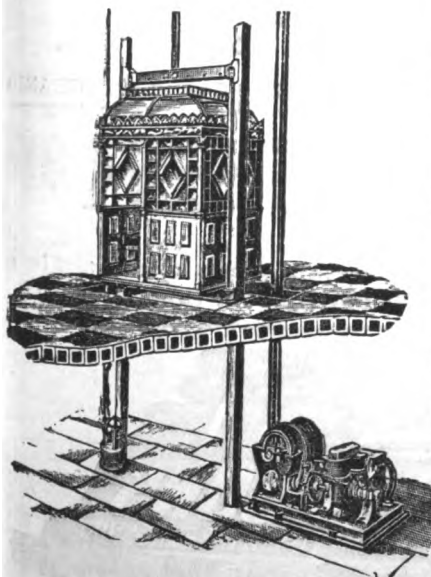
Webster & Son . . .	£6,782 0 0
Mills . . .	6,622 0 0
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F. & H. F. Higgs . . .	5,987 0 0
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Patman & Fotheringham . . .	5,943 0 0
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Sharpington . . .	5,928 0 0
Parker . . .	5,879 0 0
Mills . . .	5,640 0 0
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F. J. Gorham, Point Hill, Greenwich (provisionally accepted)	5,234 0 0

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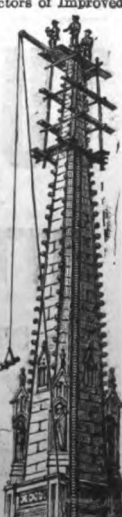
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Cooke	1,045	0	0
Wilks	1,037	10	0
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Houlton	227	10	0
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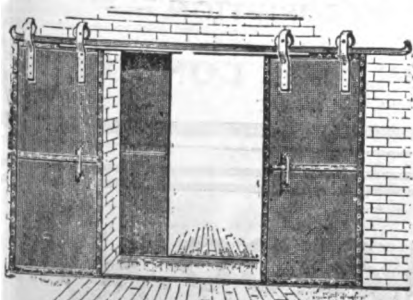
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Higgins	13,197	o	o
Hawtin	13,189	o	o
Fisher, Northampton (accepted)	13,185	o	o
Sharman	12,890	o	o

TRADE NOTES.

THE new schools, St. Albans, are being warmed and ventilated by means of Shorland's patent Manchester grates, the same being supplied by Messrs. E. H. Shorland & Brother, of Manchester.

MESSRS. DICK, KERR & Co. have been successful in their tender for the construction of electric tram lines from Wood Green to the Green Lanes at Enfield. The amount is 65,910/.

EFFICIENT AND ECONOMICAL HEATING.

THE phrase we have used above is taken from one of the numerous testimonials which Mr. Vincent Roberts, of Leeds, has received from one of his customers, who writes:—"I have pleasure in stating that the heating apparatus fixed by you at my house has been most efficient and economical." It is often believed that an inventor, like a prophet, is not honoured in his own country. But the number of houses, manufactories, churches, nurseries and other buildings which appear in Mr. Roberts's pamphlet, descriptive of his system, can be taken as evidence that the people in Leeds and Yorkshire have confidence in his methods of heating. Indeed, one of the satisfactory characteristics of the pages is the demonstration that radiators can be utilised for equable heating

without great expense or a semi-transformation of a building. People put up with much inconvenience from their dislike to have the house in which they dwell pulled to pieces in order that a heating experiment can be carried out. But the letters in the pamphlet show that everything can be accomplished that is desirable without any inconvenience. It is no doubt an advantage for the arrangements for heating to appear on the original plans, but Mr. Roberts can adapt his system to all conditions of old or new buildings. When we find that an immense clothing factory which resembles a colossal conservatory involves no greater expense for fuel during a year than 44l. 14s. 2d., there can be no question of the economy of the system. The pamphlet is also interesting from the large number of photographs which represent the modern architecture of Yorkshire.

THE *Birmingham Daily Post*, in a review of the local markets, says:—"Structural engineers also are busy. There continues to be a good demand for bridge and girder work, but manufacturers still complain of the keenness of competition and the maintenance of high prices for raw materials, which seriously cut into the margin that should be available for profit. It is really remarkable that throughout the whole of the year angles and other constructional material have been maintained at the high-water mark attained in January, when the top of the brief boom was reached. Since then other kinds of iron and steel have slipped back rapidly, but no relief has come to bridge-builders. General engineers are able to speak well of their recent experience."

THE Chief Commissioner of Ashanti in his report for 1905 says that the town of Kumasi is making rapid progress. Building operations in all quarters have been the rule throughout the year, and the majority of the new buildings (European in style, with either iron or shingle roofs) were erected and are owned by the leading Ashanti chiefs. These buildings are in most cases leased to mercantile firms at fair prices, so that the building craze in Kumasi has had the double advantage of securing fixed rentals for the chiefs and of augmenting their interest in the well-being of the town.

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BUILDING AND BUILDERS.

THE Emigrants' Information Office warn plumbers intending to go to Canada that information has just been received at the Colonial Office to the effect that a strike of plumbers is in progress at Winnipeg, affecting from 175 to 180 men, and over thirty establishments.

THE erection of the barracks for the ship's company in connection with the Royal Naval College at Dartmouth is to be started forthwith. The hostel for the masters will be ready for occupation in September. It is proposed to build four or five classrooms on the north side of the college and also a library.

THE general works committee of the Coventry Corporation at their last meeting approved of plans for a new gun factory for the Coventry Ordnance Company. The scheme provides for the erection of a large building, 927 feet long by 200 feet wide, together with power-house, boiler-house, gun-pit, &c. Plans were also approved for new cycle and motor works on a site about two acres in extent.

MESSRS. JONES & PRITCHARD, Abergele, whose tender to build the new county police station at Colwyn Bay for 5,900*l.* was provisionally accepted by the standing joint committee of the Colwyn Bay Council, afterwards intimated that they had made a mistake of 1,000*l.* in the amount of the tender, which should be 6,900*l.* An emergency committee by a majority of one decided to accept the next satisfactory highest tender, that of Messrs. Myers & Sons, Chester, the amount of which was 7,498*l.* A long debate among the Council ensued upon this matter, and finally a proposition was carried to the effect that Messrs. Myers & Sons and Messrs. Jones & Pritchard be asked each to send in a new tender.

A THREE-DEPARTMENT school to accommodate 1,200 children has been opened at Bilston. The work of erecting the structures was entrusted to Mr. T. Hardy, of West Bromwich. The total cost of the school, including a site of three acres, is estimated at 17,457*l.* The school is built on the classroom principle, special centres are provided for manual training and cookery, and there is a science lecture theatre. The buildings are fitted throughout with electric light and electric bells, and will be heated on the low-

pressure system. The architects are Messrs. Bailey & McConnal.

HIS HONOUR Judge Lumley Smith heard a case in London in which 250*l.* was claimed as compensation for the death of a man who fell from a telephone pole. The pole was claimed to be a "building," and that the accident came under the Workmen's Compensation Act. Negligence was alleged against the company because, it was said, they did not provide proper and up-to-date methods for ascending the pole. His Honour said he did not think that the claim under the Act had been made out. The pole was attached by a wire to the wall of an adjoining building, and also to the generating station. That did not make it part of those buildings. Even if it were so, there was no employment of any scaffolding. The cleats by which the deceased climbed up were permanent parts of the pole. The rope also by which the deceased slung himself was not a scaffolding, and, even if a ladder was used to enable the workman to get on to the lowest cleat, that could not make the whole a scaffolding. He decided that the accident did not happen during the repair of a building, and that there was no scaffolding. Plaintiff therefore had no case. He decided thus with regret. In the circumstances each party must pay their own costs.

ELECTRIC NOTES.

THE Bury borough engineer is to be instructed to prepare plans, estimates, &c., for the extension of the Bolton Road section of the tramways to Bolton.

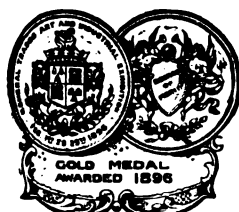
MR. SANKEY has been selected out of 248 applications for the post of electrical engineer to the Whitehaven Town Council.

THE National Electric Construction Company have come to terms for the purchase of the Stirling and Bridge of Allan tramway, which is four miles in length and worked by horses.

A SHOPKEEPER of Greenwich displays the following sign in his window:—"Anyone entering these premises after they are closed will receive 800 volts of electricity through them."

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SOME of the large German electrical firms have recently established branch offices in Egypt, and are actively canvassing for business, especially in connection with large electrical installations.

A NEW electric tramway connecting Bournemouth with Parkstone, having been inspected by the Board of Trade, was formally opened for traffic on the 3rd inst. The line covers a distance of about two miles and has cost about 30,000*l.* to construct.

THE Midland Railway Company are going to electrify 9 miles of double track on their lines between Lancaster and Morecambe and Heysham Harbour. The trains will be motor-cars, with trailers as required. The electrification is to be completed by next summer.

MR. WILLIAM TAYLOR described to the British Association experiments with a magnetic induction balance used for ascertaining the critical temperature in the heating of steel for hardening. Also a simple magnetic attachment to a muffle furnace used for giving an audible signal when the steel heated in the muffle has reached its critical temperature.

MR. A. WRIGHT, the consulting electrical engineer of the Marylebone Borough Council, reports that he found seventeen different scales of charges in vogue for electric current supplied, and he has devised a fresh tariff abolishing these complications and designed to encourage the use of electric motive-power, as well as enable the smaller classes of shops and private houses to obtain electricity at a price comparable with that of gas.

A NEW method of unshipping tea has just been tried in the London docks. The chests are placed on a system of continuous rollers, worked by electricity, and carried from the ship's hold into the storage shed, without intervention by men or the hydraulic machinery on the quay. The effect has been to eliminate breakages and to considerably reduce the number of men employed in unloading.

THE borough surveyor and electrical engineer to the Burslem Town Council recently submitted a statement showing the estimated comparative cost of pumping sewage by steam and electricity. In giving the cost per hour they only considered the dry weather flow of sewage, and they pointed out that the cost of pumps with engines and pumps

with motors would be approximately the same. The cost to drive one horizontal engine, driving either one 9-inch low-lift pump or two 6-inch low-lift pumps, would be 1*s.* 5*d.* per hour; the cost to drive one 25-b.h.p. motor, driving one 9-inch low-lift pump, would be 1*s.* 2*d.* per hour. With regard to the remaining pumps, which were brought into action in wet weather, they pointed out that their use would be intermittent and the load varying, and showed a further advantage in favour of electricity, because the current used would be in direct proportion to the load, whereas in the case of steam-driven pumps a reserve of steam must always be available. Mr. C. J. Lomas, the engineer for the sewage disposal scheme, approved of the substitution of electricity in place of steam, and considered it would have many advantages and be more economical. It has been agreed that the plant for pumping the sewage is to be driven by electricity.

THE Dalkeith Town Council have agreed not to offer opposition to the Lothians Electric Power Company in connection with the laying of electric mains along certain roads within the burgh of Dalkeith in connection with their scheme, which embraces an area of the greater part of Mid-Lothian (excepting the burghs of Edinburgh and Leith, &c., parishes of Stow, Heriot, Fala and Soutra) and certain portions of East Lothian. The company are to supply electric energy in bulk to authorised undertakers and to persons requiring a supply for power. They shall not supply energy for lighting purposes except to authorised undertakers, provided that the energy supplied to any person for power may be used by such person for lighting any premises on any part of which the power is utilised. The company are not to supply energy, except to authorised undertakers, in any area which at the date of the passing of the Act formed part of the area of supply of any authorised distributors without the consent of those distributors, which consent, however, shall not be unreasonably withheld; but no consent will be required in the case of a supply of energy being demanded from and given by the company to any railway, tramway or canal company, or to the trustees of any harbour or navigation within such area. The company offer that any mains to be laid within the burgh of Dalkeith shall be to the satisfaction of a representative of the Town Council.

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ILLUSTRATIONS.

CITY HALL, BELFAST.

SOLDIERS' WAR MEMORIAL, BIRMINGHAM.

CATHEDRAL SERIES.—ST. DAVIDS: THE TRIFORIUM AND CLERESTORY FROM TOP OF ROOD-SCREEN—THE ROOD-SCREEN.

NEW OFFICES FOR THE HEARTS OF OAK BENEFIT SOCIETY, EUSTON ROAD, N.W.—BASEMENT.

HOUSE, REIGATE, SURREY.

VARIETIES.

THE Duchy of Cornwall has granted a lease of 1,500 acres on Dartmoor for china-clay working. The output is expected to reach 30,000 tons a year.

THE Liverpool City Council have agreed to place 20,000/ at the disposal of the baths committee for the erection of public baths at Walton.

THE London County Council propose to erect a new school for 800 children in the neighbourhood of Jubilee Street, Stepney, and to more than double the accommodation of the new school in Tollitt Street.

STEPHENSON'S old railway engine, which was used in the thirties on the line between Canterbury and Whitstable, was formally presented to the Mayor and Corporation of Canterbury by Sir David Salomons on the 8th inst.

A SPECIAL committee of the Grimsby Town Council has under consideration a scheme for a boulevard with a 60-feet roadway and an avenue of trees to stretch half-way round the town along the Weelsby Road.

THE Chesterfield Rural Council have approved an estimate prepared by Mr. W. Frith, their waterworks engineer, for the supply of Eckington and Staveley with water from Barbrook reservoir. The cost is 5,500/.

AN inquiry has been held in Dublin respecting an application of the Corporation for authority to borrow 52,000/ to complete the main drainage of Clontarf, which

is one of the suburbs. The plans were prepared by Mr. G. Chatterton, of Westminster.

THE Sutton education committee have protested against the proposal of the Town Council to confine invitations to tender for the erection of a boys' school in Victoria Road to builders in Sutton Coldfield. The committee urge, "That tenders be invited by advertisement for the erection of the new school for boys in Victoria Road from builders living within a radius of twelve miles from the site."

At the last meeting of the Stourport District Council specifications for the new sewage scheme were received from the engineers, and the clerk said everything was now in order for inviting tenders. But one of the members said they could not let a scheme which might cost 20,000/ go through without examining the specifications, and it was decided that the sanitary committee should go through the specifications and report to the October meeting of the Council.

THE Royal Marine Artillery technical committee invite the co-operation of employers in the furtherance of their scheme by which soldiers are qualified for skilled labour so as to be able to support themselves on leaving the Army. The committee want the help of employers, and "will guarantee to train men in a great variety of branches up to any required standard as soon as employers will say (a) which branches they wish taught, (b) the exact syllabus and standard required for each branch, (c) of the men who reach this standard how many they will employ."

It is proposed to span the line of quays or islands lying between the southern peninsula of Florida and Key West, and the work is now being carried out. To complete the undertaking a span of arches seven miles in length must be constructed, supported by masonry columns sufficiently strong to withstand the heaviest waves. The greatest water depths are 23 feet, and the road bed will be carried 30 feet above the sea level. It is also proposed to carry loaded goods waggons by means of packet steamers from Key West to Havana, so that goods can be transported from any part of the United States direct to Cuba without rehandling.

THE Lincoln City Council have resolved "that the construction of a water tower above the hill capable of holding

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"IMPERIAL" PORCELAIN URINAL RANGES.

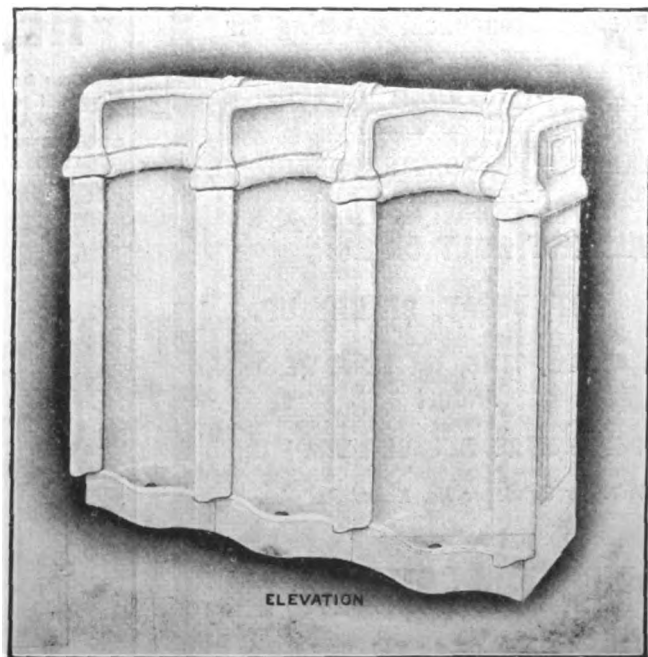


Figure 1502.—SEMICIRCULAR BACK URINALS.

London Offices & Showrooms: 2 & 3 NORFOLK STREET, STRAND, W.C.

300,000 gallons of water, at an estimated cost of 7,000*l.*, be recommended; that the present reservoir on Cross-o'-Cliff Hill be abandoned; that a new covered reservoir be recommended to be constructed capable of holding 8,000,000 gallons on the top of Cross-o'-Cliff Hill, at an estimated cost of 31,500*l.*; and that the chairman and Councillors White, Livens and Ruston be a sub-committee for the purpose of electing a suitable assistant resident engineer, to assist the engineer in carrying out the above works."

THE Tunbridge Wells Town Council have resolved:— "That with a view of protecting the chalybeate spring on the Pantiles and preserving the prosperity and character of Tunbridge Wells as an inland watering-place and health resort, it is desirable that the spring and the adjoining properties, together with all necessary rights in, over and under the Pantiles, London Road, Nevill Street and Market Street be acquired by the Corporation on behalf of the public, and that an application be made in the next session of Parliament for an Act for the purpose; such Act to give to the Corporation such powers as are possessed by the public authorities of other inland watering-places with respect to baths, springs, pump-rooms and other similar matters."

THE Grimsby borough surveyor has informed his Council that many men at work on the roads were very old, and totally unable to give a fair return of labour for the wages paid. Others worked hard, and were worth more money than they got. The wages list, nevertheless, was 40 per cent. higher than it should be. The surveyor said he was handicapped by having to find employment for men who had given the best years of their life in other service. He suggested that a standard rate of pay should be fixed, and that in future a standard man should be secured for it. Street scavengers, he thought, should be paid from 4½*d.* to 5½*d.* an hour, and other workers 5*d.* to 6*d.* an hour, and he should be left to grade a man according to his capacities. This suggestion was adopted.

A DISPUTE is pending between the Kingston Corporation and the Surrey County Council with reference to the con-

tribution of the latter body towards the maintenance of the roads in the borough. In consequence of the laying of the new tram lines the Corporation asked the county council for a contribution amounting to 3,217*l.*, expended by them during the last financial year. The county council, being of opinion that a great deal of the work was not properly chargeable to them, offered to pay 1,350*l.*, which the Corporation have refused to accept. The Corporation have intimated their desire to submit the dispute to the arbitration of the Local Government Board, and the county council have expressed a wish that that course be taken.

THE Mersey and Irwell joint committee in their annual report say:—"Further experience confirms the views which the committee have advocated—that methods of treating sewage by artificial means where the land is unsuitable may, if properly constructed and used, be relied upon to give good results. The watershed affords instances of many types of such methods; septic tanks, sedimentation tanks (with and without a precipitant), contact beds (single and double), percolating filters, made with both coarse and fine material and of varying depths. Good results are obtained with all these methods, and the question which one should be adopted in any particular case depends entirely on local circumstances."

AT Tamworth Mr. E. A. Sandford Fawcett, M.Inst.C.E., an inspector of the Local Government Board, conducted an inquiry into the application of Tamworth Corporation for sanction to borrow 20,000*l.* for purposes of sewerage and sewage disposal, and of the application of the Tamworth Rural District Council for sanction to borrow for similar purposes 11,228*l.* for Boleball and Glascote, 10,551*l.* for Wilncote and Castle Liberty, 7,303*l.* for Fazeley, 415*l.* for part of Wigginton, and 233*l.* for part of Amington and Stonydelph. The town clerk explained that the two authorities had formed a joint committee for carrying out joint disposal works, the remainder of the scheme being carried out by the respective engineers. A provisional order had been granted for the acquisition of a site for the disposal works, the cost of the joint works being shared equally between the two authorities.

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EXTENSIVE flooding occurred recently in Dundee. In all 100 intimations or claims for compensation were received by the Town Council, and in each instance an examination of the damage has been made and a separate report prepared by the burgh engineer. Where requests were made to clean out flooded properties, whether business premises or dwelling-houses, men were at once despatched to render all assistance. This was done in the interests of public health, and for the purpose of limiting any likely damage as far as possible. In each case where a claim had been lodged intimation had been given that as the flooding was not caused by any act or neglect of the Town Council they would repudiate all liability in connection with the flooding. The committee approved of the report, and formally resolved to repudiate liability and delay further consideration in the meantime.

A SPECIAL meeting of the Stockport Town Council discussed the situation with regard to the Kinder waterworks. It was decided to determine the contract of the engineer (Mr. Ernest L. Mansergh), an arrangement having been entered into between him and the waterworks committee. It was then agreed to determine the contract of Mr. Kellett, the contractor. The complete waterworks scheme, which included three reservoirs, was to cost 819,000*l.* The Kinder reservoir scheme was estimated to cost 248,000*l.*, and was to have been completed in seven years. The Corporation obtained what was considered the best professional advice in the country, and the construction of a stone dam was commenced. The work had been in progress some time before it was found that a satisfactory foundation could not be obtained at the expected depth, and the committee considered that the expense of going deeper would be excessive. It is calculated that 75,000*l.* has already been spent on the stone dam. What will be done after the termination of the contracts has not been decided, but it is not probable that the Corporation will abandon the whole scheme. A modified scheme will no doubt be presented later on.

At the Colne County Court Judge Bompas gave judgment in an action in which the plaintiffs sought an injunction and damages against the defendants, who are cotton manufacturers, owing to inconvenience and damage to their

property caused by excessive vibration from the machinery at the defendants' mill, to which the plaintiffs' property is adjacent. His Honour said that if the vibration caused by the defendants' works were such as would cause serious inconvenience to an ordinary person, then the plaintiffs were entitled to relief, and that relief would have to be in the form of an injunction. But unless the annoyance was serious the defendants were entitled to succeed. After giving the question consideration he had come to the conclusion that the annoyance was not serious. It was admitted that the walls were not cracked, or the china broken, or the plaintiffs made ill; it was only a cause of annoyance. He thought that the plaintiffs, from having been constantly watching for the annoyance had probably become nervously sensitive to it, but this would not entitle them to judgment. And he thought the vibration, in the degree to which it existed, must be treated as one of the minor inconveniences which a person living in such a neighbourhood might be properly expected to put up with. He gave judgment for the defendants.

SIR W. MATTHEWS, who was appointed arbitrator to decide certain disputes between the Scarborough Corporation and the contractor of the Marine Drive at Scarborough, arising out of damage done to the sea wall during the tidal wave of January 1905, and a subsequent storm, has made his award. The contractor claimed that he carried out his contract so far as it related to the actual construction of the wall itself, whereas the Corporation considered that, the sea wall having been shaken and the foundation disturbed during the process of construction, the contractor was bound to carry out works to remedy these defects. The award is to the effect that the contractor must repair a portion of the wall—about 325 feet in length and known as the sack dam section—by the provision of a toe and an underpinning of concrete in mass. The award also decides that the bags of concrete in this portion of the wall are to be removed and the space filled in to the width of 7 feet with concrete in mass. These works are to be carried out by the contractor at his own expense.

THE Admiralty have issued a memorandum explanatory of the recent and forthcoming changes in the administration of the Royal dockyards. The introduction of electric

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lighting has made it possible to establish a uniform forty-eight hours week throughout the year, instead of long days in the summer and short in the winter at the same wages. A premium system has been adopted experimentally in the dockyards at Portsmouth, Devonport, Chatham and Sheerness, designed to enable expert workmen to increase their pay by completing their work in less than the time allowed for it, the bonus paid being in proportion to time saved. In accordance with the practice adopted, with increasing success by private employers, a scheme has recently been promoted with a view to encouraging workmen to suggest improvements in tools and methods. All workmen are invited to contribute suggestions. The Board of Dockyard Officers sits once a month to consider and adjudicate, and 200*l.* has been authorised for distribution in awards this year.

THE London County Council decided early this year to supplement the old system of apprenticeship by some system of trade schools so as to supply a due proportion of recruits for skilled trades. The Council opened certain trade schools for girls at Easter 1906, and offered a number of scholarships. The Council has arranged to open trade schools for boys, the aim of which will be to give boys leaving the ordinary schools at the age of fourteen to sixteen a thorough preliminary training for certain trades, while at the same time continuing their general education. It is proposed to open the following schools in September 1906:—School of engineering at the London County Council school of engineering and navigation, Poplar; school of engineering at the London County Council Paddington technical institute; and the school of silversmithing at the London County Council central school of arts and crafts. A number of scholarships tenable at the above schools for competition will be offered after the holidays to boys between the ages of fourteen and sixteen who are resident in London, and whose parents' incomes do not exceed 160*l.* a year; they are tenable for two years, and in addition to free education in general subjects and in the trade chosen, carry maintenance grants of 10*l.* the first year and 15*l.* the second year.

THE "Journal" of the British Chamber of Commerce of Egypt contains an article written with the object of showing the growth of German competition in Egypt. In point of

actual turnover, Germany's largest trade with Egypt is in iron and steel goods, the main branches being rolled steel girders, mild steel bars and hoops, together with small portable steel rails. Considering the enormous number of girders imported into Egypt every year, it is much to be regretted that England practically is entirely out of the trade. The German and Belgian prices are much cheaper than those of England, but, in addition, the British standards do not suit the market. In cast-iron tubing Germany finds a serious competitor in Belgium, as the latter is able to send over a lighter and cheaper article. Egypt, however, imports large quantities of gas tubes and water piping from Germany, though England has still a good share of this trade. A trade in which the country under discussion has almost a monopoly, or at any rate by far the greatest share, is the one of supplying small portable steel rails for agricultural purposes. These light tramways for transport-work are becoming more and more in evidence, and large quantities of rails, to say nothing of equipment, annually reach Egypt from Germany. The price is about the same as for girders.

JAPANESE RAILWAYS.

By a law promulgated on March 31, 1905, the Japanese Government have been empowered to purchase within a period of ten years the principal private railways, seventeen in all. These railways have a total mileage of 2,806 miles. The purchase price is to be calculated as follows:—The construction cost up to the day of purchase, multiplied by twenty times the average rate of profits during the six half-yearly periods commencing with the latter half of 1902 and ending with the first half of 1905. Thus, if construction cost is 100,000*l.*, and average profits relative to construction cost have been 10 per cent., then 10 per cent. of 100,000*l.*, 10,000*l.*, and $10,000 \times 20 = 200,000$ *l.* The amount so arrived at will be handed over to the companies concerned in bonds of equivalent face value bearing 5 per cent. interest, which the companies will distribute among their shareholders. Stores on hand are to be taken over at cost price, and paid for in bonds of equivalent value, taken at their current market price.

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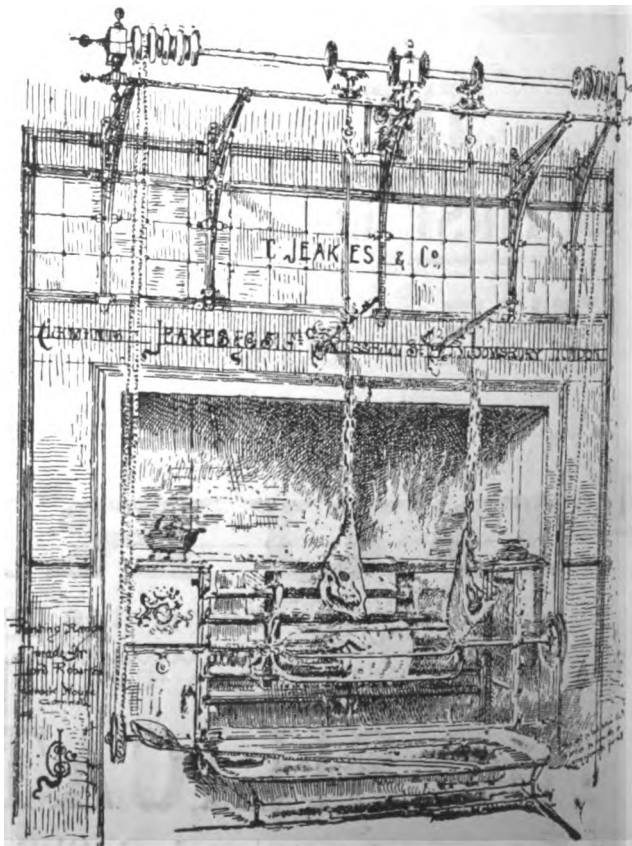
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The ninth annual meeting of the shareholders in Waring & Gillow, Ltd., was held on the 2nd inst. at the new premises in Oxford Street. Mr. S. J. Waring was able to announce that the profits were 30,000*l.* in excess of the previous year. They were able accordingly, in addition to paying the regular dividends on the Seven per Cent. Cumulative Ordinary shares for past year, to carry 30,000*l.* to the general reserve, and also to bring forward nearly 15,000*l.* to the credit of the present year's accounts. In addition to the reserve, amounting to 145,000*l.*, they were also building up substantial reserves in Messrs. Hampton's, the Waring-White and other subsidiary companies, and have carried forward to their reserve for the past year an amount almost equal to their own. Respecting the Waring-White Building Company, it was proved by the actual results that it is undoubtedly the most scientific and economical building organisation in Great Britain, and has met with a degree of success which is almost phenomenal. The new Warings, judged by the experience of several weeks, was not only a success, but proved that the expansion in the general trade was four times greater in general volume than had been anticipated. It was not merely a spasmodic leap at the outset, but a gradual and steady weekly increase of business which set in from the opening week for sales. In fact, with the object of keeping their reputation clear and of preventing disappointment, they have not only had to claim the indulgence of their customers, but in some cases even to decline orders.

The new building, vast as it is, has been required almost exclusively for modern work, and it has been necessary to keep on No. 181 Oxford Street for the antique department, which they were desirous should rank second to none in Europe. Their most sanguine expectations had been largely exceeded, and the success of their enterprise had clearly established the fact that they were catering for a demand which existed, but which for the want of proper exposition had found no adequate voice.

The results already obtained have demonstrated that the time was ripe for this new movement of popularising art and beautifying the home. The principles on which they will continue to conduct the business may be briefly sum-

marised—good design, sound workmanship and economical cost.

The Chairman also announced that the services of Mr. H. Gordon Selfridge had been secured, and he would bring to the conferences a consummate knowledge of the methods of retail trade which in the United States have distanced all competition.

A vote of thanks to the Chairman was carried with enthusiasm.

WORKMEN'S COMPENSATION.

THE Home Secretary has appointed a departmental committee to inquire and report what diseases and injuries, other than injuries by accident, are due to industrial occupations, are distinguishable as such, and can properly be added to the diseases enumerated in the third schedule of the Workmen's Compensation Bill 1906, so as to entitle to compensation persons who may be affected thereby. The chairman of the committee is Mr. Herbert Samuel, M.P., Parliamentary Under-Secretary of State for the Home Department; and the members are Professor Clifford Allbutt, F.R.S., Regius Professor of Physic at Cambridge University; Mr. H. H. Cunynghame, C.B., Assistant Under-Secretary of State, Home Office; and Dr. T. M. Legge, Medical Inspector of Factories. Correspondence on the subject may be addressed to the secretary, Mr. F. L. D. Elliott, of the Home Office.

BUILDERS' FEDERATION.

A GENERAL meeting of the National Federation of Building Trade Employers of Great Britain and Ireland was held last week in the Mansion House, Dublin. The president (Mr. George Macfarlane, Manchester) occupied the chair.

The half-yearly report stated that although trade during the half-year had continued depressed, there were some signs of improvement in the demand for builders' work. There had been very few disputes between employers and operatives during the past six months, and none in which the intervention of the executive had been found necessary. Considerable progress had been made in raising the national reserve fund, and there was now on hand a sum of 1,658*l.* 16*s.* 9*d.*, including interest, out of which a sum of 854*l.* 10*s.* was to be paid.

Mr. R. B. Henry, of Belfast, said they had experienced many difficulties in Belfast, amongst them being the question of the contract form, and they had watched with interest the successful manner in which the subject had been approached by the Federation across the water. The special form adopted by the Federation seemed to have become universal throughout Great Britain, with the exception of Ireland, and they as builders in Belfast had approached the architects in this matter, and were still working with a view to a satisfactory solution.

Mr. J. C. White (Belfast) congratulated the builders and contractors of England upon having in conjunction with the Royal Institute of British Architects achieved a clear, well-defined and equitable form of building contract. The form they understood was meeting with general acceptance, and already it had come to be recognised in the English courts of law as a standard document regulating the relationship between building owners, architects and contractors. Decisions were forming on it, and it only uniformity was maintained there would grow round their conditions of contract a body of law that would be of common knowledge, and leave little or no room for disputes and litigation. In Ireland,

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however, the matter was still in a state of uncertainty. Until recently in Ireland no serious efforts were made to procure conditions of contract that would meet with universal sanction. Individual architects used various forms, each apparently doing what seemed right in his own eyes. This led to the confusion from which they in England had emerged. Within the past few years attempts had been made in Ireland to arrive at a common understanding, and it might be gratifying to them to learn that the contract which their Federation assisted in forming had met with approval from many architects, and from most builders in Ireland. The Royal Institute of Architects in Ireland, having carefully considered and prepared five different sets of conditions of contract, a majority of their members reported in favour of the adoption of the Federation form, as the basis on which modified conditions of contract should be sanctioned, but the Council of the Irish Institute came to the conclusion that it would be wiser to postpone the adoption of that form until some years of experience had proved their efficiency. The Belfast Builders' Association only differed from that view by stating that the form was sound and equitable, that it had already been under test for over three years, and that as the law regarding these contracts was the same in both countries the form of contract should be also the same. They further thought that there was no good reason for delaying its extension here. The Irish builders believed that the extension and general acceptance of that form of contract would be beneficial to all concerned, and earnestly desired that the Federation would assist in having it adopted. Delegates from several parts of England spoke of the successful manner in which the contract form had been brought into use in various districts.

THE PROBLEM OF THE UNEMPLOYED.*

WHAT do we actually know of, and how should the nation deal with, the classes who do not fit in with the ordinary and normal economic life of society—who do not, as a fact, attain any reasonable standard of life in our *regime* of free competition; the sweated, the casual labourer, the frequently

* From the address to the Economic and Statistics Section of the British Association, by A. L. Bowley, M.A.

unemployed, the permanently unemployed and their forerunner, the underfed and uneducated child? As economists and statisticians we are not concerned with palliatives or methods of expediency, but with a correct knowledge and true diagnosis of the extent of the evils, on which can be built reasoned and permanent remedies.

As is generally the case, our information as to the facts is hopelessly incomplete. There is no agreement as to scientific classification, no complete estimate of numbers; nothing but most limited records, supplemented by ill-informed guesswork. This is the case at the present moment, when public attention has been focussed on these questions for some time. Still less do we know anything about conditions thirty, twenty, or even ten years ago. In these circumstances we cannot say whether the very serious conditions which are obvious at present are better or worse than those of previous decades; whether, for example, the number of able-bodied men who are earning less than 40s. per annum has increased or decreased absolutely or in proportion to the population. Remedies depend not only in extent, but in kind, on the numbers to be dealt with. Private resources may be sufficient to re-establish on a sound economic basis a small number of men who have been unable to weather an economic storm, but quite other means are necessary if a large class has lost the means or habit of earning a livelihood. Similar remarks apply to all the classes to whom I am referring. Till we know the facts we cannot prescribe the remedies, and it is during this period of trade activity that we have the leisure to gather the facts.

To learn the actual economic condition of all the 40,000,000 persons of the United Kingdom, or even of those who are not obviously above any possible poverty line, seems at first sight an impossible task; and so indeed it is, but only because of general apathy as to the subject. We must, therefore, proceed by some method of samples. Before we can get sound information from samples we must have a method of numbering or classification by persons or by districts. If we had a definite system of registration and identification as in Germany it would be easy to choose, say, 1 in 100 or 1 in 1,000 at random from among all the persons whose record satisfied certain conditions, and then to investigate more carefully the history and circumstances of those chosen. A similar method could

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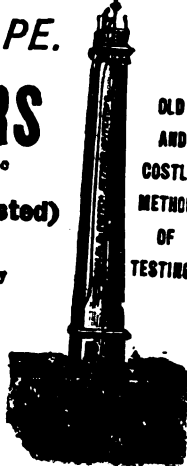
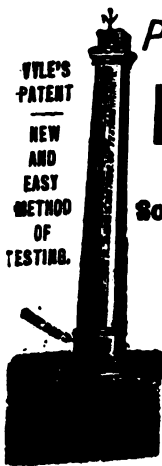
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be applied to any particular district. There is no need to make a house-to-house visitation to learn the conditions of a district; it is sufficient to enumerate the houses, to choose a certain proportion at random, and investigate carefully the status of their inhabitants. But the area of choice must be coincident with the area to be investigated.

When we have the sample, and have tested its precision by internal evidence, there are still difficulties of classification; but these can be overcome without mathematical analysis.

The economic analysis of these problems is constantly in need of help from statistics. What is the cause of, and what the remedy for the existence of a large body of able-bodied persons frequently out of work or working for a wage below any reasonable standard? The least acquaintance with economic theory will lead us to deny any permanent absence of demand for a large body of existing labour in normal conditions; the difficulty must lie in the unfitness of the supply. The root cause economically is the fact that these persons are not fit for any of the work which society as an organisation needs. The unfitness may arise from the permanent loss of the trade to which the persons belonged; or to mental or physical deterioration following a bad spell of periodic unemployment (a phenomenon to which I return); or may be, and is, I think, more likely to be due to an absence of preparation for any of the employments which need more labour. In fact, it appears that at present in England the demand for labour is not sufficiently definite, and the supply too badly organised to obtain equilibrium.

In a progressive or changing society new trades are continually growing, old trades altering their character or dying out. The latter process does not necessarily nor, I think, generally, mean the throwing out of work of existing employes; it rather means the checking the demand for recruits who should enter the newer trades, which in normal circumstances attract them with higher real wages. There is, however, no information available by which an intelligent artisan can decide into what occupation to put his son. A good deal could be done by mathematical and actuarial work, based on the successive occupational censuses (if these could be improved), to forecast what trades were relatively overcrowded. More could be done by a very

careful organisation of technical schools, directed to educating the young for the trades of the immediate future. At present the choice of a trade is too much a matter of chance, decided by the immediate vacancy in the neighbourhood, or by an ignorant observation of the temporary prosperity of a particular industry. For example, superficial observation suggests that too many lads have entered the building trades in the last twenty years; but, as usual, our sources of information break down when this is examined.

It is true that even at present new trades and growing trades are very rapidly supplied. Skilled labour as a whole is very fluid; witness the manufacture of cycles in the eighties and nineties, the more recent motor-car industry, the great increase in the number of coal-miners. On the other hand, the unemployment statistics in years of good trade show that the process of transmutation is not sufficiently rapid. The possibility of improvement lies in regulating the supply. An even more serious difficulty is that of moving from one grade to another. We are very ignorant on the subject, but it is commonly alleged that the son of an unskilled workman in general must also be unskilled. The father's wages being low, the lad must get to work at once at the first thing that opens. There is a permanent demand for errand and messenger boys, and generally for quite unskilled labour at the bottom of an industry, which if not checked throws a great many young men adrift to begin the world at eighteen in total ignorance of any useful occupation. There is therefore a tendency for a permanent over-supply of the unskilled relative to the skilled. It is not known whether in modern industry the proportions of skilled, partly skilled and unskilled have changed or not. I have not found any significant alterations in such inquiries as I have been able to make. But this proportion is not fixed by any natural law. A deficit of unskilled would soon be supplied by machinery; processes are rapidly adapted to the labour supply. The labour market could readily absorb a greater supply of skilled men, if their skill was that in demand in the growing trades. If we want to check the growth of ignorant and unadaptable labour we must save the boys of thirteen and fourteen from entering occupations that offer no future, and provide them with that knowledge and technique which industry will need five years later. The

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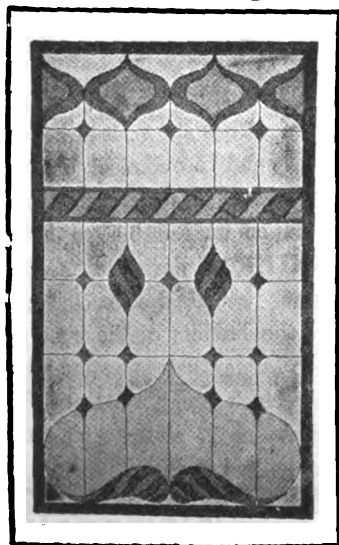
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reason why a not unwilling worker cannot find an employer is not the want of sufficient capital but the uselessness of the workman to society. So far we can get by *a priori* reasoning; whether the facts are correctly stated can only be decided by careful inquiry applying the mathematical methods of sampling, averaging and grading. A purely arithmetical inquiry as that conducted at the London Docks by Mr. C. Booth, and at Liverpool by Miss E. F. Rathbone and Mr. G. H. Wood, will, however, throw a flood of light on such a question as to how many men are wanted, and how many in fact are present, in a trade. We may also hope to learn a great deal from a study of the information collected by the various relief agencies in the recent period of unemployment.

The question of periodic unemployment (as opposed to chronic want of work) is easier to handle and is better understood. It is, however, in need of very careful investigation, and I may remark that the most recent inquiry put to me as to mathematical processes related to the question of forecasting the turning-point towards better or worse trade. The cycle of commercial credit, which is very intimately connected with employment, is best studied by index numbers of prices and of quantity, and the most advanced mathematical work done by Section F* related to these numbers. The more the nature of a crisis is understood the better it can be discounted and its worst effects mitigated, and there is some evidence that this is now done. When the recurring wave of unemployment is sufficiently well known proper rates of insurance for want of work can be established, and the very extensive insurance in this direction by trade unions and other bodies can be put on a safer basis. It is a curious point, and one little noticed, that in the high tide of trade work is plentiful and wages high; but prices are also high, and therefore the purchasing power of a sovereign low. This is the time to save, whether privately or in a society, for when the tide falls there is both more leisure to spend and the purchasing power of money is greater. Those whose occupation is affected by the commercial cycle have their salvation in their own hands.

There remain those who are physically or mentally unfit

* Report of Committee on Variations in the Monetary Standard, 1888-90.

for work, who must always be a burden on their more fortunate fellows, and in considering them we pass out of the region of economics. But in this, as in other sociological questions, we still need statistics, perhaps most those methods of measurement we associate with Galton's name, to enable us to understand the magnitude and nature of the burden to be supported.

Again I would urge that in regard to all these questions we are in a condition of great ignorance. If the numbers of unemployed or unfit are increasing relatively to the population at large, the position is very serious and heroic remedies are wanted; but if they are diminishing, while we lament the present evil, we may be hopeful as to the future. What light do statistics, mathematical or otherwise, throw on this question? We know that the wages of regular workers have increased steadily for many decades, whether measured in cash or in purchasing power, and that hours of labour have diminished progressively. The consumption of necessary commodities and of common luxuries has increased more rapidly than the population. Working-class savings and investments have grown enormously. What evidence we have indicates that aggregate wages and aggregate national income have increased at nearly the same rate. Unemployment, so far as it is registered has, period for period, been at nearly the same level for forty years, except that the years of good employment were specially numerous in the nineties. But this is only one side—the visible side—of the picture. For the permanently unemployed and unfit our only records are the singularly inadequate and imperfect statistics of pauperism. We have nothing to go on but guesses as to the real extent of poverty. We cannot recover records for previous years, and statistical science must remain powerless where there are no data. We are not taking any steps as yet to learn our existing condition in any complete way, though the work done in intensive inquiries would have been sufficient, if directed over the whole field, to have given us an adequate sample.

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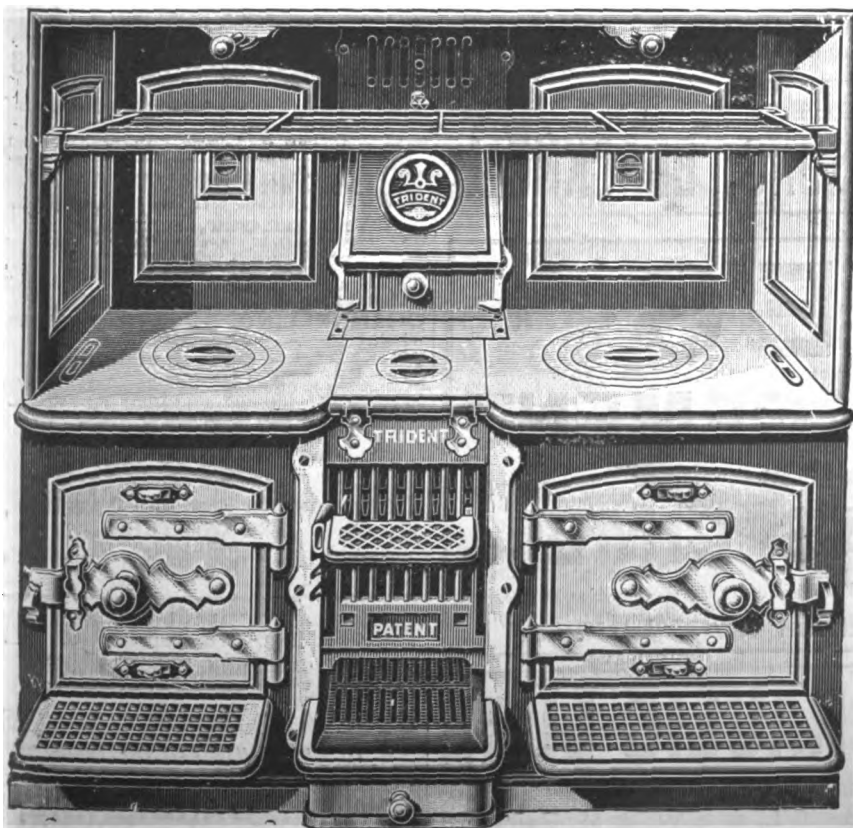
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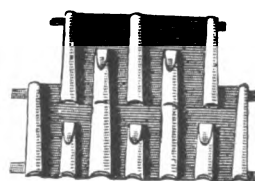
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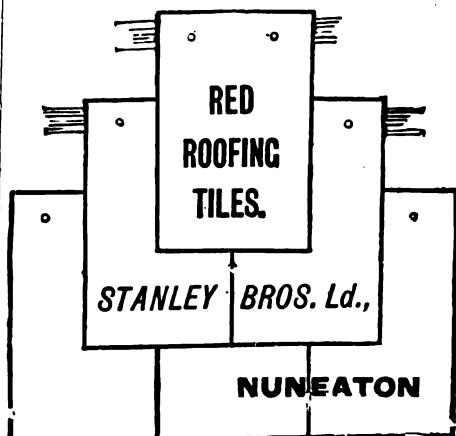
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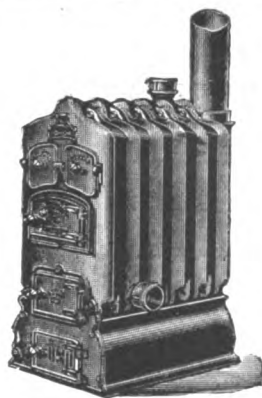
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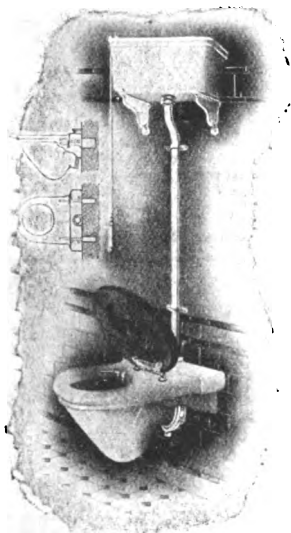
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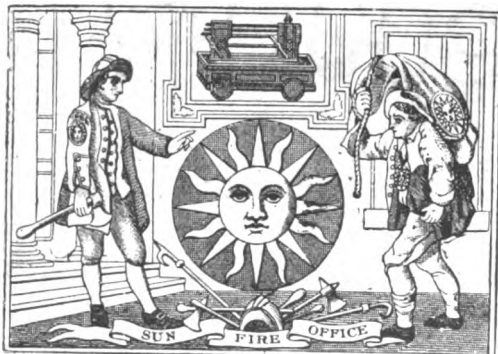
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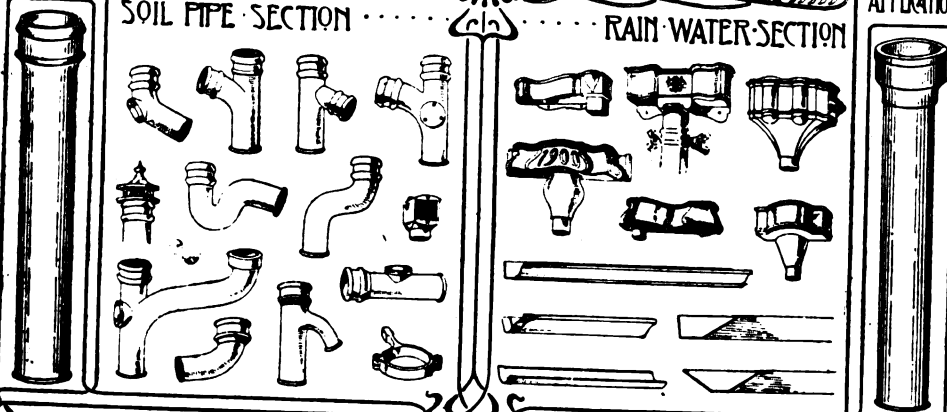
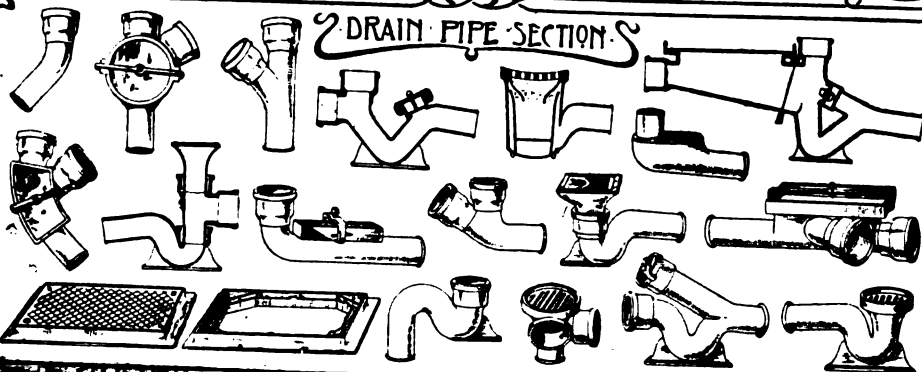
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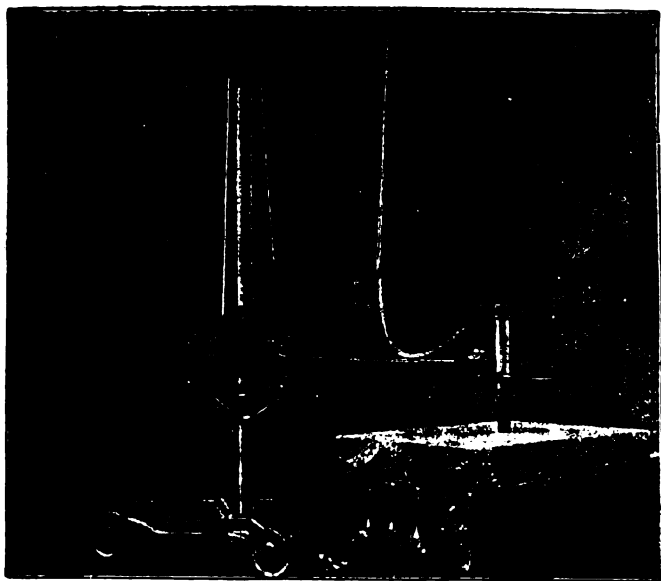
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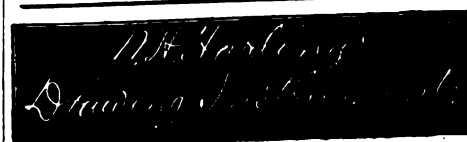
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For Index of Advertisers, see page x.

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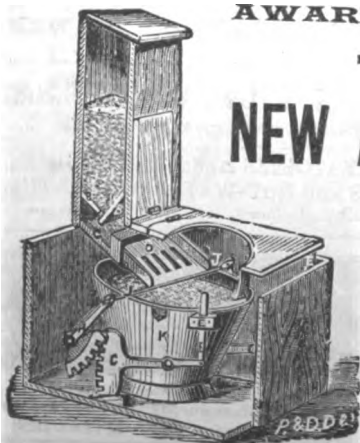
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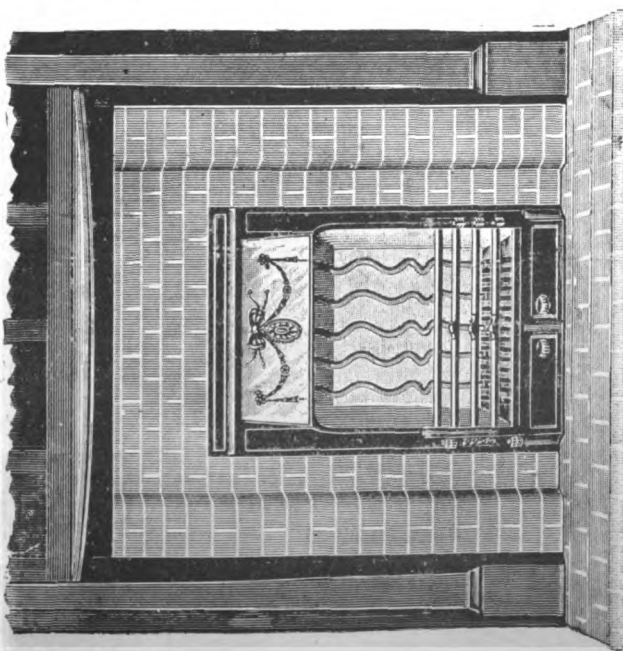
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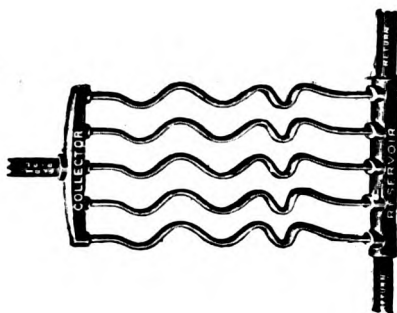
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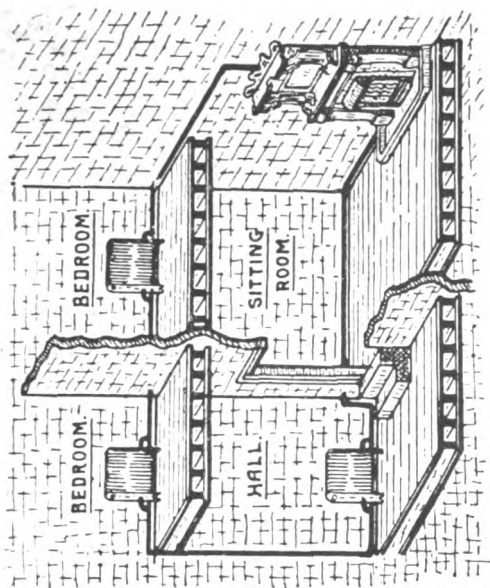


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THE Architect and Contract Reporter.

FRIDAY, AUGUST 17, 1906.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

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Important Notice to the Architects and Civil Engineers of Westminster.

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NOTICE TO ADVERTISERS.

Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further

answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

**.* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

COMPETITIONS OPEN.

BARNSELY.—Aug. 31.—For a high school to accommodate 400 girls. Three premiums of 100l., 50l. and 20l. will be awarded by an assessor. Application before above date to Mr. W. P. Donald, clerk to the Governors, Education Office, Barnsley.

BRISTOL.—Aug. 23.—The Bristol Corporation offer premiums of fifteen, ten and five guineas for sketch designs for residential buildings on their country estate. Limited to architects practising in Bristol. Mr. E. T. Taylor, town clerk.

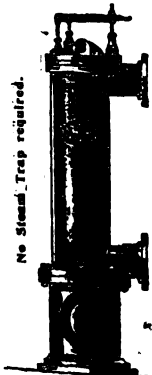
DUCKMANTON.—A scheme for a model village comprising 500 cottages, clubhouse and shops, for the Brodsworth Main Colliery Company. A prize of 100l. for the best design. Information to be obtained from Messrs. The Brodsworth Main Colliery Company, Duckmanton, near Chesterfield.

MAESTEG.—Aug. 18.—For the extension of the Bethania hall and chapel. Mr. Thos. Rees, secretary, 16 Bank Street, Maesteg.

MONTEVIDEO.—Dec. 14.—La Comision Nacional de Caridad require competitive plans for new foundling hospital with approximate cost. Plans and report, under mottoes, and, in sealed envelope, name and address of competitor. The four selected plans will receive 212l. each, and will be asked to further compete. Further particulars from the Consulate-General for Uruguay, 5 and 6 Clement's Inn, Strand, W.C.

STEWARTON.—Aug. 21.—For the proposed cemetery and caretaker's house at Stewarton, Scotland. Mr. James Kerr, F.S.A.A., clerk to the Parish Council, Parish Council Offices, Stewarton.

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CONTRACTS OPEN.

ASHTON-ON-RIBBLE.—Aug. 27.—For the whole or separate trades in new church, Ashton-on-Ribble, Preston. Messrs. Austin & Paley, architects, Lancaster.

AUDENSHAW.—Sept. 11.—For the erection of a public elementary school at Audenshaw, Lancashire. Deposit 2/. Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

BARRY.—Aug. 18.—For the erection of public offices in Holton Road. Deposit 5/. Messrs. Hutchinson & Payne, architects, 29 John Street, London, W.C.

BEDALE.—Aug. 23.—For building a Wesleyan Sunday school. Mr. F. Gatenby, Bedale, Yorks.

BELFAST.—Aug. 18.—For building extensions to premises of Messrs. R. Watson & Co., Donegall Street. Mr. William J. Fennell, architect, 2 Wellington Place, Belfast.

BELFAST.—Aug. 20.—For the erection of a school and matron's residence in Lancaster Street, for the trustees of the Ladies' Industrial school. Deposit 2/. 2s. Messrs. Blackwood & Jury, M.R.I.A., architects, 41 Donegall Place, Belfast.

BELFAST.—Aug. 21.—For fitting-up and completing five baths and the heating by steam of a dormitory at girls' school department of the workhouse. The Clerk's Office, Workhouse.

BRADFORD.—Aug. 29.—For hot-water supply apparatus at the city hospital, Leeds Road, for the Corporation. The City Architect, Whitaker Buildings, Brewery Street, Bradford.

BRISTOL.—Aug. 31.—For the third instalment of the superstructure of the Avonbank electricity works, Feeder Road, comprising steelwork, masonry, concrete, &c. Deposit 2/. 2s. Mr. H. Faraday Proctor, city electrical engineer, Temple Back, Bristol.

CASTLEBLAYNEY.—Sept. 3.—For the erection of a goods store (90 feet by 25 feet) and office (20 feet by 14 feet) of timber, with galvanised corrugated iron roof, &c., at their Castleblayney station, for the Great Northern Railway Co., Ireland. Deposit 1s. Mr. W. H. Mills, engineer-in-chief, Amiens Street terminus, Dublin.

CAVERSHAM.—Aug. 21.—For alterations to existing works and the erection of additional septic tanks and continuous filters in connection with the sewage-disposal works. Deposit 2/. 2s. Mr. Alfred J. Smith, engineer and surveyor, Council Offices, 11 Bridge Street, Caversham.

CLIMPING.—Aug. 28.—For the erection of three wooden groynes, average 300 feet in length, and for the extension by 150 feet of an existing groyne, on the foreshore at Climping, Sussex, for the Commission of Sewers for the Rape of Arundel. Mr. Arthur Holmes, clerk to the Commissioners, Arundel.

DARTMOUTH.—Sept. 1.—For the erection and completion of shipping offices on the South Embankment, Dartmouth. Deposit 2/. 2s. Mr. R. Montague Luke, civil engineer and architect, 15 Princess Square, Plymouth.

DENTON.—Sept. 11.—For execution of alterations at the Denton technical institute, Lancashire. Messrs. J. W. Beaumont & Son, 10 St. James's Square, Manchester.

DUBLIN.—Aug. 20.—For the following works in connection with new motor-car shed at Amiens Street terminus, Dublin, for the Great Northern Railway Co., Ireland:—(Contract No. 1) Three timber smoke troughs, each 126 feet long; (2) slating of roof. Tender forms 1s. each. Mr. W. H. Mills, engineer-in-chief, Amiens Street, Dublin.

EASTBY.—Aug. 28.—For the erection of an entrance lodge at the Sanatorium, Eastby, near Skipton, for the guardians of Bradford Union. Deposit 1/. 1s. Mr. Fred. Holland, engineer and architect to the Board, 11 Parkinson's Chambers, Hustlergate, Bradford.

FAIRFIELD.—Aug. 28.—For the construction of a concrete storage reservoir at Turner Lodge, Fairfield, near Buxton, to hold 4,000,000 gallons. Deposit 2/. 2s. Messrs. Swan & Brady, engineers, Town Hall, Chapel-en-le-Frith, via Stockport.

FROSTERLEY.—Aug. 23.—For the erection (labour only, for all or each trade separately) of an institute and hall at Frosterley, Durham. Mr. Matthew Lee, Frosterley.

GREAT BROUGHTON.—Aug. 18.—For alterations and additions to the Great Broughton Baptist church, Cumberland. Messrs. W. G. Scott & Co., architects and surveyors, 2 Park Lane, Workington.

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HALIFAX.—Aug. 18.—For mason, carpenter and joiner, plumber and glazier, plasterer and slater, heating engineer, ventilating engineer and painter's work in erection of additions to Booth Town Liberal Club. Messrs. Chas. F. L. Horsfall & Son, architects, Lord Street Chambers, Halifax.

HASLEMERE.—Aug. 20.—For the erection of an engine-house and pair of cottages at the pumping station on Blackdown, near Haslemere, for the Hambledon Rural District Council. Deposit 3*l.* 3*s.* Messrs. R. B. Grantham & Son, 23 Northumberland Avenue, London, W.C.

HENLEY-ON-THAMES.—Sept. 10.—For converting the school buildings adjacent to the workhouse at Henley-on-Thames into an infirmary, for the Guardians of Henley union. Names before August 15 to Messrs. Charles Smith & Son, architects to the Board, 164 Friar Street, Reading.

IRELAND.—Aug. 20.—For additions to houses in Evergreen Road, Cork. Messrs. W. H. Hill & Son, architects, 28 South Mall, Cork.

IRELAND.—Aug. 20.—For rebuilding premises, 77 Church Street, Ballymena, recently destroyed by fire. Messrs. R. E. Buchanan & Co., architects, Castle Street, Londonderry, or at Church Street, Ballymena.

LIDGATE.—Aug. 20.—For rebuilding a bridge at Lidgate, Suffolk, for the Moulton Rural District Council. Messrs. Holland & Sons, High Street, Newmarket.

LIVERPOOL.—Aug. 27.—For the erection at Highfield infirmary, Knotty Ash, of laundry buildings. Deposit 2*l.* Messrs. Edmund Kirby & W. E. Willink, architects, 5 Cook Street, Liverpool.

LONDON.—Aug. 20.—For the supply, delivery and erection complete, at the depot, Queen's Road, Wimbledon, of a cart shed, about 165 feet long by 30-feet span, with open sides and consisting of galvanised corrugated iron roofing, steel roof trusses and rolled steel stanchions. The Borough Engineer and Surveyor, Town Hall, Wimbledon.

LONDON.—Aug. 22.—For alterations at the additional workhouse, Hazelville Road, Hornsey Rise, lately known

as the Alexandra orphanage, for the Guardians of St. Leonard, Shoreditch. Deposit 5*l.* Mr. F. J. Smith, architect, Parliament Mansions, Victoria Street, S.W.

LONDON.—Sept. 4.—For the execution of ordinary works and repairs to buildings, &c., in their charge in the London district for three and a half years from October. Deposit 1*l.* H.M. Office of Works, Storey's Gate, Westminster.

LONDON.—Sept. 27.—For additions and alterations in the building at the electricity works, Osborn Street, Whitechapel, E., for the Stepney Borough Council. Deposit 5*l.* Mr. M. W. Jameson, A.M.I.C.E., borough engineer, 15 Great Alie Street, Whitechapel, E.

MANCHESTER.—Aug. 23.—For the erection of a photometer-house and extension of coal-sheds at the Droylsden station. Mr. J. G. Newbigging, M.I.C.E., engineer, Rochdale Road gasworks.

MANCHESTER.—Sept. 5.—For alterations and additions to the Abbot Street Municipal school, Rochdale Road. Deposit 2*l.* 2*s.* The Education Offices, Deansgate, Manchester.

MANCHESTER.—Sept. 5.—For the erection of the Domett Street Municipal school, Blackley. Deposit 2*l.* 2*s.* The Education Offices, Deansgate, Manchester.

NEW MALDEN.—Aug. 31.—For building a boundary wall, erecting wood and iron fencing and forming a path at Norbiton Common farm. Mr. William H. Hope, architect and surveyor, Hampton Wick, Surrey.

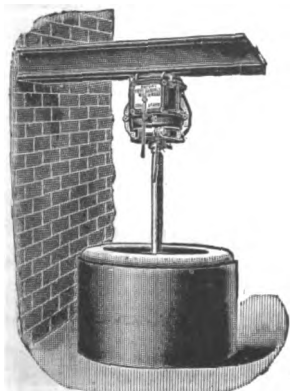
POOLE.—Sept. 10.—For the erection of a secondary school at Seldown, Poole. Mr. Walter Andrew, architect, Parkstone.

PRESTON.—Aug. 21.—For proposed art-room and other additions to the grammar school, Cross Street. Deposit 1*l.* 1*s.* The Borough Surveyor, Town Hall, Preston.

SALFORD.—Sept. 10.—For the following works, for the tramways committee:—(Contract 145) constructional steel-work; (Contract 146) builders' work, in erection and completion of extensions to the central car depot, Frederick Road, Pendleton. The General Manager, Tramways Department, 32 Blackfriars Street, Salford.

SCOTLAND.—Aug. 21.—For the mason, carpenter, slater, plasterer and plumber's work of alterations and additions to

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SCOTLAND.—Aug. 24.—For the construction of a timber jetty about 435 feet long and 30 feet wide, and relative works on the south side of Albert Basin, within the port of Aberdeen, for the Harbour Commissioners. Deposit 2*l.* 2*s.* Mr. R. Gordon Nicol, engineer, Aberdeen.

SCOTLAND.—Aug. 24.—For the mason, carpenter, slater, plumber, plasterer and painter's work of a schoolhouse at Glenkindie. Mr. Alex. Taylor, Castle Cottage, Kildrummy.

SCOTLAND.—Aug. 27.—For bricklayer and joiner, plumber, plasterer and painter's work of proposed new pavilion to be erected at fever hospital, Falkirk. Mr. David Ronald, burgh engineer, Burgh Buildings, Falkirk.

SCOTLAND.—Sept. 4.—For the erection of the Lochmaben combination hospital. Mr. F. Carruthers, architect, 35 Buccleuch Street, Dumfries.

SHEFFIELD.—Aug. 21.—For the work required in connection with underground conveniences adjoining the town hall in Surrey Street. Deposit 1*l.* 1*s.* Mr. C. F. Wike, city surveyor, Town Hall, Sheffield.

SOUTH SHIELDS.—Sept. 28.—The South Shields education authority invite preliminary schemes and estimates for the warming and ventilation on the Plenum system of a block of four school departments, accommodating a total of 1,950 scholars, to be erected on the site of the Mowbray Council school, South Shields. Mr. Henry Grieves, architect, Albany Chambers, King Street, South Shields.

STANLEY.—Aug. 27.—For the erection of dwarf walls and palisading, together with cement footpaths and necessary surface-water drains to twenty-four houses in Council Street, Stanley, Durham, for the Urban Council. Mr. Wm. Forster, architect, Stanley.

SUTTON-ON-SEA.—Aug. 23.—For the demolition of the existing lifeboat-house adjoining the promenade, and the construction of an enlarged boathouse on the same site. Mr. W. T. Douglass, engineer and architect to the Royal National Lifeboat Institution, 15 Victoria Street, Westminster, London, S.W.

SWINDON.—Aug. 25.—For the erection of schoolroom, Upper Stratton, Swindon. Mr. O. Fry, 152 Cricklade Road, Swindon.

THROWLEIGH ASH.—Aug. 24.—For a moor cottage at Throwleigh Ash, Devon. Messrs. E. H. Harbottle & Son, architects, County Chambers, Exeter.

WALES.—Aug. 18.—For the erection of public offices in Holton Road, Barry. Deposit 5*l.* Messrs. Hutchinson & Payne, architects, 29 John Street, London, W.C.

WALES.—Aug. 20.—For the erection of proposed villa residence at Rhymney. Messrs. James & Morgan, architects, Charles Street Chambers, Cardiff.

WALES.—Aug. 20.—For repairs to the master's house belonging to the Council school at Bwlchgygroes, Clydey, Pembrokeshire. Mr. D. E. Thomas, architect, 17 Victoria Place, Haverford West.

WALES.—Aug. 21.—For the erection of a public slaughter-house and other contingent works at Taff's Well, Caerphilly. Deposit 2*l.* 2*s.* Mr. A. O. Harpur, surveyor, the Council Offices, Caerphilly.

WALES.—Aug. 21.—For the erection of a free library at Bangor, North Wales. Deposit 2*l.* Messrs. Dixon & Potter, architects, 66 King Street, Manchester.

WALES.—Aug. 25.—For making additions and extensive improvements to the Cardiff Arms, Abergavenny, also for building new stores, stabling and other works, for the Hereford and Trecegar Brewery Company, Hereford. Mr. B. J. Francis, architect, Abergavenny.

WALES.—Aug. 27.—For the erection of a mission hall at Hawthorn, Pontypridd. Mr. Arthur L. Thomas, architect and engineer, Church Street Chambers, Pontypridd.

WALES.—Sept. 12.—For additions and improvements to Bethesda Congregational chapel, Merthyr Tydfil. Mr. John Thomas, 90 Brecon Road, Merthyr Tydfil.

WALES.—Sept. 17.—For the erection of schools for boys, girls and infants, together with cookery and manual instruction rooms at Willowtown, Ebbw Vale, Mon. Deposit 3*l.* 3*s.* Mr. H. Waters Waungoh, architect, Beaufort. Separate tenders are required for (1) the infants' block, (2) mixed block, (3) cookery and manual block, (4) the remainder of the works and (5) the whole of the works.

WOODFORD GREEN.—Aug. 28.—For alterations, repairs, &c., at The Willows, Woodford Green, for the purpose of adapting the buildings for Council offices, fire station, &c. Mr. William Farrington, surveyor, Council Offices, Woodford Green, Essex.

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Heathfield	6,121	0	0
Nightingale	5,967	0	0
Green	5,893	10	0
Jones & Andrews	5,798	0	0
Crossley & Son	5,683	0	0
Lonsdale	5,651	0	0
F. & G. Foster	5,591	0	0
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For carrying-out the Derby Road sewage works.

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DARTFORD.

For alterations to the laundries at Darenth asylum. Mr. W. T. HATCH, engineer.

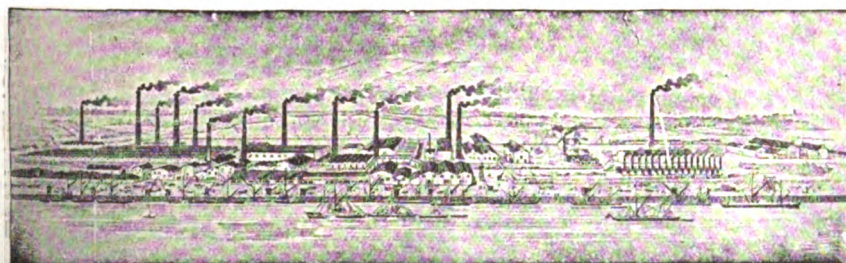
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IRELAND.

For alterations and additions to the Munster and Leinster Bank, Bandon. Mr. ARTHUR HILL, B.E., F.R.I.B.A., architect.	
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Hegarty	1,200 0 0
E. & P. O'Flynn	1,135 0 0
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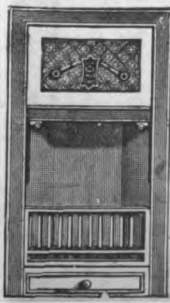
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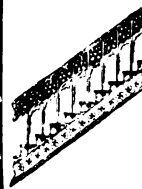


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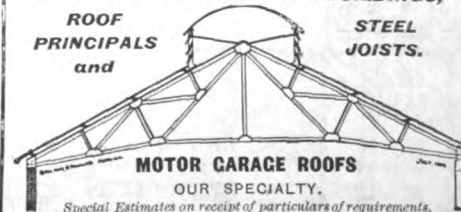
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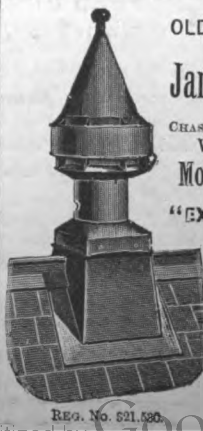
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SUPPLEMENT

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For installation of electric lighting at the Downs school.

Mr. W. T. HATCH, engineer.

Allam & Co.	£3,985	19	0
Ward, Barker & Co.	3,650	0	0
Jackson Bros.	3,523	0	0
Eastlakes, Ltd.	3,365	0	0
Warren, Smith & Co.	2,994	0	0
Glover & Co.	2,958	0	0
Buchanan & Curwen	2,950	0	0
Western Engineering Co.	2,935	0	0
Electrical Engineering Maintenance Co.	2,892	0	0
Army and Navy Auxiliary Co-operative Supply	2,885	0	0
Suter & Co.	2,791	0	0
Sweet Bros.	2,673	3	1
Sunderland & Co.	2,655	0	0
Cort & Son	2,651	0	0
Cowtan & Sons	2,650	9	0
Barker & Co.	2,646	7	0
Mann, Egerton & Co.	2,642	13	2
Coleby & Co.	2,625	0	0
Tamplin & Makovski	2,555	0	0
Lund Bros. & Co.	2,550	0	0
Smeeton & Page	2,545	9	6
Bromley, Batstone & Kirk	2,498	16	0
Potter & Sons	2,493	0	0
Hiscock	2,469	0	0
DARGUE, GRIFFITHS & Co., Liverpool (accepted)	2,407	0	0

TERRINGTON ST. CLEMENT.

For the erection of a dwelling-house at Hay Green. Mr. H. T. TILSON, architect.

Reeder	£255	0	0
Dye & Allen	235	0	0
Brummitt	210	0	0
Johnson & Son	210	0	0
Read & Wildbur	209	10	0
Bone	200	0	0
Medwell	198	10	0
Warne	197	18	4
BARNES & Co., Lynn (accepted)	190	0	0

SEAFORD.

For the erection of a boarding-house. Mr. J. W. B. BLACKMAN, P.A.S.I., architect, 3 Pavilion Buildings, Brighton. Quantities by Mr. H. CURTIS CARD.

Saunders & Co.	£3,876	0	0
Rich	3,271	5	3
Martin	3,261	10	8
Bulld & Co.	3,209	0	0
Field & Co.	3,161	0	0
Webb	3,132	1	2
Young	2,998	0	0
Morting Bros.	2,972	0	0
Potter Bros.	2,950	0	0
Wilkinson	2,889	18	7
Leney & Son	2,785	0	0
Godfrey Bros.	2,772	12	5
Cook & Son	2,684	0	0
STREATHER, South Croydon (accepted)	2,495	14	0

WEALDSTONE.

For making-up, &c., Bruce Road. Mr. H. WALKER, surveyor.

Lee	£268	13	3
Hardy, Bate & Co.	247	9	10
J. & W. Drake	243	0	0
Free & Son	242	12	1
Adams	233	3	7
Bower Bros.	223	5	10
Mann	216	16	9
CHAMPNISS, Wealdstone (accepted)	208	11	4

WOLVERHAMPTON.

For additions to administrative block at fever hospital. Mr. G. GREEN, borough engineer, Wolverhampton.

Tomkinson	£2,231	0	0
Kidson	1,949	0	0
Willcock & Co.	1,685	0	0
Herbert	1,660	0	0
T. & S. Ham	1,660	0	0
Jones	1,658	0	0
Cave & Son	1,585	0	0
GOUGH & SON, Wolverhampton (accepted)	1,490	0	0

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VIEWSLEY.

For reconstruction of Colham bridge. Mr. H. T. WAKELAM, county engineer, Guildhall, Westminster.

Thorne.	£2,560	17	0
Johnson & Hunt.	2,465	19	3
Kirk & Randall.	2,268	0	4
Somerville.	2,260	11	7
Macdonald.	2,199	0	0
Pethick Bros.	2,197	0	0
Ellis.	2,179	16	1
Mowlem & Co.	2,117	9	10
Ford.	2,108	12	3
Jackamans & Co.	2,066	4	3
Wimpey & Co.	2,058	0	4
Muirhead & Co.	1,961	14	11
Rutter.	1,922	8	0
Jackson.	1,919	14	0
A. & B. Hanson.	1,857	0	0
Morecroft.	1,790	0	0

TRADE NOTES.

A NEW company has just been registered, under the title of the Fletton Crown and Crowhurst Brick Company, Ltd., to acquire the Fletton Crown Brickworks and the London and Brighton Brick and Terra-Cotta Company, Ltd.

THE Plum Mill, Heywood, the longest mill in the world, is being protected with sprinklers, and the order has been entrusted to Messrs. George Mills & Co., Radcliffe, to fit the mill throughout with their Mills's modified "Titan" sprinkler.

MESSRS. J. B. JOYCE & Co., Whitchurch, Salop, have received the order for a large striking clock, showing time upon two dials 5 feet diameter, for Claverdon Church, near Warwick. The same firm have a similar clock in hand for Boreatton Hall, Baschurch.

THE new workhouse infirmary, Coventry, is being warmed and ventilated by means of Shorland's double-fronted patent Manchester stoves, with descending smoke flues, Manchester grates and special inlet ventilators, the

same being supplied by Messrs. E. H. Shorland & Brother, of Manchester.

WE have received specimens of "Lignomur," which is an admirable manufacture for wall decoration. The relief is sharply defined, and the varieties of patterns are all adapted for the purpose.

THE following firms have supplied their specialties to the new City Hall, Belfast:—Clyde Structural Iron Company, Diespeker & Co., Farmer & Brindley, James Gibbons, Goodall, Lamb & Heighway, Ltd., P. & W. M'Lellan, Limmer Asphalte Paving Company, T. Skidmore & Son.

"MODERN BATH-ROOMS" is the title of a handsome booklet illustrating a great variety of the "Standard" porcelain enamelled baths and one-piece lavatories, and containing useful advice with regard to planning and fitting the bath-room. A copy of "Modern Bath-rooms" will be sent gratis and post free to architects, builders or anyone interested in residence construction or refitting. "Standard" porcelain enamelled goods are thoroughly reliable in material and in service, artistic in finish and design, and withal so moderate in price that their merits are worthy of consideration; for this reason an application for a copy of "Modern Bath-rooms" is to be recommended. The address of the Standard Sanitary Manufacturing Company is 22 Holborn Viaduct, London, E.C.

MESSRS. GEORGE JENNINGS, LTD., hydraulic engineers, of Lambeth, London, have secured the order for the supply, delivery and erection of automatic apparatus at the Crawley and Ifield sewage works. The apparatus comprises four armed revolving sewage sprinklers 67 feet diameter, similar to those in operation at Yardley, Kenilworth, Eastwood, Tenterden, &c. The consulting engineer for the scheme is Mr. Sidney R. Lowcock, M.I.C.E., of 50 Queen Anne's Gate, S.W., and the contractors are Messrs. Edwards & Co., of Granville House, Arundel Street, Strand. By a recent mail the above firm received a testimonial from the consulting civil engineer to the Transvaal Government, stating that the several large sprinklers (Jennings's patent) which have been installed on his recommendation in various parts of the Transvaal have given complete satisfaction.

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BUILDING AND BUILDERS.

MR. T. PARKER, building contractor, died at the age of fifty-two at his residence in York. In the course of his partnership with Mr. Sharp he carried out several contracts.

THE plasterers' labourers in Clitheroe struck work in a body on the 9th inst., demanding an increase from 5d. to 5½d. an hour.

ACCORDING to *Kemp's Mercantile Gazette* there were thirteen failures in the building and timber trades recorded during the past week, as against twenty-two last year and twenty-three of the year before in the corresponding weeks.

THE National Telephone Company has purchased a large site at the corner of York and George Streets, Manchester, for the erection of a new telephone exchange. Plans are being got out for an exchange of 10,000 lines.

THE Lancashire Asylums Board have applied for authority to borrow 21,000*l.* for the erection of a new block of buildings at the Winwick asylum, near Warrington. The plans have been approved by the Home Secretary.

THE Chiswick Urban Council invited tenders for the construction of a 36-inch by 24-inch sewer and 16-inch by 24-inch surface-water drain. On being opened it was found they varied from 775*l.*, the lowest, to 1,481*l.*, the highest. The intermediate figures were 1,115*l.* and 1,235*l.*

THE Amalgamated Union of Carpenters, London, have telegraphed to the Toronto carpenters, who are now on strike, encouraging them in the fight they are making against the employers and promising to send them funds from Great Britain.

THE quarterly report of the Amalgamated Society of Carpenters and Joiners states that the cash balance at the end of June was 93,924*l.* 11*s.* 9*d.*, an increase of 8,881*l.* 16*s.* 10½*d.* on the three months. The officials hope that at an early date they will be in a position to revert from the triple levy of 9*d.* a week to the double levy of 6*d.* a week.

DR. MEREDITH YOUNG, the medical officer of health of Stockport, in a report which he has issued, states that the Council will shortly have to face the question of improving the sanitation of courtyards. Infectious diseases, he says,

are undoubtedly more readily communicated from one occupant of a courtyard to another, coupled with the probability that life in such courtyard does not tend to a high standard of morality. The case against such a method of building is irresistible.

ON Monday morning nearly 200 unemployed men drawn from the Finchley district were engaged to commence work for the construction of a reservoir on the borders of Hampstead. When they arrived at the ground the contractor's foreman explained that the payment would be 6½*d.* per hour. A murmur went round, and some dozen men came forward and demanded another halfpenny per hour, refusing to touch a stone until that was acceded to. They laid down their tools and marched off. The remainder drew up an ultimatum and presented it to the foreman, adding that it would expire at ten o'clock. On the stroke of ten, no satisfactory answer being forthcoming, the men left the works in a body.

THE Home Secretary has been pleased to appoint a departmental committee to inquire into the dangers attendant on building operations, and to prepare a draft for regulations embodying the precautions which may in their opinion be desirable for the safety of the workers. The members of the committee are Mr. William Dawkins Cramp, I.S.O., deputy chief inspector of factories (chairman), Mr. John Batchelor (Operative Bricklayers' Society), Mr. E. T. Jessup (Amalgamated Society of Carpenters and Joiners), Mr. William Shepherd (London Master Builders' Association), and Mr. Alexander R. Stenning (Surveyors' Institution). Any communications on the subject should be addressed to the secretary, Mr. Leonard Ward, Home Office, Whitehall.

THE works which are to be erected at the Bute Docks, Cardiff, by the Cardiff Washed Coal Company, will, it is stated, be the largest and most up-to-date coal washing, screening and sizing installation in Europe. They are estimated to cost 100,000*l.* The machinery will be electrically driven. The superstructure will be erected on a reinforced ferro-concrete slab supported by about five hundred ferro-concrete piles driven to a depth of 45 feet.



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ELECTRIC NOTES.

THE Walsall Town Council have received the sanction of the Board of Trade to an expenditure of 28,000*l.*, the estimated cost of reconstructing certain of the tramway lines in the borough.

THE Brighouse Town Council have decided on an electric light and power supply scheme combined with the provision of a destructor for dealing with the refuse, at an estimated expenditure of about 25,000*l.*

THE Beckenham Council find that the adoption of the incandescent gas mantle in place of the old flat flame burner has resulted in a saving of about 55*o*l. during the past four years. A contrast between electric light and gas shows that the comparative cost per mile is 57*l.* for incandescent gas lighting and 57*o*l. for electric arc lighting.

THE cost of mining in Mexico has been diminished by the use of electric power. In the El Oro mining camp power is received over a 200-mile transmission line at 50*o*l. gold per horse-power per year, while the cost of steam power had previously been from three to four times that amount. This has reduced the cost of working the ore from 7*o*l. to 5*o*l. per ton.

THE Marylebone Town Council offer to instal and supply, through wiring contractors, two pairs of 50-watt lamps to any new and approved customer for an inclusive charge of 20*s.* per lamp per annum, to cover the use of the

wiring and the supply of electricity up to 1,500 hours a year. All new lamps are to be paid for by the consumer, and electricity consumed in excess of the quantity named is to cost 1*d.* per unit.

THE fire hazard of electricity as computed from the fire losses in New York City from 1902 to 1905 is very slight as compared with the other causes of fires. The total number of fires traceable to defective electrical wiring or other electrical causes was in that time only 361, which is 1.34 per cent. of the total number of fires; the total loss from these 361 fires was 207,610*o*l., which is 1.15 per cent. of the total loss from fires due to all causes.

MR. J. B. McNAMARA, of Cairo, chief electrical engineer of the State railways of Egypt, has been making a tour of the United States, during which he has inspected the Pennsylvania, New York Central, Long Island and other electrified steam roads. Mr. McNamara stated that the management of the State railways of Egypt has decided to instal a 19-km. single-phase line near Cairo and put a 10-minute service in operation. The road has previously been operated by steam. Bids will be asked for the construction of this line probably in January.

THE fourteenth annual report by the Glasgow Corporation electricity department, which embraces the year ended May 31, 1906, states that the gross revenue amounted to 195,841*l.* 14*s.* 11*d.* and the working expenditure to 91,416*l.* 4*s.* 11*d.*, leaving a balance of 104,425*l.* 10*s.*, out of which the committee had to meet their statutory requirements. After this was done there remained a surplus on the year's operations of 3,808*l.* 5*s.* 9*d.*, which has been transferred to the credit of the reserve fund account, which now stood at 16,913*l.*

INSTRUCTIONS were recently given to Messrs. Laidler & Sons, electrical engineers, New Elvet, to provide a complete installation for Durham Cathedral. A five-light fitting will depend from the inside centre of each arch in the church, and will, it is expected, be ready for use long before the dark days of winter set in. It is conjectured that these will furnish a satisfactory method of lighting both nave and aisles, and leave uninterrupted the view from one end of the noble church to the other. Another advantage claimed is that the light will be thrown where mostly required, just

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over the heads of worshippers, the old system being objected to because a flood of light was thrown on the vaulted roof, whilst the floor of the church was, to the disadvantage of the congregation, always in semi-darkness.

THE Leamington Town Council have received from the Board of Trade the memorandum drawn up by Colonel Von Donop, the inspector recently sent down to investigate the complaints as to the shrieking noises made by the tramcars in rounding certain curves in Leamington. He said that the rails at one of the curves were worn away to a dangerous extent, and there were marks of frequent derailments. The company attributed the wearing away of the rails entirely to the action of a few radial axle cars, the wheels of which failed to "radiate." They had already given orders for some cars of rigid wheel base, and were confident that when this was done the wearing away would cease. The inspector agreed to the company's views, and did not think they could be pressed to take further steps at present. With regard to the noise, which was not confined to the radial axle cars, the company could not account for it, but had undertaken to look further into the matter.

THE Board of Trade in their annual report upon the accidents that occurred on the railways of the United Kingdom during 1905 record that within the year 1,099 persons were killed and 6,459 injured by accidents due to the running of trains or the movements of railway vehicles. A table in the return points to the conclusion that experience is gradually making for safety in the management of electricity as a motive force on railways. The table in question shows the number of persons killed and injured in 1905 on the Lancashire and Yorkshire, the London and South-Western, the Metropolitan, the Metropolitan District and the North-Eastern Railways through coming in contact with electric "live" rails. In 1904, when only two of these railways were using electric traction, eight persons were killed and twenty injured in the way named. Last year one servant and one trespasser were killed and thirteen servants and five trespassers were injured on the same railways.

THE United States Consul at Berne gives further particulars of the project for a trunk line called the "Lotschberg," with electricity as motor-power, to pass through the Bernese Alps and connect at Brig with the Simplon, which are published in a report to the Washington Bureau of

Manufactures. The new railroad will require five and a half years to build, and necessitates a tunnel $13\frac{1}{2}$ kilometres long out of an entire length of 56 kilometres. The cost will be over 3,000,000*l.* The steepest gradient will be twenty-seven one-thousandths. It will serve as the most direct means of communication between Northern Italy (Milan, and Genoa) and the vast district lying to the north and north-west of Switzerland. It will shorten the approach to the Simplon, that now must be reached *via* Lausanne, and will compete with the Gothard tunnel railroad. Paris will be 15 miles nearer the cities of Italy than *via* the new Lausanne-Simplon tunnel route, and about 100 miles nearer than *via* Gothard. From Calais Northern Italy can be reached with 52 miles less travel than by Lausanne through the Simplon.

SHEFFIELD City Council have received an interesting report with respect to the maintenance of the existing electric tram system. Sheffield has adopted a universal penny fare from the centre of the city to all suburbs, and passengers are carried in some instances as far as three and three-quarter miles for the penny, a cheaper rate than has been attempted either in this country or on the Continent. The Council find that the income of the undertaking is sufficient for its needs, and that reasonable assistance out of the surplus will probably be available year by year in aid of the rates. It has been decided to establish a renewals fund of 75,000*l.*, and to put aside each year towards renewals an amount equal to 1*d.* per car-mile travelled, which will realise about 26,000*l.* or 27,000*l.* per year. That sum, it is considered, will be sufficient to meet all calls on this account, though it is pointed out that neither Sheffield nor any other city has yet had sufficient experience to guide them to any exact figure.

THE London County Council, in connection with the widening of Hampstead Road at its southern end, found it necessary to acquire the site of the Old King's Head public-house. Claims were sent in by the freeholder and leaseholder amounting to 71,000*l.* After prolonged negotiation, the Council will pay 29,200*l.* for the leasehold and trade interest in the house and 18,000*l.* to the Metropolitan Railway Company, the freeholders.

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VARIETIES.

MR. A. CARNEGIE presented to Dundee in 1902 the sum of 37,000*l.* for the erection of district free libraries. Owing to the difficulty of obtaining suitable sites only one building has so far been erected. Last week it was announced that two further sites have been offered free to the Council by citizens.

THE Canadian Manufacturers' Association reports that 6,273 employes are required in Canada, apart from those required by contractors and farmers. In the iron and steel trade 935 workmen are required, chiefly in Ontario, and 102 cabinetmakers. Of the total number 3,394 men are required, 1,231 women, 405 boys and 1,183 girls. The total for the province of Ontario is 3,318, and for Quebec 1,665.

THE Newport works and general purposes committee are of opinion that greater powers should be given to local authorities to direct in what manner building lands should be developed so that streets on different estates should be made to join one another and thus avoid *cul de sacs* and afford better facilities for police supervision, &c. With this object they recommend the Council to urge upon the Association of Municipal Corporations the desirability of having legislation granting such powers to local authorities.

THE opponents of the proposal to erect a new town hall and municipal buildings at Hamilton, N.B., have taken legal opinion on the legality of a recent resolution of the Town Council to defray the cost out of the Common Good. The Council have given their opinion that a town hall cannot be erected without a plébiscite of the ratepayers, and that the resolution to defray the cost out of the Common Good is illegal. They consider that any ratepayer would have a right to challenge the resolution.

THE Local Government Board have several times refused to sanction the plans for additions and alterations to the Rotherhithe infirmary, estimated at an enormous sum. The plans have been revised each time with a view to economy, and the cost has been reduced to 45,000*l.* The Local Government Board, however, still refuse to sanction such an expenditure and suggest a further reduction by 2,000*l.* exclusive of furnishing. They have approved the plans, but subject to the cost being reduced by the amount stated.

THE Board of Education in the course of a communication to the Governors of the New Mills secondary school suggest some of the leading manufacturers might be approached, so as to ascertain in what way courses of work can be arranged for the greatest benefit of workmen and apprentices. Encouragement might best be given by paying the fees of students, or by allowing students time off on the morning following the evening on which they have been at the classes. Both these plans have been adopted by employers in various parts of the country.

THE President of the Local Government Board has refused to alter his decision allowing only twenty-six years for the repayment of the additional 25,000*l.* borrowed to defray the cost of erecting the new municipal buildings at Walsall. The Town Council had Parliamentary sanction to borrow 75,000*l.* for fifty years, but the scheme actually involved an outlay of 100,000*l.*, and the Corporation had urged the Department to extend the period for repayment of the additional loan to that allowed by their Parliamentary powers. The general purposes committee has forwarded to the Local Government Board a resolution strongly protesting against its action, particularly of its refusal to receive a deputation on the subject.

MR. POLLOCK, official referee of the High Court of Justice, who sat for three days at Lincoln recently to assess the damage done by the flooding of Messrs. B. Cannon & Co.'s glue, &c., works at New Boutham in 1903, through the negligence of the trustees of the Lincoln West Drainage Commissioners, South District, has made his award. The plaintiffs claimed 3,700*l.*, and the defendants paid 1,200*l.* into court prior to the hearing of the reference. The official receiver has awarded Messrs. Cannon 1,200*l.*, the amount paid into court. The question as to who is bear the costs of this inquiry will be settled by Mr. Justice Swinfen Eady, by whom the question of the defendants' negligence was decided.

MR. G. H. HILL, engineer, Manchester, has prepared a report concerning the Harrogate Corporation's waterworks undertakings at Masham. Mr. Hill estimates that a further expenditure, from July 12, of 125,000*l.*, after giving credit for the materials on the ground and for the sum likely to be realised by the sale of the plant, will be necessary. The

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total amount of the original loan was 325,000*l.* Up to July 12 there had been spent on the works 280,000*l.*, together with 17,176*l.* in accumulated interest, making the total expenditure 297,685*l.* Mr. Hill considers "that the masonry in the dam should not be raised higher, but must be suspended until satisfactory foundations have been reached at both ends of the trench, and the refilling these lengths has been brought to the level of the masonry now put in. After this it is necessary that the construction of the dam should be carried on right across the valley at about the same level, and breaks in the masonry avoided."

THE Commercial Intelligence Branch of the Board of Trade have received from His Majesty's Consul at Christiania a copy of a notice inviting tenders for the supply to the Government Inspector of Roads and Bridges of about 42 tons of iron framework bridges, and the erection of the same. Apart from the usual Customs duties, a preference of from 10 to 15 per cent. is given to Norwegian manufacturers. In all cases of Norwegian Government contracts it is obligatory that a resident agent should act for tenderers not residing in Norway, and be responsible to the Government, but it is not necessary for the agent to be a Norwegian firm.

In the City of London Court on Tuesday a novel claim for compensation for injuries received was heard. A painter on January 18, when a hurricane of wind was blowing, was walking along West Ham Lane on his way to work. A huge notice-board on the gate of some empty premises announcing their sale by auction was blown down on him, striking him to the ground. For seven weeks he was laid up, and he now demanded compensation. The board had been up for three years. The defendant (who was the auctioneer) argued that the owner of the land on which the board was placed was liable if anyone. The real blame rested with the wind, which was abnormal. The jury found for the plaintiff for seven guineas.

At the next meeting of the Newport Town Council the chairman of the electricity and tramways committee will move that application be made to the Local Government Board for sanction to borrow 10,000*l.*, repayable within fifteen years, for the purpose of providing and supplying electrical fittings, motors, &c. The chairman of the sanitary

committee will move that application be made for sanction to borrow sums of 6,560*l.* and 2,360*l.* for the purpose of constructing main sewers and outfall works in the Malpas and the Caerleon Road districts respectively. The chairman of the education committee will also move that application be made for sanction to borrow 26,000*l.*, required for the provision of higher elementary schools to be erected on the Stow Hill site.

A VERY material extension of the port of Gothenburg is under consideration, and will probably soon be taken in hand. The plan for the purpose of procuring a better bridge connection between the new harbour and the city of Gothenburg, proposes to divert the course of the Gota river for a distance of about a mile and a half some 2,500 feet further north. The new bed of the river, which forms a big curve, will thereby be made to go round the greater part of the new harbour area. A new thoroughfare, principally built as a viaduct, will supersede the present Hising Bridge, and to the west of the viaduct referred to a movable bridge will be built across the old river, which is only about 100 feet broad there, and which bridge it will only be necessary to open for vessels unable to pass under the said fixed bridge, which will probably be some 25 feet above ordinary water-level.

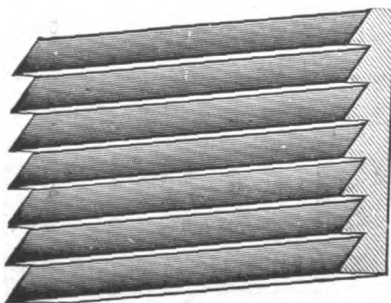
THE Humber Conservancy Commissioners have been informed by officials of the Treasury that the Government had maintained defensive works at Spurn Point under a misapprehension of their liability, and unless the Conservancy Commissioners were prepared to share the future responsibilities the Government would probably decide to abandon the works. They propose transferring to the Commissioners the future maintenance of all needful defences against sea encroachment. The Treasury intended to grant a sum of money to pay for works of defence, estimated to cost about 12,000*l.*, for Spurn, Kilnsea and the vicinity, the money to be repaid. The Conservancy Commissioners have decided to write to the Board of Trade denying any liability, but stating their willingness to send delegates to a conference.

THE Court of Appeal has given judgment in the case of the Manchester Corporation against the Moss Colliery, Ltd. The Corporation originally sued for damage to their Audenshaw reservoir caused by a subsidence of land,

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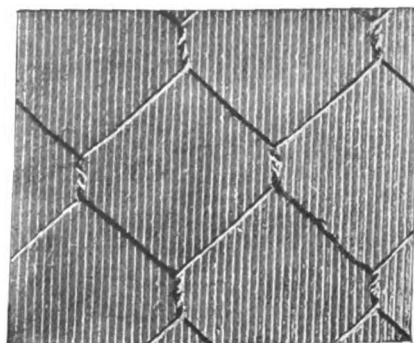
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due, it was alleged, to the working of minerals by the colliery company. Mr. Justice Farwell, before whom the case was brought, decided against the Corporation, who appealed. Lord Justice Cozens-Hardy, in giving a judgment with which his colleagues, Lords Justices Vaughan Williams and Romer, agreed, said the mineowners gave notice to the Corporation that they intended working the minerals under land bought by the Corporation from a Mr. Taylor, and the Corporation had the right to say within thirty days whether they intended to purchase these mineral rights, and so prevent the working. They did not do so, but he shrank from saying that would deprive them of their common law right to recover damages for injury to the reservoir, so the appeal of the Corporation would be allowed and an injunction granted. The order, however, would be made without prejudice to the rights, if any, which the defendants sought to assert by counterclaim. The appeal was therefore allowed, with costs. The decision, it was stated, would cover arrangements with respect to other lands purchased by the Corporation.

According to an American Consular report, the use of coloured papers for house decoration, which was scarcely known in China until quite recently, is now becoming general. It is believed that these papers would find a good opening in the country, because in certain towns like Shanghai, Hankow and Tientsin, they would be used not only in the houses built for Europeans, but also in those of the Chinese of the wealthy class who follow European customs and habits. The papers used in China are very varied in colours, qualities, patterns and prices; it is therefore advisable to send the greatest possible variety of samples, and papers representing landscapes, scenes and pictures of Teniers, tapestry, &c., would probably sell best. The frieze, which is placed immediately below the cornice, is generally of a greater depth than that common in European countries, and often measures as much as 15 inches or 16 inches. The best papers represent in these friezes landscapes, seascapes, borders of flowers, garlands, &c.; the ceilings of houses are also covered with paper with a simple pattern on a light-coloured ground. Manufacturers are recommended to send varied and detailed catalogues of papers for walls, ceilings, friezes and borders, with samples at least 15 inches square. At the same time it is a good

plan to send with the catalogues, which should be in duplicate, a small consignment of paper sufficient in quantity to decorate two or three rooms of ordinary dimensions, i.e. 16 feet by 20 feet.

AUSTRALIAN MARBLE.

THE American Consul at Sydney reports that the marble deposits in New South Wales are the finest in the world. Some of the quarries are easily worked without the use of any mechanical appliances and yield large-sized blocks of a good quality. The Consul says that not only are the deposits of variegated marble in New South Wales among the finest in the world, but if properly worked and developed they should give the means of livelihood to thousands of workers in quarrying, carting, working the machinery, &c., not only for local consumption but for exportation. Unfortunately for the industry, the quarries are being worked by bodies of men who have not the funds available for opening up these quarries, and for keeping on hand a sufficient number of blocks of marble to meet a sudden demand, or the properties belong to persons who are too extensively occupied in other directions to admit of their devoting the necessary time to the development of this industry, which, if properly worked, would, it is said, give a better return than many a gold mine. The men, it is added, are working without the necessary appliances, and they have too much unsuitable machinery, without the expert knowledge of the needs and requirements of the market, and have not sufficiently studied the purposes to which marble can be applied.

STRAINS IN IRON.*

FROM the engineer's point of view a much more important matter than fatigue of elasticity is the fatigue of strength that causes fracture when a straining action is very frequently repeated. Experiments which I made with Mr.

* From the address of Mr. J. E. Ewing to the Engineering Section of the British Association.

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Humfrey showed that this action begins with nothing more or less than slight slip on surfaces where the strain is locally sufficient to exceed the limit of elasticity. An alternating stress, which makes the surfaces slip backwards and forwards many thousands or it may be millions of times alternately, produces an effect which is seen on the polished surface as a development of the slip lines into actual cracks, and this soon leads to rupture.

We have therefore to look for an effect equivalent to an interruption of continuity across part or the whole of a surface of slip, an effect progressive in its character, becoming important after a few rubbings to and fro if the movement is violent, but only after very many rubbings if the movement is slight.

That there is a progressive action which spreads more or less into the substance of the grain on each side of the original surface of slip was clearly seen in the experiments referred to. It was found that a slip-band visible on the polished surface of the piece broadened out from a sharply defined line into a comparatively wide band with hazy edges, and this was traced to an actual heaping up of material on each side of the step which constituted the original line.

I think this suggests that under alternating stresses which cause repeated backward and forward slips these do not occur strictly on the same surface in the successive repetitions, and hence the disturbance spreads to some extent laterally. It may be conjectured that slip on any surface leaves a more or less defective alignment of the molecular centres; that is to say, the rows on one side of the plane of slip cease to lie strictly in line with those on the other side. If this occurs over neighbouring surfaces, as a result of slips or a number of parallel planes very close together, the metal throughout the affected region loses its strictly crystalline character, and with it loses the cohesion which is due to strict alignment.

Mr. G. T. Beilby, in a very suggestive paper, has advanced grounds for believing that portions of a metal may pass from a crystalline to an amorphous formation under the mechanical influence of severe strain, as in the hammering of gold leaf or the drawing of wire, and that this occurs in the polishing of a metallic surface, and also in the internal rubbing which takes place at a surface of

slip within the grain. In both cases he suggests the formation of an altered layer. When a polished metal surface is etched the altered layer is dissolved away, and the normal structure below it is revealed.

Without accepting all Mr. Beilby's conclusions, I think the idea of an altered and more or less amorphous layer is supported by the considerations I am now putting forward. We have assumed that in normal crystallisation the inter-molecular forces lead to a normal piling, in which each molecule touches six neighbours. But it may be conjectured that some of them may take up pyramidal piling (touching twelve others) under the compulsion of strong forces—such forces, for example, as act on the superficial molecules of a surface that is being polished.

If this also occurs at a surface of slip, it gives us a clue to several known facts. It at least assists in explaining the familiar result that metal is hardened by straining in the sense of being made less plastic. Again, it accounts for the general increase of density which is found to take place in such an operation as wire drawing. Further, if a local increase of density occurs in the interior of a grain through piling of some molecules in the closer manner where repeated slips are going on, the concentration of material at one place requires it to be taken from another; in other words, the closer piling tends to produce a gap or crack in the neighbourhood where it occurs. This is consistent with what we know of the development of cracks through repeated alternations of strain.

Recourse to the model shows that with pyramidal piling the polar axes point in so random a manner that the aggregate may fairly be called amorphous. To illustrate this a group is shown with centres fixed at the corners of equilateral triangles.

It is obvious that any pyramidal piling at a surface of slip tends to bar further slip at that particular surface. Hence not only the augmented hardness due to strain, but the tendency in repeated alternations to lateral spreading of the region on which slip occurs. The hardness due to straining is, of course, removed when we raise the metal to such a temperature that complete recrystallisation occurs, normal piling being then restored in the new grains.

Taking a previously unstrained piece, it is clear that the facility with which slip will occur at any particular surface

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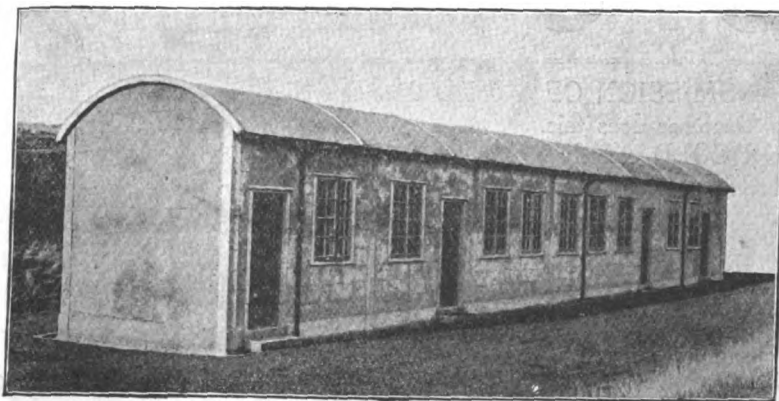


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of slip in any particular grain depends not only on the nature of the metal and on the orientation of the surface in question to the direction of the stress, but also on the amount of support the grain receives from its neighbours in resisting slip there. In other words, for a given orientation of surface the resistance to slip may be said to consist of two parts; one is inherent in the surface itself, and the other is derived from the position of the grain with reference to other grains.

To make this point clear, think of a grain (under stress) in which there is a gliding surface oriented in the most favourable direction for slipping. Slip on this surface can take place only when its yielding compels the neighbours (which are also under stress) to yield with it, and the surfaces in these on which slip is compelled to occur are, on the whole, less favourably situated. Hence the original grain cannot yield until the stress is considerably in excess of that which would suffice to make it yield if it stood alone, or had neighbours equally favourably inclined.

Apply this consideration to the case of steel, where there are two classes of grains: the ferrite, which is simply iron, and the pearlite, which is a harder structure. Slip on any ferrite grain is resisted partly by the strength of the surface itself, and partly by the impossibility of its yielding without forcing slip to take place on neighbouring (harder) grains. Now suppose the structure is a very gross one, such as Mr. Stead has shown may be found in steel that is seriously overheated. On the large grains of ferrite in overheated steel the resistance to slip will be but little greater than it would be in iron, and, consequently, under an alternating stress fatigue of strength, leading to rupture, may be produced by a very moderate amount of load. Mr. Stead has shown how the effects of overheating can be removed by the simple expedient of raising the steel to a temperature sufficient to cause recrystallisation—a homœopathic remedy that transforms the gross structure of the overheated metal into an ordinarily fine structure, where no ferrite grain can yield without compelling the yielding of many pearlite grains. Hence we find, as Rogers has demonstrated by experiment, that steel cured by reheating from the grossness of structure previously produced by overheating, has an immensely increased power to resist the deteriorating effects of often repeated stress.

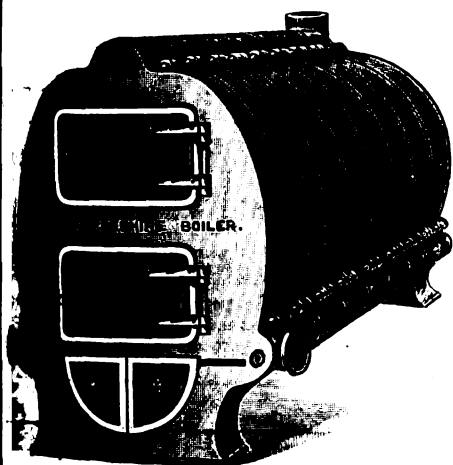
THE LINCOLN ARTESIAN BORING.*

Down to the present time since the year 1847—when the waterworks were commenced by a public company—Lincoln has depended for its supply of water upon surface streams, impounded into reservoirs and subjected to a filtering process, the quantity dealt with amounting to about 331 millions of gallons a year, with a rainfall of about 25 inches. Needless to say, a supply from such sources was found to be unsatisfactory on the grounds both of quality and quantity. In 1885 Dr. Harrison was requested to report on the former of these subjects, and he produced elaborate analyses, the general result being that, as some of the sources were liable to pollution, the water was unfit for domestic purposes.

Owing to the rapid growth of the city the conditions became more unfavourable, and it was determined by the Corporation to ascertain whether some better source of supply might not be available. With this object the late Mr. De Rance, F.G.S., was instructed by the Corporation to report "on the probability of obtaining a pure and sufficient supply of water for the city." Accordingly he presented a report, dated September 15, 1891, containing the results of a prolonged and careful study of the geological conditions, and stating his opinion that a boring of large diameter to a depth of from 1,250 to 1,500 feet at Torksey or Collingham would yield at least a million of gallons per day of the purest water, also suggesting supplies from the oolite limestone formation.

This report does not appear to have been immediately acted upon, and nothing was done until the year 1898, when I received instructions to report on "the probability of obtaining water by boring near the present pumping-station, and if so, at what depth and at what expense?" After a preliminary survey I recommended a well and boring to be carried down into the new red sandstone, which I estimated would be reached at a depth of about 1,400 feet, from which I anticipated a supply of about a million gallons per day, and that the water would rise in the boring and well up to or nearly to the surface of the ground by hydro-

* A paper by Professor Edward Hull, LL.D., F.R.S., read before the British Association.



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static pressure. It will be observed that my conclusions went to verify those of Mr. De Rance, both being founded on well-recognised geological data, and they have now been abundantly borne out by actual experiment.

Not until the year 1901, however, was a contract signed with Messrs. C. Chapman & Son, of Salford, for carrying out this, the deepest water boring in the United Kingdom. Nor was it till Sunday, June 10, 1906, that the success of the undertaking was demonstrated, when, on reaching the top beds of the new red sandstone at a depth of 1,561 feet 6 inches, the water burst in with great force, and (to adopt the words of the newspaper reporter) "the roaring sound of rushing waters far below was distinctly heard at the surface, and was likened by one of the workmen to the rush of the eagle on the Trent when the tides are at their highest." From this time the water steadily rose in the bore and well, which is 1,502 feet in depth, at the rate of 12 feet per hour, until it ultimately reached the surface and overflowed, which event took place on the Wednesday morning following the inburst of the water.

The following are the formations passed through:—

	Feet.
Lower Lias clay	641
Rhætic beds	52
Red marl and sandstone (Keuper)	868
Total	1,561

Below the above is the new red sandstone and conglomerate, which reaches the surface in a broad tableland of an average of 300 to 400 feet above the sea-level to the north of Nottingham, and constitutes the source of supply for that town and a large district ranging into Yorkshire. At its nearest border it is about 20 miles from Lincoln, and spreads westward to its margin at Worksop for a distance of five or six miles, receiving and absorbing, probably, two-thirds of the rainfall over its area. Owing to its extreme porosity, its absolute continuity in the direction of the dip of the beds, there being no faults between, and the constantly increasing hydrostatic pressure of the water in the direction of Lincoln, we have all the conditions for a successful artesian water-supply. The success of this undertaking has produced amongst the inhabitants of that important city a

feeling of the greatest relief and satisfaction, which finds expression in the local paper in the words, "Sunday, June 10, 1906, will be a day to be recorded in the annals of Lincoln."

GAS FOR LIGHT, HEAT AND POWER PRODUCTION.

THE question of a cheap and abundant supply of energy is one of vital importance to this country. During the present session a large number of Bills for the supply of electrical energy to London have been before Parliament, and a select committee of the House of Commons has recently presented a special report on the subject. Though not seeing their way to give the London County Council the powers which they asked for, the committee "consider that the provision of cheap electrical power for London is so important and pressing that they do not view with favour the possibility of the question being indefinitely hung up."

While attention has been concentrated on electricity as a medium for the supply of light, heat and power, the claims of gas have been to some extent overlooked, although its field of usefulness coincides very closely with that of electricity. A paper on the subject was read by Mr. A. J. Martin before the British Association at York.

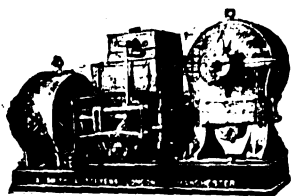
The late Sir William Siemens used to insist strenuously that gas should be used for all purposes in place of coal, the burning of which in its raw state he denounced as "a barbarous practice." The substitution of gas for coal has been greatly impeded by the circumstance that it was first introduced solely as an illuminant, in which light it is still generally regarded. This conception of gas continues to dominate the methods of manufacture and distribution, to the great detriment of users of heat and power.

The main obstacle to the general use of gas for purposes other than lighting is its cost, which varies from 11d. per 1,000 cubic feet (at Widnes) to upwards of 7s. 6d. The higher prices of gas are due to various causes, the chief of which are the standards of illuminating value to which it has to conform, the large capital involved, the disproportion-

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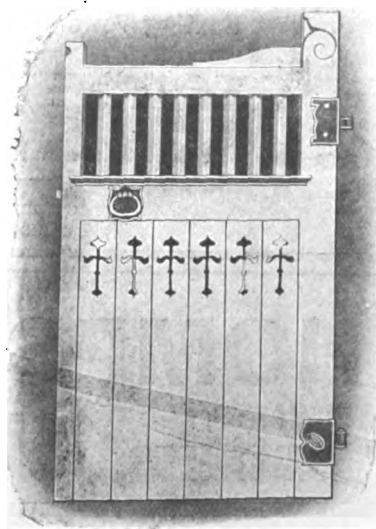
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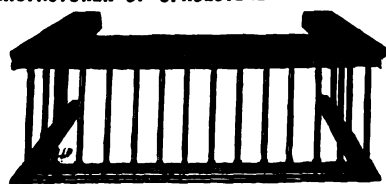
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tionate cost of manufacture on a small scale and the high prices paid for coal, consequent on the cost of carriage from the collieries. These causes together swell the cost of the gas consumed in this country every year by many millions of pounds. Illuminating standards are now in many cases being relaxed, but not to such an extent as to give the consumer the full benefit to which he is entitled. The effect of high capital charges and that of working on a small scale are automatically reduced with every increase in consumption, and the greater part of the cost of carrying coal may be saved (in the case of London) by making the gas at the pit's mouth and piping it under pressure to the Metropolis. It is well known among engineers that a pipe line is the cheapest means for transporting anything which can be made to flow. This has long been recognised in the case of water, which no one would think of conveying by rail, except on an emergency, such as recently occurred at Lincoln. Water is piped to Coolgardie, a distance of 352 miles, and petroleum over 400 miles to New York Harbour. The advantage of generating power at the collieries on a large scale and transmitting it to the areas of supply has been pointed out by the Royal Commission on Coal Supplies, but in this country proposals of this kind have been directed chiefly to the conveyance of electrical energy from the coal-fields. A proposal to supply the Metropolis in this way was laid before the select committee, who dismissed it as not suitable.

Gas has many advantages over electricity for transmission purposes. It can be conveyed at less cost and at a much higher efficiency; it can be stored cheaply and without loss, and used at any desired rate, and it requires no conversions, as in the case of high-tension electricity. Moreover, even where electricity is required, it will generally be cheaper to convert the coal into gas and pipe it for use in gas-engines than to generate current direct from coal.

Down to very recently the conveyance of gas under high pressures to long distances would have been regarded as impracticable, owing to various difficulties arising from condensation and leakage and to other considerations. Of late years, however, both natural gas and coal-gas have been piped in America to great distances (extending in the case of natural gas to 200 miles) with marked success, and further projects of the kind are under way.

In this country, in the absence of natural gas, either a fuel-gas, such as Mond-gas or water-gas, or coal-gas of reduced illuminating power might be used. The latter could probably be sold in London at something like 1s. per thousand cubic feet, at which price it would displace the greater part of the coal now used for heating and power purposes. The larger cities and towns in Lancashire and Yorkshire, and other districts within easy reach of coal-fields, might also with advantage lay down pipe-lines of their own, but smaller and more remote places could only do so in combination—preferably through a board formed on the model of the Metropolitan Water Board—of representatives of the various Corporations and companies interested.

The inauguration of a general supply of cheap gas would have far-reaching consequences. The smoke nuisance, with its appalling death-roll, would be done away with, and the annoyance and damage to property from smoky fogs brought to an end. A cheap and abundant supply of sulphate of ammonia would come to the aid of our distressed agricultural interests. The most far-reaching effect of cheap gas, however, would probably be in stimulating the establishment of manufacturing plants in rural districts, thus helping to relieve the congestion in our overcrowded towns. No single factor has played so great a part in determining the distribution of industries as the existence of natural sources of power, and with gas at such prices as it could be supplied at from the collieries, gas-power would be even cheaper than water-power.

Last, but in the long run not least, in importance is the part which the substitution of gas for raw coal would play in postponing the exhaustion of our coal-fields.

RADIATION FROM GAS MANTLES.*

As the object of this paper is to stimulate a discussion in order to elucidate the subject, I will state one point of view and oppose some others, inviting criticism, even if quite destructive, and see what happens.

* A paper by J. Swinburne, read before the meeting of the British Association.

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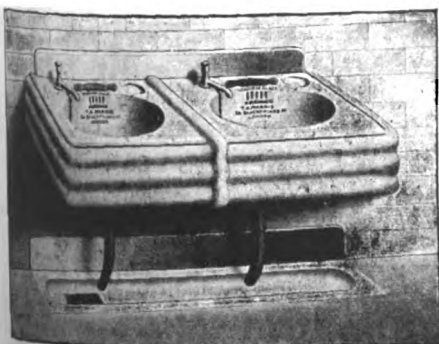
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The ordinary explanation of the great luminous efficiency of the gas-mantle is that rare earths have a property of selective radiation, in virtue of which they send out a larger proportion of their radiant energy in the form of light than ordinary hot bodies.

Other explanations are that there is catalytic action going on; that cerium has two oxides and oscillates between the two states, and this produces the effect.

Another explanation, first given, I believe, by Ram ("Incandescent Lamp," p. 196), is that the Bunsen flame is really very hot, and that the mantle is of such low emissivity that it gets rid of so little power that there is little difference of temperature between it and the flame, and it is therefore hot enough to give the light by pure temperature radiation without any anomaly.

One reason why the simple temperature explanation has been questioned is that the temperature of the Bunsen is generally taken to be much lower than it is. It is generally measured by means of platinum wires or thermocouples. These can never rise to the real temperature of the flame, as they are radiating and must therefore be taking in heat by conduction, in which case they must be cooler than their surroundings.

The simple temperature explanation fits the phenomena. If pure thoria has low emissivity it will rise to a temperature near that of the shell of flame bathing it. Having low emissivity it will then give out little light, but the light will have a large proportion of visible and refrangible rays. If a very little of a body with a high emissivity be added, radiation will increase, but the temperature of the mantle will fall, as there must be a steeper heat gradient to supply it. The total radiation is then increased, and though the proportion which is luminous will be diminished, the total light will be increased. Further addition of the emissive substance increases the total radiation and reduces the temperature until the light given is less even than with pure thoria.

By selective radiation may be meant that a body at the temperature of a black body emits some rays and omits others, or that it has the power of emitting more refrangible rays than a black body at the same temperature. If two black bodies are in a reflecting envelope, at the same temperature, each radiates to the other and absorbs power from

the other. The heat in each is in a state of degradation corresponding to the temperature, and in a state of equilibrium it must be radiated and absorbed by each without further degradation. Heat radiated from a black body into a closed space in equilibrium is thus not degraded. If a body only emits the portion of the rays of high frequency, though it may radiate less power or energy per second, that energy must surely be of a higher grade than that of the black body at the same temperature, because it can be degraded into radiation of lower frequency. If that is so, this sort of selective radiation violates the second law. Emitting more refrangible rays than the black body is worse still. It does not follow from this that a body cannot emit rays of high frequency balanced by another batch at low frequency, so that their degradation corresponds with the temperature. This form of selective emissivity has not yet been invented by the advocates of this theory.

The catalytic action theory is vague. Generally catalytic action merely accelerates a change from unstable to stable equilibrium. It is difficult to see how catalytic action can affect radiation. A suggestion may be made. The gases in the hot shell combine at a certain rate, and the flame radiates heat and comes up to a certain temperature. If the mantle causes quick combination intimately among its own particles, it may be possible that the temperature there may be higher than in the flame itself, so that the mantle may really be hotter than the flame. I have not seen this idea put forward. It is not needed to explain the phenomena, and it would be curious that all the bodies capable of increasing the light of pure thoria should be coloured oxides.

It is sometimes urged that the particles of rare earths have a special way of vibrating in resonance with the particles of hot gas and thus radiate light preferably. This again would mean elevating heat energy to a grade higher than that corresponding to the temperature, without rejection of heat at a lower temperature, a violation of the second law.

The same reasoning holds against the theory that ceria oscillates between two states of oxidation. If it did it could not supply energy by such means, and therefore could not deliver energy supplied as heat at a grade higher than that corresponding to the temperature of the body.

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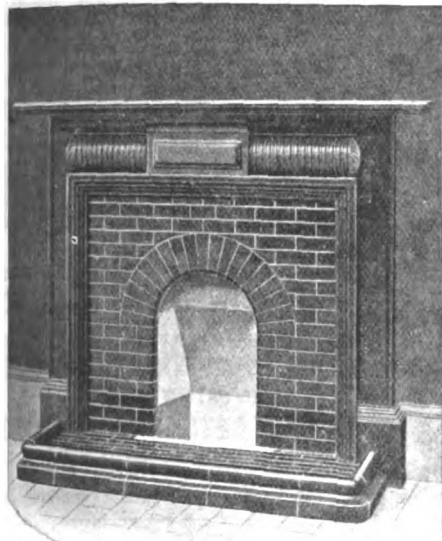
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(See page 25 of Supplement in Issue of June 8).

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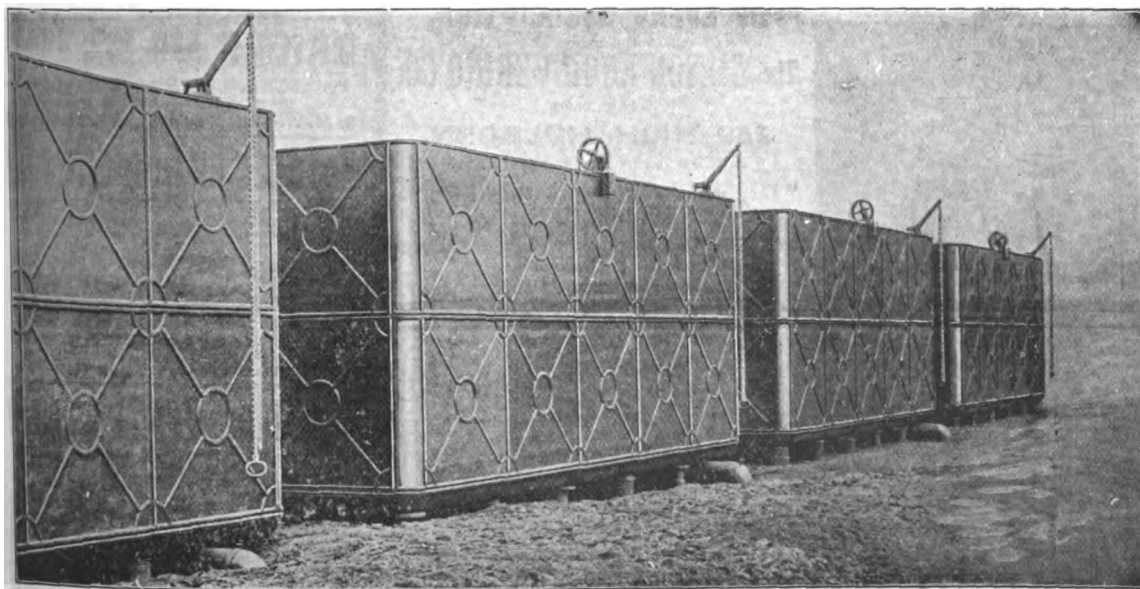
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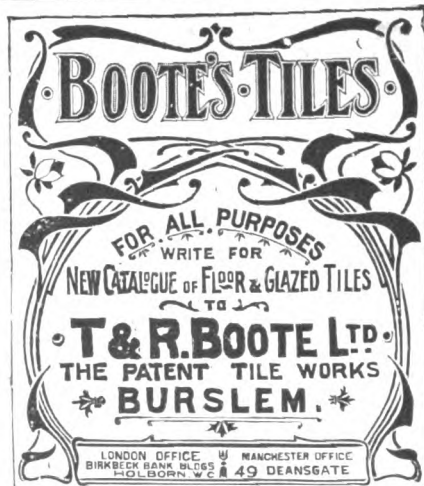
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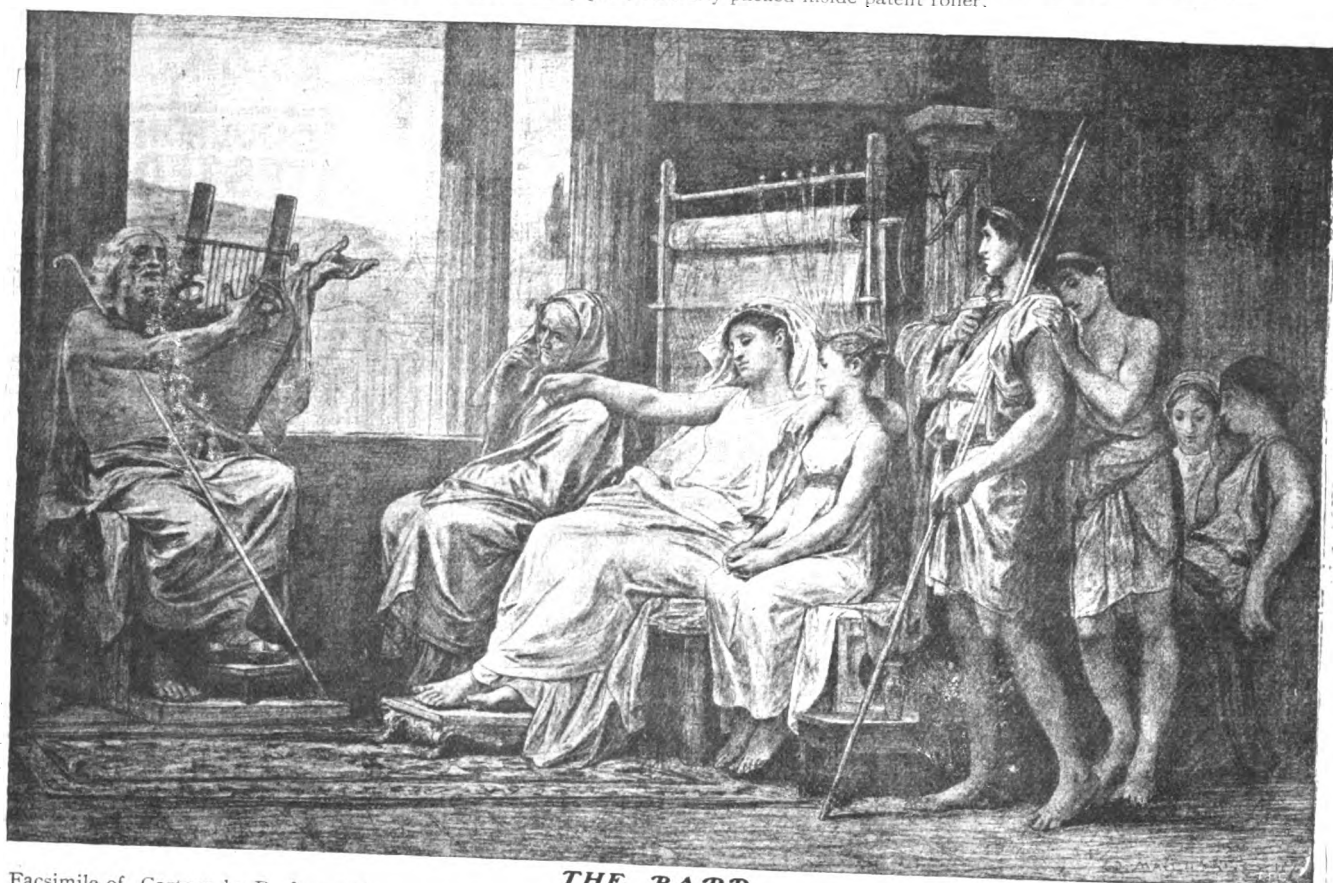
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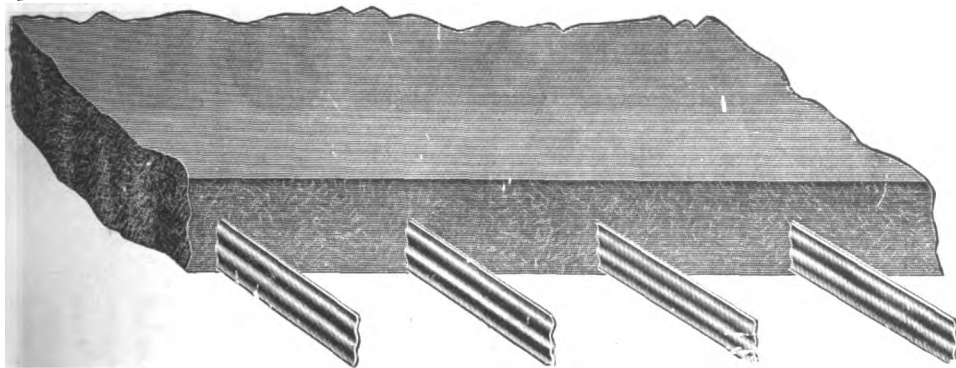
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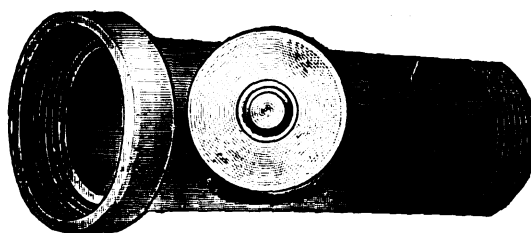
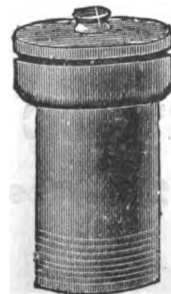
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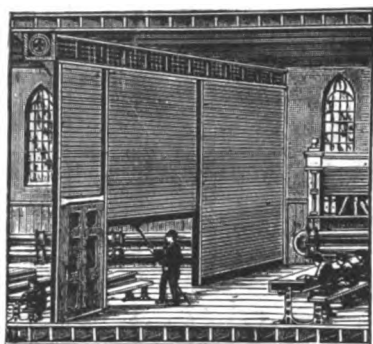
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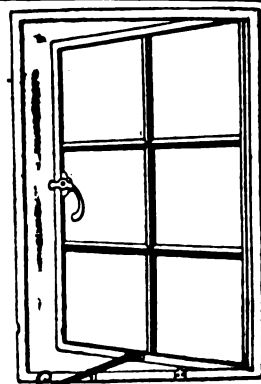
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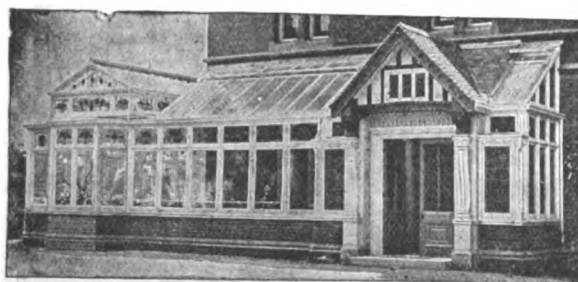
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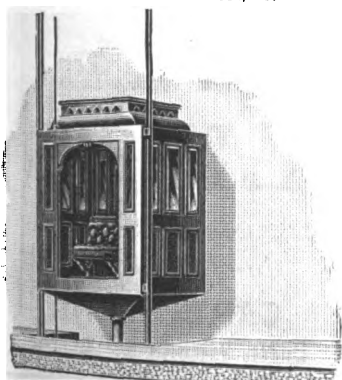
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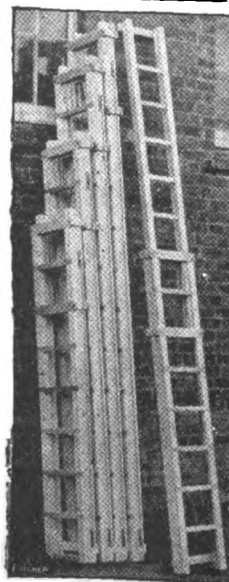
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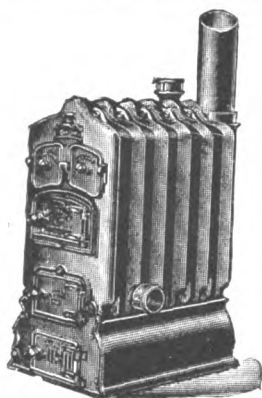


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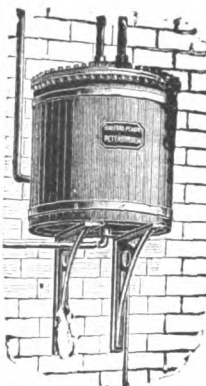
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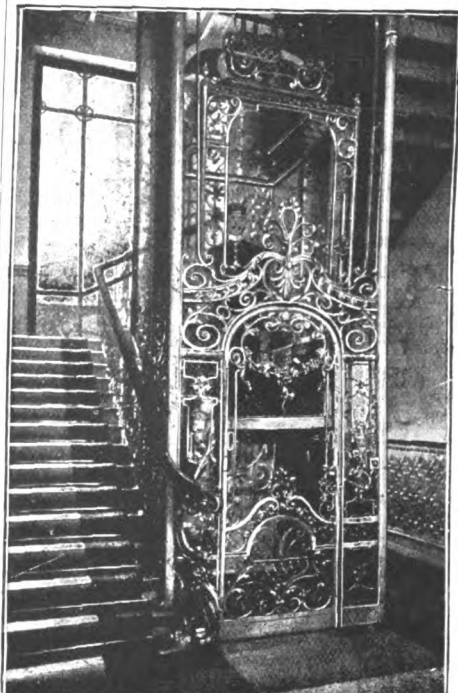


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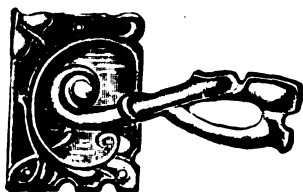
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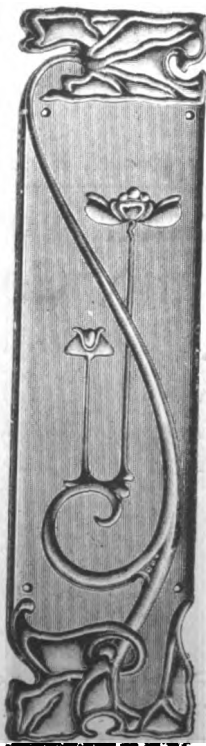
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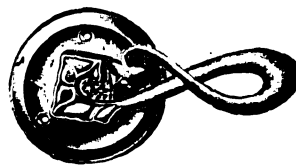


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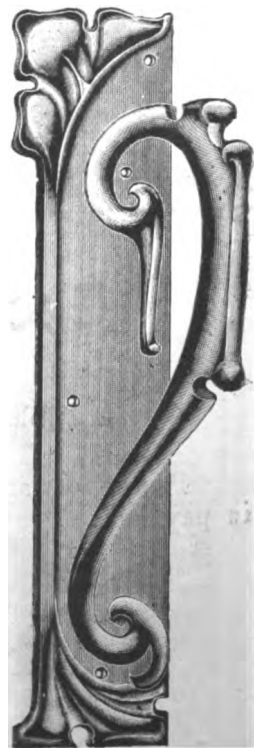


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answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

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The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

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BRADFORD.—Aug. 29.—For hot-water supply apparatus at the city hospital, Leeds Road, for the Corporation. The City Architect, Whitaker Buildings, Brewery Street, Bradford.

BRISTOL.—Aug. 31.—For the third instalment of the superstructure of the Avonbank electricity works, Feeder Road, comprising steelwork, masonry, concrete, &c. Deposit 2*l.* 2*s.* Mr. H. Faraday Proctor, city electrical engineer, Temple Back, Bristol.

BURY ST. EDMUNDS.—Sept. 10.—For alterations and additions to the county school, Northgate Street. Mr. A. Ainsworth Hunt, county architect, Sudbury and Bury St. Edmunds.

CASTLEBLAYNEY.—Sept. 3.—For the erection of a goods store (90 feet by 25 feet) and office (20 feet by 14 feet) of timber, with galvanised corrugated iron roof, &c., at their Castleblayney station, for the Great Northern Railway Co., Ireland. Deposit 1*s.* Mr. W. H. Mills, engineer-in-chief, Amiens Street terminus, Dublin.

CHERTSEY.—Aug. 28.—For the erection of a balcony at the old infirmary, union workhouse, Ottershaw; also for an iron staircase at the infirmary. The Union Workhouse, Ottershaw, Chertsey.

CHOPWELL.—Aug. 30.—For the erection of forty cottages at Chopwell. Mr. Charles E. Oliver, architect, Consett Iron Company, Consett.

CLIMMING.—Aug. 28.—For the erection of three wooden groynes, average 300 feet in length, and for the extension by 150 feet of an existing groyne, on the foreshore at Clipping, Sussex, for the Commission of Sewers for the Rape of Arundel. Mr. Arthur Holmes, clerk to the Commissioners, Arundel.

DARTMOUTH.—Sept. 1.—For the erection and completion of shipping offices on the South Embankment, Dartmouth. Deposit 2*l.* 2*s.* Mr. R. Montague Luke, civil engineer and architect, 15 Princess Square, Plymouth.

DARTMOUTH.—Sept. 3.—For the demolition and rebuilding of the Globe inn, South Embankment. Mr. R. Montague Luke, civil engineer, 15 Princes Square, Plymouth.

DENTON.—Sept. 11.—For execution of alterations at the Denton technical institute, Lancashire. Messrs. J. W. Beaumont & Son, 10 St. James's Square, Manchester.

EASTBY.—Aug. 28.—For the erection of an entrance lodge at the Sanatorium, Eastby, near Skipton, for the guardians of Bradford Union. Deposit 1*l.* 1*s.* Mr. Fred. Holland, engineer and architect to the Board, 11 Parkinson's Chambers, Hustlergate, Bradford.

FAIRFIELD.—Aug. 28.—For the construction of a concrete storage reservoir at Turner Lodge, Fairfield, near Buxton, to hold 4,000,000 gallons. Deposit 2*l.* 2*s.* Messrs. Swan & Brady, engineers, Town Hall, Chapel-en-le-Frith, via Stockport.

GLASGOW.—Aug. 29.—For alterations to the Whitevale depôt, for the Corporation. The work will be let in one contract, and includes brick, cast-iron and steel, carpenter and joiner, slater, plumber and painter works. Mr. James Dalrymple, general manager, 46 Bath Street, Glasgow.

GLASGOW.—Sept. 1.—For (1) the masonwork and (2) steelwork required in connection with the widening of Keppochhill Road bridge over the North British Railway, for the Corporation. The Office of Public Works, City Chambers, 64 Cochrane Street.

GREAT BROUGHTON.—Aug. 31.—For alterations to the Baptist church, Great Broughton, Cumberland. Messrs. W. G. Scott & Co., architects and surveyors, 2 Park Lane, Workington.

GRIMSBY.—Aug. 30.—For the erection of proposed buildings, Humber Bank, N. Fish Docks. Mr. Herbert Heap, architect and surveyor, Osborne Chambers.

HENLEY-ON-THAMES.—Sept. 10.—For converting the school buildings adjacent to the workhouse at Henley-on-Thames into an infirmary, for the Guardians of Henley union. Names before August 15 to Messrs. Charles Smith & Son, architects to the Board, 164 Friar Street, Reading.

HOCKLEY.—Aug. 27.—For the erection of scattered homes at Hockley, for the Guardians of Rochford Union, Essex. Messrs. Greenhalgh & Brockbank, architects, Southend.

KETTERING.—Sept. 8.—For construction of service reservoir and laying mains; 560 tons of cast-iron pipes and specials; sluice valves, air valves, hydrants, &c.; gas

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LEEDS.—Aug. 27.—For the whole of the trades required in proposed alterations and additions to Pool school. Mr. Geo. W. Atkinson, architect, 1 Mark Lane, Leeds.

LIVERPOOL.—Aug. 27.—For the erection at Highfield infirmary, Knotty Ash, of laundry buildings. Deposit 2*l*. Messrs. Edmund Kirby & W. E. Willink, architects, 5 Cook Street, Liverpool.

LONDON.—Aug. 27.—For a wood and corrugated iron shelter to be erected in the Hendon public park. Mr. S. Slater Grimley, engineer and surveyor to the Council, at the Council offices, Hendon, N.W.

LONDON.—Sept. 4.—For the execution of ordinary works and repairs to buildings, &c., in their charge in the London district for three and a half years from October. Deposit 1*l*. H.M. Office of Works, Storey's Gate, Westminster.

LONDON.—Sept. 6.—For the following, for the Guardians of St. Mary, Islington:—Providing and fixing (1) hot-water and heating arrangements, (2) fire mains and hydrants, (3) gas supply and fittings, (4) electrical installation at the two new blocks now being erected at the St. John's Road workhouse, Upper Holloway, London. Deposit 2*l*. Mr. Wm. Smith, architect, 65 Chancery Lane, W.C.

LONDON.—Sept. 18.—For erecting a public convenience and bath-houses at Bell Green, Lower Sydenham, for the Lewisham Borough Council. Deposit 5*l*. Surveyor's Department, the Town Hall, Catford.

LONDON.—Sept. 27.—For additions and alterations in the building at the electricity works, Osborn Street, Whitechapel, E., for the Stepney Borough Council. Deposit 5*l*. Mr. M. W. Jameson, A.M.I.C.E., borough engineer, 15 Great Alie Street, Whitechapel, E.

MANCHESTER.—Sept. 5.—For alterations and additions to the Abbot Street Municipal school, Rochdale Road. Deposit 2*l*. 2*s*. The Education Offices, Deansgate, Manchester.

MANCHESTER.—Sept. 5.—For the erection of the Domett Street Municipal school, Blackley. Deposit 2*l*. 2*s*. The Education Offices, Deansgate, Manchester.

MIDDLEWICH.—Aug. 27.—For alterations and extensions at No. 2 Branch, Lewin Street, for the Winsford Industrial Co-operative Society.

MIRFIELD.—Aug. 31.—For the whole or any portion of the works required in alterations to the Mirfield grammar school, Yorks. Mr. J. Lane Fox, architect, 4 Oxford Place, Leeds.

NEW MALDEN.—Aug. 31.—For building a boundary wall, erecting wood and iron fencing and forming a path at Norbiton Common farm. Mr. William H. Hope, architect and surveyor, Hampton Wick, Surrey.

NORWICH.—Sept. 7.—For the following works for the Norfolk education committee:—Enlargement of Filby school and for the erection of a teacher's dwelling-house. Mr. T. Inglis Goldie, architect, Bank Plain, Norwich. For alterations and improvements at Lessingham school, Winterton school and at Stalham school. Messrs. Olley & Haward, architects, Queen Street, Great Yarmouth. Deposit 1*l*. 1*s*. in each case.

POOLE.—Sept. 10.—For the erection of a secondary school at Seldown, Poole. Mr. Walter Andrew, architect, Parkstone.

ROMFORD.—Aug. 28.—For the erection and completion of the following buildings for the Romford Joint Hospital Board:—One ward for fourteen beds, nurses' quarters, convalescent block. Deposit 5*l*. Mr. Frank Whitmore, architect, 73 Duke Street, Chelmsford.

SALFORD.—Sept. 10.—For the following works, for the tramways committee:—(Contract 145) constructional steel-work; (Contract 146) builders' work, in erection and completion of extensions to the central car depot, Frederick Road, Pendleton. The General Manager, Tramways Department, 32 Blackfriars Street, Salford.

SCOTLAND.—Aug. 25.—For the construction of the unloading shed at Bangour village station, for the Edinburgh District Lunacy Board. Mr. Hippolyte J. Blanc, R.S.A., architect, 25 Rutland Square, Edinburgh.

SCOTLAND.—Aug. 25.—For the mason, carpenter, slater, plasterer, plumber, painter and glazier's work of villa to be built at Boat of Garten. Mr. J. A. Smith, architect, Glenurquhart Road, Inverness.

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SCOTLAND.—Aug. 27.—For bricklayer and joiner, plumber, plasterer and painter's work of proposed new pavilion to be erected at being hospital, Falkirk. Mr. David Ronald, burgh engineer, Burgh Buildings, Falkirk.

SCOTLAND.—Sept. 4.—For the erection of the Lochmaben combination hospital. Mr. F. Carruthers, architect, 35 Buccleuch Street, Dumfries.

SMALL HEATH.—Sept. 4.—For the erection of stables, cattle pens, &c., at Small Heath, Birmingham, for the Great Western Railway Co. The Resident Engineer at Acocks Green Station.

SOUTHPORT.—Sept. 6.—For the construction of a cooling pond, filter-beds and other works at or near Royal Oak, in the parish of Bickerstaffe, for the Southport, Birkdale and West Lancashire Water Board. Deposit 5/ 5s. Messrs. H. Rofe & Son, civil engineers, 8 Victoria Street, Westminster, and Oxford Chambers, Victoria Square, Leeds.

SOUTH SHIELDS.—Sept. 28.—The South Shields education authority invite preliminary schemes and estimates for the warming and ventilation on the Plenum system of a block of four school departments, accommodating a total of 1,950 scholars, to be erected on the site of the Mowbray Council school, South Shields. Mr. Henry Grieves, architect, Albany Chambers, King Street, South Shields.

STANLEY.—Aug. 27.—For the erection of dwarf walls and palisading, together with cement footpaths and necessary surface-water drains to twenty-four houses in Council Street, Stanley, Durham, for the Urban Council. Mr. Wm. Forster, architect Stanley.

SWINDON.—Aug. 25.—For the erection of schoolroom, Upper Stratton, Swindon. Mr. O. Fry, 152 Cricklade Road, Swindon.

TRELOWTH.—Aug. 31.—For the erection of a dwelling-house at Trelowth, Cornwall. Mr. John Mutton, architect, Charlestown.

TYSELEY.—Sept. 4.—For the erection of an engine-shed, &c., at Tyseley, near Birmingham, for the Great Western Railway Co. Resident Engineer at Acocks Green Station.

WALES.—Aug. 25.—For the erection of a mission-room at Blaengwynfi. Deposit 1/ 1s. Messrs. Evans & Jones, architects and surveyors, 4 Trinity Place, Swansea.

WALES.—Aug. 25.—For making additions and extensive improvements to the Cardiff Arms, Abergavenny, also for building new stores, stabling and other works, for the Hereford and Trecegar Brewery Company, Hereford. Mr. B. J. Francis, architect, Abergavenny.

WALES.—Aug. 27.—For the erection of a mission hall at Hawthorn, Pontypridd. Mr. Arthur L. Thomas, architect and engineer, Church Street Chambers, Pontypridd.

WALES.—Aug. 27.—For the reconstruction of about 150 lineal yards of river retaining walls, together with fence-walls and contingent street works, at Hopkinstown, Pontypridd. Deposit 1/ 1s. Mr. P. R. A. Willoughby, engineer and surveyor to the Council, Municipal Buildings, Pontypridd.

WALES.—Aug. 28.—For the erection of a school hall at Pontycymmer. Mr. Arthur L. Thomas, architect, Church Street Chambers, Pontypridd.

WALES.—Aug. 31.—For erecting a fire station at Cwm, Ebbw Vale, Mon. Deposit 10s. Mr. T. J. Thomas, town surveyor.

WALES.—Aug. 31.—For the construction of an iron girder bridge with stone abutments and approaches at Hoely-Glo, for the Margam Urban District Council. Deposit 1/ 1s. Mr. John Cox, surveyor, Port Talbot.

WALES.—Sept. 12.—For additions and improvements to Bethesda Congregational chapel, Merthyr Tydfil. Mr. John Thomas, 90 Brecon Road, Merthyr Tydfil.

WALES.—Sept. 17.—For the erection of schools for boys, girls and infants, together with cookery and manual instruction rooms at Willowtown, Ebbw Vale, Mon. Deposit 3/ 3s. Mr. H. Waters Waungoeh, architect, Beaufort. Separate tenders are required for (1) the infants' block, (2) mixed block, (3) cookery and manual block, (4) the remainder of the works and (5) the whole of the works.

WALES.—Sept. 22.—For erection of a stone and steel bridge at Gwyddrug, near Pencader, for the Carmarthen-shire County Council. Mr. Charles H. Mounsey, county surveyor, Carmarthen.

WILPSHIRE.—Aug. 27.—For the erection of proposed store and one house adjoining same at Wilpsire. Mr. J. B. Thornley, architect, Darwen.

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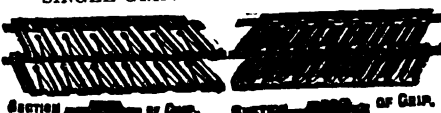
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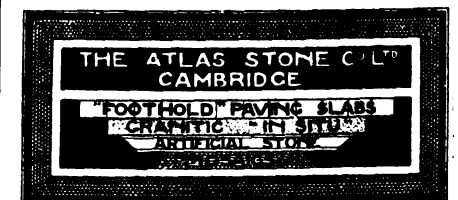
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S. ATKINS, Kingston-on-Thames (<i>accepted</i>)	141	16	2

HERNE BAY.

For levelling, paving, sewerage, &c., of street from Lane End to Hampton pier. Mr. F. W. J. PALMER, surveyor.

Adams	£5,837	0	0
Browning	5,389	0	0
A. & B. Hanson	4,986	0	0
Head	4,933	0	0
Ingleton Bros.	4,753	19	0
Johnson	4,450	0	0
Castle & Co.	4,444	16	6
Zadig & Co.	4,158	0	0
HARDY, BATE & Co., Slough (<i>accepted</i>)	4,093	6	9

HOLYHEAD.

For additions and alterations to chapel at Llaingoch. Mr. J. OWEN, architect, Holyhead.

Morris	£1,082	0	0
Parry & Owen	1,080	0	0
Roberts	986	0	0

LYME REGIS.

For the erection of hotel adjoining railway station. Mr. A. W. YEOMAN, architect, Chard.

Westcott, Austin & White	£2,472	0	0
Clarke	2,389	10	0
Bird & Pippard	2,196	0	0
Crabb	2,155	0	0
Pittard & Son	2,100	0	0
Spiller & Son	2,060	0	0
Turner	2,053	2	10
Childs	2,047	0	0
Wiscombe	2,031	0	0
Caddy	1,998	10	0
Poole	1,896	0	0
Parsons Bros. & Dunster	1,866	0	0
HARRIS & WORTCOTT, Chard (<i>accepted</i>)	1,860	0	0

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For the erection of workshops, engine-house, &c. Mr. N. ATKERS, architect, Fareham.

Cockerell	£683	0	0
Newbury	660	0	0
Tubbeck	658	10	6
Lane Bros.	650	0	0
Latty	644	0	0
Dash	629	0	0
Willcox	628	0	0
Hunt	595	15	0
Dawse & Son	595	0	0
Conway	590	0	0
Plummer	559	14	0

PONTLOTTYN.

For the erection of two houses. Mr. P. VIVIAN JONES, architect, Hengoed, Cardiff.

Jones	£989	8	6
Francis	915	0	0
Davies & Francis	881	0	0
Heatherley	870	0	0
Davies	870	0	0
VAUGHAN, Tredegar, Mon (accepted)	810	0	0

RAND (S.A.).

For the erection of ten motor-houses at boreholes in the Klip River Valley, for the Rand Water Board.

Kelly, Anderson & Co.	£4,164	0	0
Edmanson & Thomas	3,997	0	0
Mostert	3,553	8	4
Wilson	3,313	10	10
Forsyth & Reid	3,299	8	4
Forsyth	3,158	16	8
Reid & Knuckey	3,154	17	6
Stabb	3,097	3	4
SLORACH & McWILLIAM (accepted)	2,704	17	6
Informal—			
Scott	4,854	0	0
Rsos	3,774	0	0

RAND (S.A.).—continued.

For the erection and completion of engine and boiler-houses at Village Main Reef pumping station.

Stabb	£7,132	5	10
Slorach & McWilliam	6,601	10	5
Wilson	6,137	3	0
Thorpe	5,851	6	6
Lamb	5,787	2	0
Clark & Waterman	5,750	17	11
Mostert	5,696	13	6
Edmanson & Thomas	5,556	8	6
Mansel & Co.	5,364	5	6
Reid & Knuckey	5,160	1	0
Jowett, Rainey & Co.	5,022	14	10
Henderson & Gordon	5,014	13	6
Forsyth & Reid	5,010	18	10
Birnie Bros.	4,880	16	6
GABRIEL & BALLANTINE (accepted)	4,326	19	11

Informal—

Scott	6,646	6	2
Weightman	5,575	0	0
Hamilton & Hedley	5,067	4	8

SCOTLAND.

For additions to the East Burgh school, Forfar.

Accepted tenders.

M'Lean, mason	£335	0	0
Farquharson, joiner	182	0	0
M'Laren & Son, plumber	116	0	0
Moffat & Co., slater	18	10	0
Masterton, plasterer	33	19	0

SHERBURN.

For constructing sewage-purification works. Mr. G. GREGSON, surveyor, Durham.

Oliver	£1,497	17	9
Arundale	1,347	0	0
CARRICK, Durham (accepted)	1,212	4	8
Birtley	1,120	9	8

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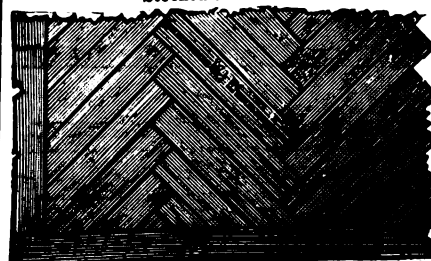
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Wesley Street.

Naylor & Son	£444	18	0
La Brea Asphalt Co.	419	2	0
Davies Bros.	383	14	4
Worthington	383	2	1
National Asphalt Co.	353	0	0
French Asphalt Co.	326	8	5
Standard Asphalt Co.	322	8	0
Bradshaw & Co.	303	0	0

Burleigh Street.

Naylor & Son	1,092	17	6
La Brea Asphalt Co.	1,023	15	9
Davies Bros.	935	16	7
Worthington	925	17	7
National Asphalt Co.	858	2	0
French Asphalt Co.	800	10	11
Standard Asphalt Co.	795	10	7
Bradshaw & Co.	753	2	10

North Lonsdale Street.

Naylor & Son	1,087	11	6
La Brea Asphalt Co.	1,028	2	5
Davies Bros.	935	15	6
Worthington	925	3	9
National Asphalt Co.	857	10	0
French Asphalt Co.	798	3	9
Standard Asphalt Co.	789	9	3
Bradshaw & Co.	743	0	3

Powell Street.

Naylor & Sons	1,762	15	4
La Brea Asphalt Co.	1,659	7	5
Davies Bros.	1,502	5	9
Worthington	1,489	14	6
National Asphalt Co.	1,369	19	2
Standard Asphalt Co.	1,270	1	3
French Asphalt Co.	1,297	7	11
Bradshaw & Co.	1,192	3	7

STRETFORD—continued.*Alphonsus Street.*

Naylor & Son	£1,794	18	4
La Brea Asphalt Co.	1,679	10	7
Davies Bros.	1,529	15	4
Worthington	1,521	14	2
National Asphalt Co.	1,399	13	2
French Asphalt Co.	1,316	15	8
Standard Asphalt Co.	1,289	14	2
Bradshaw & Co.	1,213	8	11

TILBURY DOCK.

For laying 300 yards of sewers, &c. Mr. S. A. HILL-WILLIS, engineer, Grays.

Catton, jun.	£364	4	5
Mead	335	11	0
Wilson, Border & Co.	240	15	0
Hewitt & Son.	225	10	0
WHITE, Tilbury (accepted)	194	0	0
Hayward	188	15	3
Philbey	181	8	7

TEIGNMOUTH.

For the laying and jointing 17,110 lineal yards of 9-inch, 1,120 lineal yards of 6-inch and 5,850 lineal yards of 4-inch British Mannesmann steel pipes, erection of a meter-house with sluice, air and other valves.

Mitchell & Sons	£8,483	9	3
Jones & Son	8,379	19	1
Moffat	8,294	13	9
Buckley	7,987	8	0
Smith & Co.	7,224	11	2
Bridgman	7,205	14	2
BREENER & Co., Edinburgh (accepted)	7,147	0	0

WREXHAM.

For the erection of Wesleyan chapel in Victoria Road.

Williams	£1,230	0	0
Williams & Sons.	1,205	0	0
Jones	1,186	0	0
Davies	1,113	17	0
WOOLLEY, Wrexham (accepted)	1,100	0	0

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UXBRIDGE.

For the erection of magistrates' courts. Mr. H. T. WAKE-
LAM, county architect, Guildhall, Westminster.

Mather.	£7,700	0	0
L. & W. H. Patman	7,045	0	0
Higgs & Hill	6,984	0	0
Patman & Fotheringham	6,963	0	0
Holloway Bros.	6,930	0	0
Porter	6,921	0	0
Gibson	6,794	0	0
Godson & Sons	6,785	0	0
Heath	6,701	0	0
Wall, Ltd.	6,700	0	0
Wisdom Bros.	6,630	0	0
Dorey & Co.	6,593	0	0
Fassnidge & Son	6,547	0	0
Phillips & Son	6,489	0	0
Knight & Son	6,404	0	0
Fairhead & Son	6,397	0	0
Kearley	6,394	0	0

WHITBURN.

For construction of sea-wall. Mr. J. H. MORTON, architect,
South Shields.

Rule	£509	5	0
Wells	440	0	0
Middlemiss Bros.	438	0	0
Young	432	4	0
Miller	427	3	6
Purvis	405	0	0
Allison	415	8	3
Stott	398	17	6
Clerey & Charlton	390	0	0
Storey	376	17	0
Ranken	375	0	0
Kirk & Brown	366	0	0
White	363	0	0
Hall	317	5	3
Johnson	315	9	9
BAILEY, Newcastle (accepted)	311	9	7

WHITEHAVEN.

For the erection of a dwelling-house. Mr. J. S. STOUT,
architect, Whitehaven.

Accepted tenders.	
Young, mason	£300 18 8
Fletcher, joiner	153 11 3
Holloway, plumber	90 0 0
Lawson & Sons, plasterer	76 2 0
Burrow, slater	39 17 2
Peason, painter	15 5 0

WHITLEY.

For the extension of farm premises. Messrs. C. H.
MARRIOTT, SON & SHAW, architects, Dewsbury.

Oakland & Son	£259 18 3
Wilson Bros.	252 11 0
Ramsden	241 17 6
Haley Bros.	238 16 6
Blackburn & Co.	231 6 5
Coop & Son	228 0 0
Crossley	220 5 6
Humphreys & Green	216 0 7
CLEGG, Dewsbury (accepted)	215 6 0

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THE Board of Trade have given their sanction to the carrying-out of an experiment in the Llanelly estuary, upon the application of the harbour trust. In order to increase the depth and width of the channel to the sea, the harbour superintendent has devised a scheme for running out a temporary spur of sand-bags from the existing training wall. The object of the experiment is to see whether the waters of the Loughor river can be diverted from their present course into a new channel, the effect of which would be to make a new channel sweeping past the harbour lighthouse. If the experiment proves successful the bags will be removed and a permanent structure laid down on the same line of direction. The harbour trust are acting in consonance with local opinion and against the advice of the expert engineers who have been consulted.

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TRADE NOTES.

THE tender of Messrs. Strode & Co., lighting engineers, amounting to 849/., has been accepted for the electric-light wiring at the new workhouse, Isleworth.

MESSRS. PATMAN & FOTHERINGHAM, LTD., have obtained the large contract for rebuilding Gloucester House, Piccadilly, W. (the late Duke of Cambridge's residence), for Mr. J. J. Duveen, of Messrs. Duveen Bros., Bond Street, W. The architects are Messrs. Colcutt & Hamp.

MESSRS. MOLESWORTH & Co., of the Ketton Stone Quarries, inform us they are supplying the whole of the stone now being used in the extensive restorations of York Minster, particulars of which appeared in our last week's issue.

THE Directors of the Manor Mill, Ltd., whose mill is being erected at Chadderton, near Oldham, have decided to protect their premises with automatic sprinklers; the order has been placed with Messrs. George Mills & Co., Radcliffe, the proprietors of the "Titan" sprinkler.

THE business of the Universal Wine Bin Company, formerly conducted at Alfred Road, South Norwood, is now and has for some time past been transferred to 2 Occupation Road, Manor Place, Walworth, S.E., under the auspices of Messrs. J. Stevens & Co.

NEW CATALOGUES.

THE firm of Newton, Chambers & Co. have several specialties. The catalogue of their cast-iron tanks would be remarkable if it were only from the list of large tanks which they have manufactured and supplied. The capacity of those selected amounts to the total of 7,797,800 gallons. Messrs. Dowson, Taylor & Co., of Manchester, purchased no less than 300 tanks, and two were supplied to the Salford electricity power station, each being 97 feet 6 inches by 48 feet 9 inches by 6 feet 3 inches. The list is enough to excite the envy of foreigners. One advantage possessed by the firm is that they have a large and varied stock of patterns of standard sizes. They can be combined with expedition, and there are ribs, flanges and bolts which

correspond with the plates. In that way tanks of dimensions that might be considered colossal can be built up, and if, as happens in some of the colonies, it is necessary to support the tanks on columns and joists they are also at hand. As aids in manufactories and in waterworks capacious tanks are invaluable.

THE style of ornament which found most favour in the eighteenth century is less easy to imitate than most people imagine. The patterns appear to be simple, but they have a peculiar character which is not fully attainable by modern modes of teaching. All who see the grates of the Carron Company might imagine that the style was imitated with unusual perfection. The explanation is, however, that they are produced from carvings by two students of the Royal Academy in the eighteenth century whose names were William and Henry Haworth. The forms of the grates have been altered to correspond with modern desires. But the ornament with which they are adorned is owing to genuine eighteenth-century inspiration.

THE United States Government, with a view to cause paint to adhere firmly to galvanised iron, have recently adopted specifications compelling the use of vinegar for washing the surface preparatory to painting. This is said to corrode or roughen the surface, thus giving the paint better opportunity to adhere.

MR. N. MCK. BARRON, waterworks engineer, Lincoln, has submitted a report to the Lincoln City Council dealing with the present mode of water distribution and the condition of the reservoirs, and making certain recommendations. Mr. Barron is of opinion that the right situation for a new reservoir is on the high ground near Cliff Hill reservoir. This he considers preferable to the Westgate site because of the possibility of utilising the existing mains. It is also pointed out that it would be impracticable to provide a good supply for the county asylum from Westgate. The report, which will be considered at the October meeting of the Council, estimates the total cost of the works recommended at 55,100/.

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ROAD, N.W.—DELEGATES' ROOM, LOOKING TO GALLERY.

ELECTRIC NOTES.

THE Surbiton Urban Council have been advised by Messrs. Talbot & Stevenson, consulting engineers, that a further expenditure of 20,000*l.* is advisable in connection with the electric lighting scheme, on which 50,000*l.* has already been spent.

THE Lancashire United Tramways Company have completed their section of the Liverpool to Manchester tramway from Winton to Boothstown. It is now possible to travel by tramcar from Liverpool landing-stage to the Manchester Exchange with two changes. The journey occupies five or six hours, and the route taps a population of nearly one and a half millions of people and includes a score of towns.

THE Yardley District Council were unable to come, on the 21st inst., to a decision on the subject of a recommendation by the tramways and electric-lighting committee, that the Council's undertaking authorised by the Yardley Rural District electric-lighting orders 1904 and 1906 be transferred to the Corporation of Birmingham or to the Shropshire, Worcestershire and Staffordshire Electric Power Company. Negotiations are to be opened up with the Birmingham Corporation.

THE Londonderry Corporation held a special meeting on the 16th inst. to consider a letter from Messrs. White, London, the contractors for the electrification of Belfast trams, to purchase the entire undertaking of the Corpora-

tion, which includes both a public and private lighting installation, which cost over 60,000*l.* The company also offered to promote tramways, electrically propelled, throughout the city, and to give guarantees to satisfy the Corporation and consumers. The proposal was received with favour, and has been referred to a committee to ascertain further particulars.

At the half-yearly meeting of the Midland Railway Company Sir E. Paget, the chairman, in referring to the fact that the directors had decided to electrify that part of their line from Lancaster to Heysham and Morecambe, said:—Up to the present they had been content to see what other people were doing, but, as it seemed to be the general opinion of experts that the locomotive power of the future was likely to be electricity, they thought their own officers should gain the experience necessary to give the advice in the future as to the extension of their electric plant. That part of the line was particularly well adapted for their purpose; they had an electric-power station which supplied electricity for lighting Heysham Harbour, and they could enlarge it more cheaply than they could establish a new one in any other part of the country. No doubt it was an experiment, but it was an experiment which the directors ought to undertake, and even if the whole thing had to be scrapped through electricity not becoming the locomotive power of the future as was supposed, it would not be a heavy burden upon the Midland shareholders.

VARIETIES.

THE total length of the railways of the United Kingdom at the end of 1905 was 22,847 miles, and the total track mileage 38,431 miles without sidings and 52,322 with sidings.

THE Manchester Building Industries Federation have adopted Mr. Thomas Park, general secretary of the Amalgamated Wood-cutting Machinists, as a trade-union candidate for St. Luke's Ward at the November election.

THE Kent County Council have decided to increase the salary of the county surveyor from 700*l.* a year to 1,000*l.* It was stated that in Middlesex the surveyor is paid 1,200*l.*

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in Hereford 1,250*l.* and 1,000*l.* in Surrey, Notts and Warwickshire.

THE Feltham District Council have decided to adhere to its present system of street lighting by oil in preference to gas, which the Sunbury Gas Company offered to supply at a price estimated to be about 25*l.* per annum more than oil now costs.

A SUB-COMMITTEE of the Portsmouth Corporation has been requested to carefully examine the phraseology of the fair wages clause which figures in the contracts entered into by the Town Council. The Board of Guardians have also decided to overhaul this particular clause in their standing orders.

LAST year 61,953,459½ gallons of water were used in the City of London for washing streets and courts. The engineer of the Corporation states that the quantity appears to be exceedingly heavy, and that steps are being taken to reduce the same without affecting the efficiency of the cleansing.

THE rival of the Eiffel Tower erected by Sir Edward Watkin in Wembley Park is being demolished. The material of the structure has been sold, a firm of Manchester contractors has the work of pulling down in hand, and the Metropolitan Railway Company has the sidings ready prepared for its removal.

THE first pile in the provision of new harbour works to be erected at Southwold at a cost of 45,000*l.* was driven on the 20th inst. The existing piers, which practically form the harbour, are to be extended 340 feet, and there is to be a uniform depth of water of 40 feet on the north side of the harbour. There will be a concrete quay 1,000 feet long.

THE Local Government Board held an inquiry at Droylsden into an application of the Council for sanction to borrow 9,000*l.* for sewage extension purposes nearly a year ago. Sanction has not yet been received. As the sewerage works are urgently needed, the Council are going to try and obtain an interview in London with the local board.


THE Flintshire education committee have decided that the county surveyor shall be paid the following percentage, viz. 1½ per cent. upon all expenditure in respect of buildings which had already been completed or which were now in process of erection, and 3 per cent. in respect of all buildings to be hereafter erected, the surveyor making his own arrangements as to the preparation of bills of quantities and the duplicating or printing of same.

THE river-wall at Fambridge, Essex, having collapsed in March, a body of unemployed were brought down from London to repair the breach under the direction of Mr. A. E. Carey, M.I.C.E. The work of over a hundred men during five months has now been destroyed. Two breaches in the main river wall, about a third of a mile apart—one 150 yards in length, the other 200 yards—have caused over 200 acres of land to be flooded at high tide to a depth of over 6 feet.

A SHORTAGE of wood in Litchfield County, Connecticut, has led to a new application of gas as an industrial aid. The lack of the usual fuel was threatening the restriction and possibly the entire abandonment of a once flourishing lime-burning business, when it was suggested that experiments should be made with gas as a substitute. As a result, the daily output of the kilns at Canaan and New Milford has been increased from 80 to 100 barrels a kiln. It is alleged that this is the first instance in any country of the use of gas in lime-burning.

A COMPANY has been formed under the title of the Manchester Tenants, Ltd., for an enterprise which has some features in common with the Garden City movement. Its purpose is to provide better housing accommodation for the clerks and artisans of Manchester. Every house is to have its own garden patch, and each is to be arranged with a due regard to the general appearance of the whole. The Society has been formed under the auspices of the Co-partnership Tenants' Housing Council. The scheme is one of collective ownership. Each tenant member takes five 10*l.* shares, paying up by instalments, and if he has to leave the neighbourhood the shares are transferable, unless he desires to keep them.

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THE FARNHAM PROCESS.

THE Municipality of Paris offer prizes for the most artistic façades, and in consequence the city has been enriched by many excellent private buildings. We cannot expect the Corporation or the County Council to follow the example, but they might at least do something to promote the cleansing and reparation of the fronts of houses in the streets of London. In such a case the Farnham process would carry off many of the awards. The company have at present in hand the premises at the corner of Fenchurch Street and Billiter Street, which they are now treating under the direction of Mr. A. R. Stenning. The stone has suffered by the weather.

Farnham, Ltd., are removing by their patent process all the decayed surface of the stone, and the sound surface will then be treated by their patent waterproofing process, and impregnated to a considerable depth by pure paraffin wax, so that the pores of the stone will be entirely filled by an inert, colourless material which cannot be affected by acids or alkalis, and thus the stonework will in future be absolutely preserved from all possibility of decay.

An inspection of the work while in progress will be interesting to many architects and house-owners in London who have to solve similar problems. Building stone in London is subject to disintegration through atmospheric causes, and all such cases can be treated with absolute certainty of success by the Farnham patent processes.

CORROSION OF IRON AND STEEL.

A PAPER was read by Dr. Henry M. Howe, at the recent meeting of the American Society for Testing Materials, in which some of the popular opinions as to the relative resistance to corrosion of iron and steel were compared with scientific observations upon the same matter.

Since the general introduction of steel for iron in nearly all departments of construction it has been found that steel

is vastly superior in many respects, but there have been maintained certain views as to corrosion which, if true, become very important in some special cases. It is generally believed that wrought-iron does not corrode nearly so rapidly as steel, all other things being equal, and in locations where resistance to corrosion is essential, many engineers will use wrought-iron if it can be obtained. One of the objections to steel pipe is the general belief that it corrodes much more rapidly than wrought-iron, while experience seems to confirm the view that iron resists the corrosive action of gases, as in boiler stacks, overhead railroad bridges, &c., far better than steel.

Dr. Howe reviews these opinions in the light of accurate observations, and succeeds in disposing of some of the charges against the behaviour of steel, while others are suggested as suitable for further exhaustive scientific investigation.

On one hand we have the very general public opinion that steel corrodes not only faster but very much faster than wrought-iron, an opinion held so widely and so strongly that it cannot be ignored. Smoke does not prove that fire exists; but much strong smoke bids us look carefully for fire. On the other hand we have the results of direct experiments by a great many observers in different countries and under widely differing conditions; and these results certainly tend to show that this popular belief is completely wrong, and that on the whole there is no very great difference between the corrosion of steel and wrought-iron. Under certain sets of conditions steel seems to rust a little faster than wrought-iron, and under others wrought-iron seems to rust a little faster than steel. Thus taking the tests in unconfined sea water as a whole, wrought-iron does constantly a little better than steel; and its advantage seems to be still greater in the case of boiling sea water. In the few tests in alkaline water wrought-iron seems to have the advantage over steel, whereas in acidulated water steel seems to rust more slowly than wrought-iron.

Dr. Howe calls attention to the fact that with the general introduction of steel into structural work there has been also a great increase in sulphurous acid in the air of cities, while at the same time the presence of stray electric currents in the ground has introduced another cause of corrosion. Hence it is altogether possible that metallic struc-

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tures may be more subject to corrosion than formerly, and yet this increased corrosion may be due to causes independent of the change in the materials themselves. It is admitted that popular beliefs, while lacking in scientific precision, are generally based upon a larger number of observations than are possible in the laboratory, and a greater variety of conditions of service, and hence they should not be hastily discredited, but given due weight in connection with scientific investigations.

In view of this great discrepancy between popular belief and the results of our direct tests, it behoves us who have relied chiefly on these latter to examine their conditions carefully, to see whether they really have represented fairly the conditions of actual industrial use and service in such a way that, if there is a real difference between the corrosion of steel and that of wrought-iron, such a difference would become manifest. In short, have our direct comparative tests been trustworthy?

Now, when we review our conditions in the light of this apparent contradiction between popular belief and the results of the differences between steel and wrought-iron which ought to cause a difference in their rapidity of rusting, there are three prominent differences:—(1) Blowholes; (2) manganese; and (3) the presence of cementite in the steel and of cinder in the wrought-iron. Let us take these up in order and see how they require that direct tests should be very prolonged or pushed to destruction.

1. Blowholes exist in steel but not in wrought-iron. But blowholes, at least blowholes which do not weld up and thus cease to exist, are not necessary. Yet they are to be prevented only by care and skill. Hence, get your steel only from careful and trustworthy makers.

2. Steel always and almost necessarily contains more manganese than wrought-iron. This may or may not hasten its rusting. If it does, then its effects ought to be made manifest even in short-time tests. From the fact that such tests do not show that steel rusts materially faster than wrought-iron, I infer that this manganese is probably not a serious cause of rusting.

3. Steel is generally richer than wrought-iron in cementite, the iron carbide Fe_3C . Wrought-iron always contains very much more cinder than steel. Each of these substances—the cementite of the steel and the cinder of the

wrought-iron—may have a double influence on corrosion, hastening it through difference of potential and retarding it by acting as a mechanical barrier like so much paint, to exclude the oxygen or the air or the water. It is not clear that the influence of difference of potential ought to change materially as corrosion proceeds; but it is clear that that mechanical protection given by the plates of cementite and of cinder ought to increase as corrosion proceeds. When a piece of wrought-iron, for instance, is first exposed to corrosion, only the outcrops, so to speak, of the sheets of cinder come to the surface; its mechanical protection is very small. But as corrosion proceeds and more and more of the metal which at first overlay the sheets of cinder is eaten away, the remaining cinder forms a larger and larger proportion of the outer surface, and therefore protects a constantly increasing proportion of the underlying metal from corrosion. In short, the mechanical proportion afforded by the cinder ought to increase as corrosion proceeds. Here, then, is a cause which, as corrosion proceeds, should continuously tend to retard the corrosion of wrought-iron, and to make it compare more and more favourably with steel. But, in like manner, as steel is gradually corroded away, more and more of its surface should come to be composed of cementite, and this fact should tend to retard the corrosion of steel, because cementite, too, should protect the underlying free iron or ferrite.

These causes may, in time, reverse the initial relative rapidity of rusting of steel and wrought-iron. Steel which in the first few months may rust faster than wrought-iron may, on greatly prolonging the experiments, or pushing them to destruction, actually rust more slowly, and *vice versa*.

Now of the two, the cinder of wrought-iron ought to gain more than the cementite of the steel, in its value as a mechanical retarder of corrosion, as time goes on and more and more of the metal is eaten away. The reason for this is that the cementite is in such extremely minute microscopic plate that the eating away of a very small quantity of the iron from above them ought to bring very nearly the full proportion of this cementite to the surface; whereas the much larger and more distantly scattered plates of cinder in wrought-iron would not constitute their full

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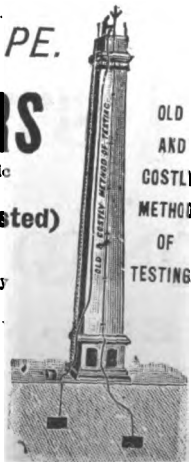
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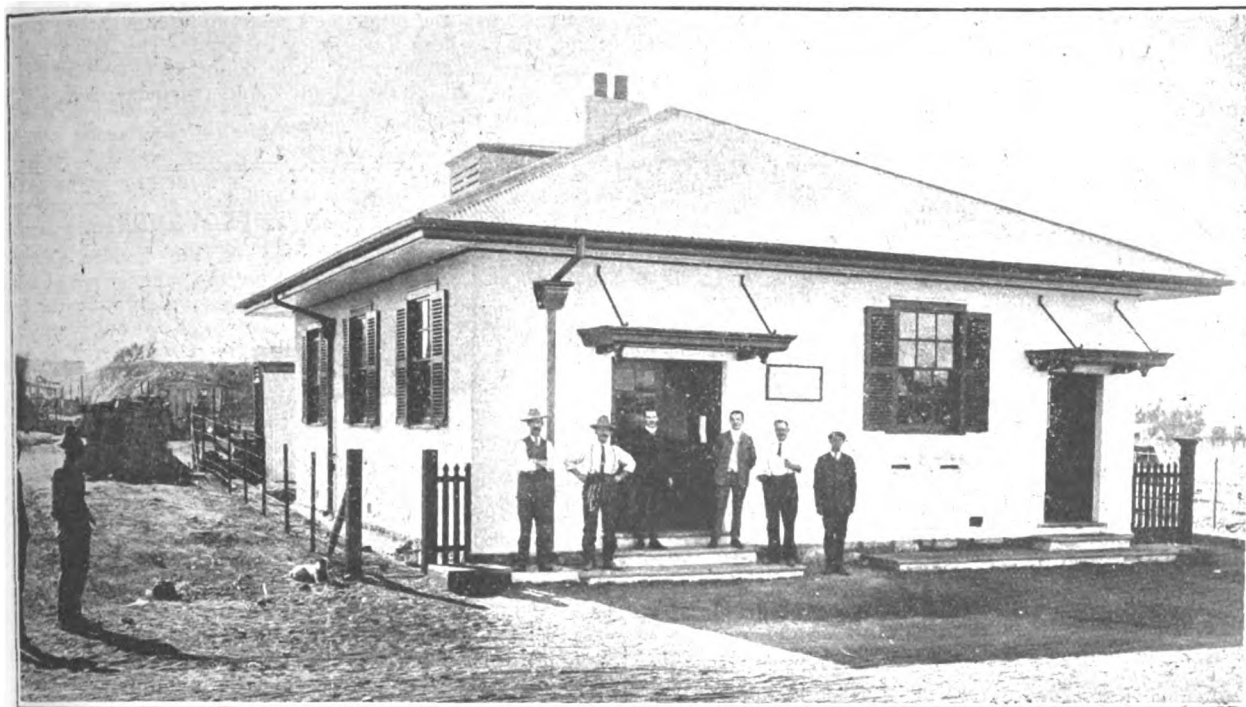
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share of the surface until a much thicker layer of initially overlying metal had been eaten away. This, then, may be the true explanation: that is, the reason why steel does not rust faster than wrought-iron in our direct tests, though it does in actual use, is that our direct tests are too short to

bring out the full protective action of the cinder of the wrought-iron. Or the reverse may be true. As time goes on, the harmful effect of the difference of potential of the cinder may grow more than its protective action. Let us, therefore, henceforth push our tests to destruction.

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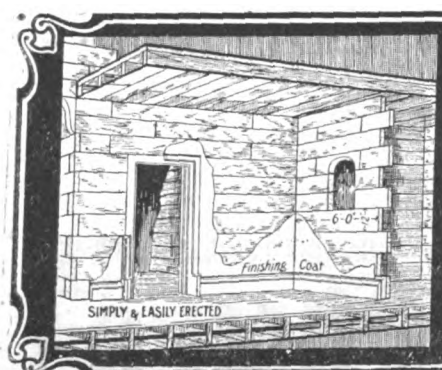
WORKING-CLASS DWELLINGS.

In the course of his report on the accounts of the London County Council Mr. T. B. Cockerton, the official auditor, refers to those relating to the erection of working-class dwellings. The Council, under their various improvements Acts, are restricted from acquiring houses occupied by persons belonging to the labouring classes until they have obtained the approval of the Secretary of State for the Home Department to a scheme for providing new dwellings for the number of persons residing in the houses proposed to be acquired. In the capital accounts of the dwellings built to satisfy these statutory obligations it has not been the practice of the Council in past years to charge the actual value of the land used for the building of such dwellings, but an amount which the valuer of the Council estimated the land would be worth if bought with the condition that it should be used for the erection of dwellings for the working classes, and this course has always appeared to the auditor as reasonable. During the year to March 31, 1905, the Council appear to have departed in certain cases from this practice, and in these cases to have charged to erection of dwellings account amounts which, in their estimation, will enable the Council to erect and carry on the buildings without a charge on the rates. In two of these cases, where the commercial value of the land was 4,500*l.*, and the value for the erection of working-class dwellings as recommended by the Council's valuer 2,250*l.*, nothing was charged for the land to the erection of dwellings account. In a third case a sum of about one-fourth the commercial value was so charged. The auditor points out that the difference between the amount charged to the erection of dwellings account and the actual value of the land becomes a charge on the improvements capital account, and that with regard to joint improvements, such as the Mare Street improvement, to which the Hackney Borough Council contribute one-fourth of the cost up to 125,000*l.*, the contributing authority is adversely affected. He states that he has passed the accounts relating to these matters as submitted to him, but he expresses the hope that the Council will give instructions for transfers representing full housing values to be made between the different accounts, as it would appear that the dwellings capital

accounts have been considerably undercharged. During the year sums amounting to 11,835*l.* were transferred from special county rate account to the appropriation accounts of dwellings built under Part III. of the Housing of the Working Classes Act, 1890, to make good the estimated deficiency. Although these accounts were relieved to that extent from rate account, there were still deficits at March 31, 1905, amounting to 1,664*l.* During the year the clerk of the peace received certain fees in respect of services rendered by him under the Licensing Act, 1904, and has not paid the amount with the other fees received by him to the county fund, but has kept the money in hand. The auditor states that there is apparently some doubt as to whether these fees are payable to the Council, and the matter is engaging the attention of the solicitor.

METROPOLITAN IMPROVEMENTS.

THE improvements committee of the London County Council, at the first meeting after the summer recess, will submit for approval a list of the county improvements for which they propose that statutory powers shall be sought in the session of 1907. The list this year is a very modest one, and the suggested improvements with one exception are for road widenings in connection with the construction of proposed new tramways, the most important of which are from St. John's Hill, Wandsworth, to Putney Bridge, from Norwood to the Crystal Palace, from Lea Bridge Road to Lower Clapton Road, from High Street, Stoke Newington, to Mare Street, Hackney, and in connection with the doubling and reconstruction of the lines taken over from the London Southern Company. In their report upon the subject the committee point out that the total net cost to the Council of the suggested improvements was estimated at 146,760*l.*, after deducting contributions from local authorities. If there was added to this an amount in respect of contributions towards the cost of local improvements, say, 100,000*l.*, the amount recommended for the year 1906-7 became 246,760*l.* That was less than the annual amount recommended in some of the previous years. If the Council adopted their present proposals the net amount voted for



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street improvements during the eighteen years beginning March 1889 and ending March 1907 would be about 7,968,456*l.*, which represented an average annual vote of about 442,700*l.* The Metropolitan Board, during the thirty-three years of its existence, spent upon street improvements, including the embankment of the Thames, 11,516,974*l.*, an average annual expenditure of 349,000*l.* Since the Board was superseded by the Council the traffic in London had considerably increased, and the need for new and widened thoroughfares had become more and more pronounced. Having regard to this great public need, it became exceedingly difficult for them to refrain from submitting to the Council several important and necessary schemes, but in view of the large amount to which the Council was already committed in respect of street improvements, and having regard to opinions recently expressed in the Council against further extensive liability being incurred, they had decided this year to submit only a few of the most urgent schemes in connection with tramway proposals, special circumstances making it desirable for them to be undertaken without delay.

The Richmond (Ireland) District lunatic asylum authorities at their last meeting adopted a resolution requesting the architect to furnish an explanation as to why defective verandah work had been certified for at Portrane.

The Derbyshire Association of Urban District Councils' Surveyors has sent to the urban councils of the county a series of resolutions adopted by the Association, urging the taking of steps to improve the roads. In a letter to the authorities it is pointed out that the main roads throughout Derbyshire do not compare favourably with those of other counties in England, and contending that it is only by an increased annual allowance from the county authority that the main roads through urban districts can be maintained in a manner equal to present-day requirements. The Association requests any urban authority not satisfied with the allowance offered by the County Council to refuse to enter into a contract, and to combine with other authorities in a like position to urge the County Council to increase its allowances offered to an amount in keeping with the estimate of the urban authority's surveyor.

CARLISLE WATERWORKS.

The new waterworks for Carlisle were inaugurated last week. The supply is derived from two streams known respectively as Old Water and New Water, which below their junction become the river Gelt, drain an area of about 7,500 acres consisting entirely of open moorland, and have within their sheds several springs yielding a copious supply of pure water. Under their Water Act of 1898 the Corporation obtained power to appropriate and use for the purposes of water supply the Upper and Lower Tarnmonath Springs, Old Water Bridge Springs and Sheepwash Springs in the Old Water Valley, Leach's Springs in New Water Valley, Priest's Springs on the west slope of the Gelt below Geltsdale Farmhouse, and the waters of the two streams Old and New Water, with their tributaries.

The water of each spring in Geltsdale is led by pipes to the main receiving chamber situated at the junction of the waters. Weirs have been built across both Old and New Water above their junction, enabling the water of the stream to be diverted through copper wire gauze screens into pipes which deliver into the receiving chamber. The spring water is always clear and bright, but in times of flood the streams may become turbid. The receiving chamber is so arranged that the spring water and stream water are delivered into separate tanks, and the latter can be entirely shut off when discoloured by flood. The amount of water coming into the receiving chamber from either source is automatically gauged and recorded, and a copy of the record of the flow of the river Gelt over the gauge at Hynam bridge is electrically transmitted to the receiving chamber, so that the man in charge of the valves may know when to abstain from taking water. The highest spring is situated at an altitude of 1,290 feet above Ordnance datum, the top-water level of the receiving chamber being at 751.0 O.D.

A storage reservoir was necessary in order to maintain the full supply to the city in times of drought, and as there was no suitable site for such a reservoir in Geltsdale, it was decided to make use of the neighbouring valley of Castlecarrock, where a reservoir holding upwards of 170,000,000

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gallons, and covering about 42 acres, is in course of construction. This reservoir, which will have its top-water level at 508.0 O.D., is to be formed by an embankment across the valley, 40 feet high in the deepest part, the waters of Castlecarrack beck being diverted round the eastern side. Seven filter beds, covering an area of 5,250 square yards, have been built below the embankment; two additional beds can be added when required.

The water from the receiving chamber at the junction of the waters is brought to Castlecarrack by a cast-iron main, 20 inches in diameter, three miles long, and can be delivered either into an open tank situated on the eastern slope about 90 feet above the filters, or into the filters direct. When the embankment is complete a pipe from this tank will deliver water into the southern end of the reservoir. For the purpose of providing a supply of water to the Brampton Rural District Council at a high level pumping has to be resorted to. Turbines driven by the flow of water from the upper tank down to the filters have been installed at the north-east corner of the filters. These turbines actuate centrifugal pumps which are capable of delivering the required quantity into the Brampton Council's reservoir at Garth Head, and a further quantity required for the supply of the farms round Castlecarrack and for the purpose of washing the sand for the filter beds. This latter water is delivered into a covered tank which adjoins the open tank at the end of the 20-inch gravitation main, and is at a sufficient elevation to command the houses and fields to be supplied.

After passing through the Castlecarrack filters the water is collected in a covered pure water tank, with top water level at 474.0 O.D., whence it flows through a 16-inch cast-iron gravitation main six miles long to the covered service reservoir at Cumwhinton, which holds 5,000,000 gallons, and can be doubled in size when necessity arises. As the top-water level at Cumwhinton reservoir is at 275.0 O.D., or 150 feet above the existing service reservoir at Harraby, the pressure in the city mains will be largely increased under the new scheme. From Cumwhinton a 21-inch cast-iron main four and a half miles long conveys the water into the city, and has been coupled up to the existing distributing mains at the junction of Warwick Road and Broad Street.

The scheme is designed to give an ultimate daily supply of three and a half million gallons, sufficient for a population of well over 100,000 persons.

The contract for the first portion of the scheme, including the intake works in Geltsdale, the gravitation mains, Castlecarrack filters and Cumwhinton reservoir, has been carried out by William Kennedy, Ltd., Partick; and the contract for Castlecarrack reservoir is in the hands of Messrs. Harold Arnold & Son, of Doncaster. Messrs. Gilbert Gilkes & Co., of Kendal, have supplied and erected the turbines and pumps at Castlecarrack; and Mr. G. Kent, of Holborn, has furnished the recording apparatus in Geltsdale and at Hynam bridge. Cottages for the men in charge at Geltsdale, Castlecarrack and Cumwhinton are being built by Mr. J. Heward, of Brampton, and Mr. W. Latimer, of Carlisle.

The resident engineer for all the works is Mr. A. W. Lewis, assisted by Mr. J. C. Boyd and Mr. P. H. East.

SMOKE.*

SMOKE is nearly always worst in the early stages of a fire, and although in the daytime it is often the best fire alarm possible, at night it is a serious danger to the sleeping inmates, and hampers the rescue work of the firemen. Being formed during combustion the gases within the floating vesicles and the other products are expanded by the heat which formed them, and are lighter than the surrounding air, and rise so that even in a room full of dense smoke breathing is possible close to the floor, whilst anything which will filter off the tar vesicles and dust leaves the air in a condition fit to breathe for a certain time.

The construction of a satisfactory smoke and dust respirator for use by firemen under conditions where the smoke is so thick as to seriously impede their labours is by no means an easy problem, and of the hundreds of such appliances that have been suggested and made very few even approach efficiency.

In making such an apparatus it must be remembered

* From the Cantor Lectures on Fire, Fire Risks and Fire Prevention, by Professor Vivian B. Lewes.

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that simplicity, lightness and compactness are essential. At the same time the filtering material must be sufficient to arrest the tar vesicles and particles of dust and carbon without offering so much impediment to the passage of air as to render breathing difficult, because the need for the helmet will probably arise under conditions of considerable exertion.

During the early stages of a conflagration when there is more smoke than fire, a good smoke respirator or filter of simple construction would afford much help, as the poisonous products of incomplete combustion are absent, but when a fire has been in progress for some time and there is a considerable mass of incandescent carbonaceous matter at the seat of the mischief, a large proportion of the product of incomplete combustion, carbon monoxide, begins to make its appearance with the smoke, steam and carbon dioxide. This introduces a new and serious source of danger to the workers, owing to the intensely poisonous nature of the gas.

The increase in quantity of this gas with increase in the mass of burning material is due to several factors:—

1. When the mass of incandescent matter is large the amount of air is rarely sufficient to complete the combustion, and carbon monoxide is produced.

2. With increase of temperature the proportion of monoxide to dioxide increases with great rapidity.

The playing of water on to the incandescent carbonaceous mass and the action of the steam generated on the glowing carbon yield carbon monoxide.

It might be imagined that as carbon monoxide ignites at about 700 degrees C. and burns readily in air, forming the comparatively harmless carbon dioxide, there would be but little chance of any escaping unburnt with the products of combustion, but dilution plays an important part in preventing the combustion of such gases, and air may contain from 16 to 18 per cent. of oxygen still left in, and yet extinguish the flame of carbon monoxide if there be any considerable percentage of carbon dioxide present in it.

It is generally stated that air which extinguishes a flame is irrespirable and will not support life, but it has been shown clearly that if the oxygen in the air be reduced to about 17 per cent. and the carbon dioxide increased to between 3 and 4 per cent., either by respiration or by combustion, although a candle placed in this air will be at once

extinguished, the mixture may be breathed by a healthy man for a very considerable period without any noticeable effect being produced.

Carbon dioxide is not a poison, but acts by keeping the oxygen of the air away from the lungs, and in small quantities by interfering with the diffusion processes which in the lungs enable the blood to discharge the carbon dioxide formed in the body, and to reoxygenate itself from the inhaled air. When 6 per cent. of carbon dioxide is present in the air men inhaling it begin to pant and show signs of distress, which becomes severe with 10 per cent., whilst 15 per cent. soon leads to unconsciousness.

With carbon monoxide, however, a distinct toxic action is set up with the presence of even small traces in the air inhaled. The gas forms a definite compound with the hæmoglobin of the blood, and so prevents it from carrying out its normal functions; 0.1 per cent. of carbon monoxide in the air will, after half an hour's breathing the atmosphere produce inability to walk, whilst 1 per cent. will produce unconsciousness in a couple of minutes, followed by death if the man "gassed" is not quickly removed to an uncontaminated atmosphere. Should a man be overcome, artificial respiration and the inhalation of pure oxygen is the only treatment to employ.

The history of attempts to produce apparatus providing a means of breathing smoke-laden air for any length of time affords the best idea of the difficulties that have to be overcome. Amongst these attempts some of the earliest were breathing-tubes, consisting of a muzzle fitting to the mouth with valves connected to which were long tubes, which remained in the open air and down one of which the wearer breathed, whilst fresh air was sucked in through the other. These were exceedingly awkward to manage, especially when corners had to be turned, and the skin friction of the air passing through the tubes rendered respiration extremely hard.

An improvement of this idea was to have an airbag with a short tube, which enabled a man to enter an atmosphere of smoke and remain in it for two or three minutes. A more complex apparatus was the smoke jacket, consisting of a blouse of cowhide fitted with a helmet over the head, the ordinary water hose being screwed into an inlet in the blouse, into which air instead of water was pumped by the

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engine, whilst in the same clumsy class of apparatus Aldini's fire-protecting suit, consisting of asbestos covered by fine wire gauze and surmounted by a helmet, may be placed.

In 1875 Professor Tyndall, in conjunction with Captain Shaw, devised and introduced the smoke cap, which consisted of a hood of calf-skin, fitting practically air-tight over the head and shoulders, and which carried goggles for the eyes, and in front of the mouth a valve for expired air and a filter tube through which the air could be respired. The tube was closed with wire gauze at each end, and contained alternate layers of wool, wool moistened with glycerin, freshly burnt charcoal and freshly burnt lime, the whole apparatus weighing about 4 lbs.

In such a smoke-filter the wool moistened with glycerin is especially active in retarding the passage of such particles of dust and vesicles of tar vapour as could pass the dry cotton-wool, whilst the charcoal exercised a certain amount of absorptive effect on the gaseous products of combustion, the lime taking up the carbon dioxide.

In the smoke-helmets used at the present time no attempt is made to rely on filtration of air to render it fit for breathing, as it is recognised that to be of real service a helmet of this kind must render it possible for a man to enter any atmosphere, poisonous or otherwise, and the only way to do this is to keep him supplied with fresh pure air.

Perhaps the apparatus most used for this purpose is a survival of the old air tubes known as König's patent respirator. It consists of a helmet fitted with goggles, a valve for escaping air and inlet to which an air tube is attached; the neck of the helmet is made of soft leather which straps round the man's neck. The air tube, which may be of any length, is attached to the helmet, the other end being fixed to double-acting bellows worked by a man in the outer air, which drives fresh cool air round the face of the wearer, and the air being under slight pressure prevents the entrance of any gases or smoke to the helmet, the air finally escaping through a valve in the top of the helmet.

This form of smoke-helmet is popular with the men, as a small attachment near the bellows allows the tube to be used as a speaking tube, so that the man wearing the helmet can keep in communication with the man outside

and direct operations. Thus the feeling of isolation is done away with.

In case of a great disaster, such as a theatre or hotel fire, where the rescue of a large number of people has to be conducted rapidly, more independence of action than would be given by the König apparatus is needed, and for this purpose the Vajin-Bader helmet is excellently adapted.

It consists of a fire and gas-proof helmet, fitting tightly on to the shoulders and carrying mica eyepieces with revolving cleaners; a metal cylinder attached to the back flap of the helmet is filled with air under pressure, and this is allowed to escape slowly into the body of the helmet, the foul air leaking out through the shoulder-pieces.

Another excellent piece of apparatus of the same type is the Chapin-Sherman cap, which comes from San Francisco, and consists of a light oiled silk cap covered with fireproof material and connected with air reservoirs strapped on the fireman's back.

The supply of air carried is larger than with the Vajin-Bader apparatus, and the air cylinders, being lower down the back, form a ledge that would help in the carriage of an unconscious person on the fireman's back.

As we have seen, rapid combustion or fire is induced when the ignition point of a substance is reached, but in studying the causes of fire one soon discovers that they are by no means limited to those cases in which the combustion is caused by the direct application of flame or other source of heat, many secondary actions tending to bring a mass of material accidentally to its ignition point.

On taking the causes of fire as revealed by the statistics of any large town, one generally finds that matches in one way or another are a most prolific cause, whilst defective vents and flues or fireplaces, owing to the overheating of beams and woodwork near them, also mount up to a very large total, the other cases being due to a number of causes, amongst which the spontaneous ignition of goods in bulk plays an important part.

Taking the fire returns for 1904 in London, Liverpool, Manchester, Glasgow, Leeds and Sheffield, we find that the chief ascertained causes of fire were:—Matches, 1,695; overheating from defective flues and fireplaces, 853; gas, 464; oil, 408; candles, 327; whilst a myriad of other causes make up the remainder of the list.

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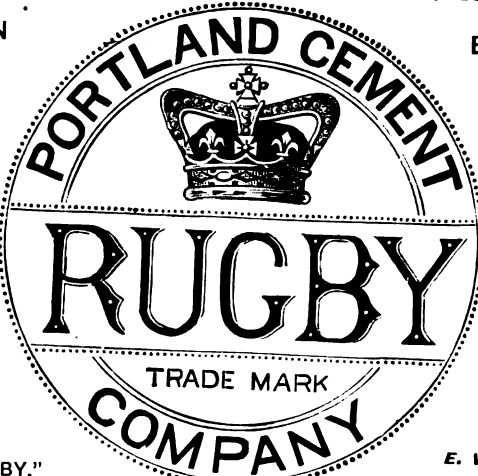
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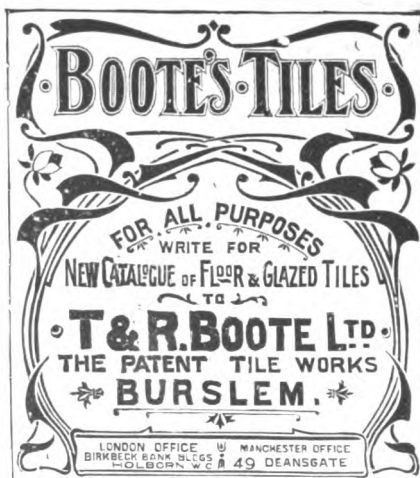
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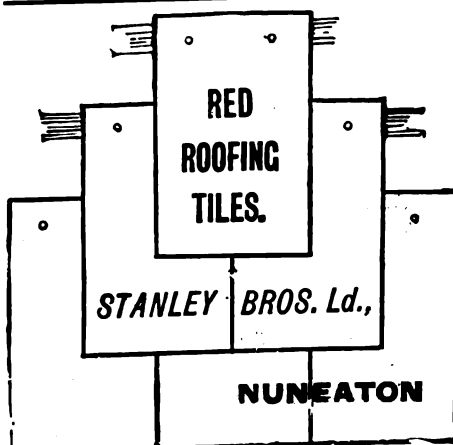
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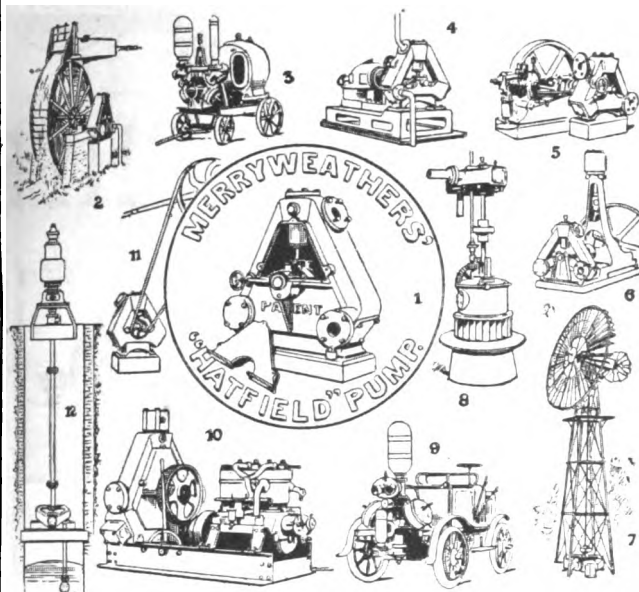
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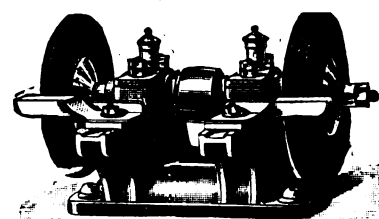
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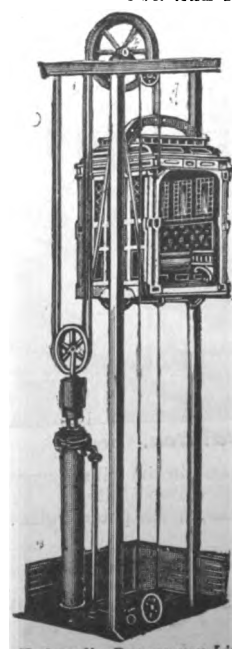
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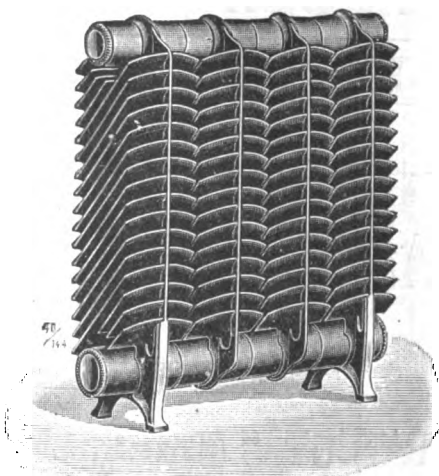
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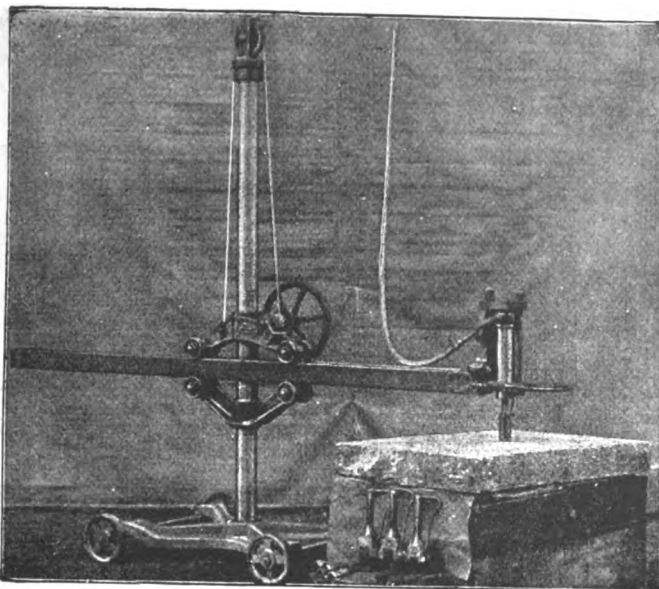
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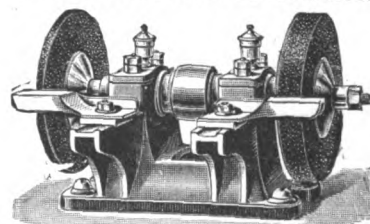
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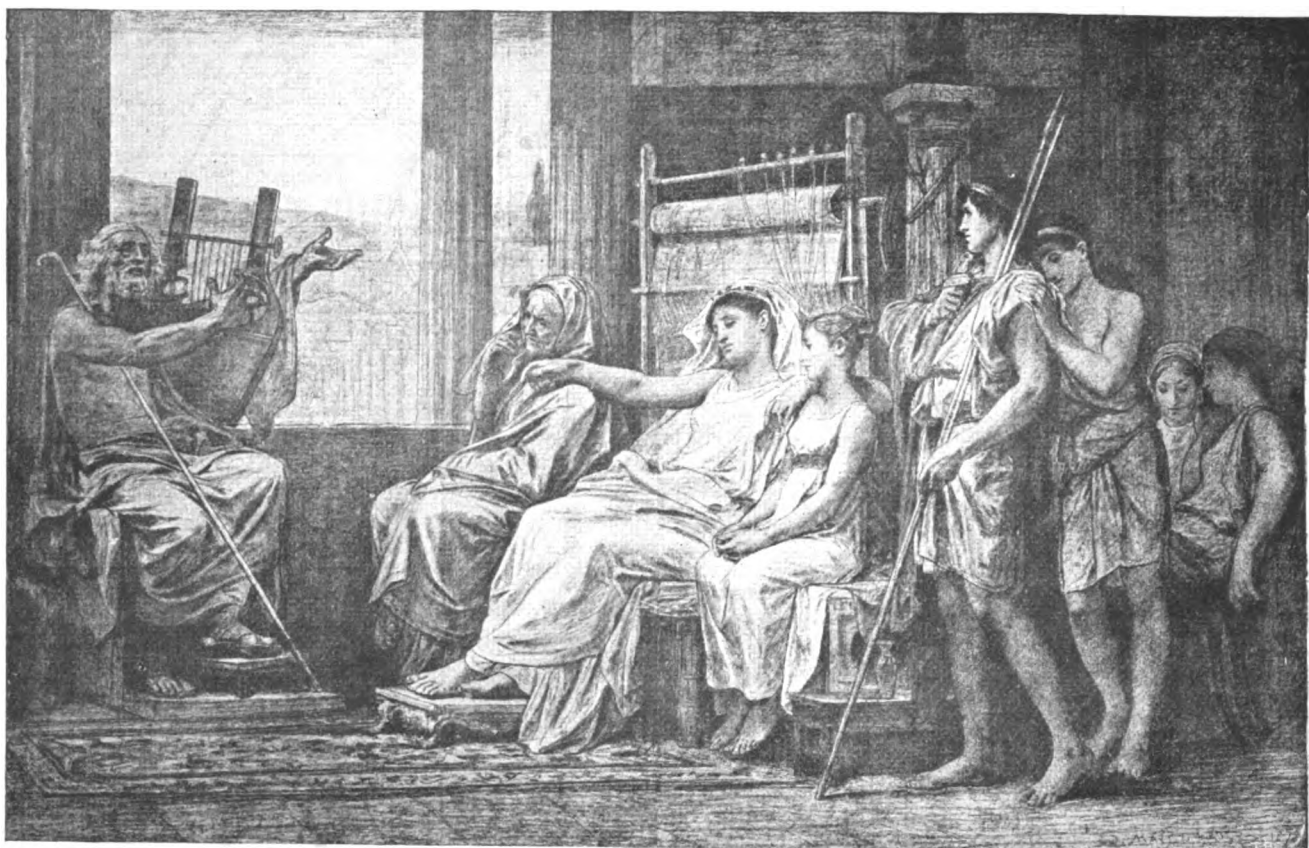


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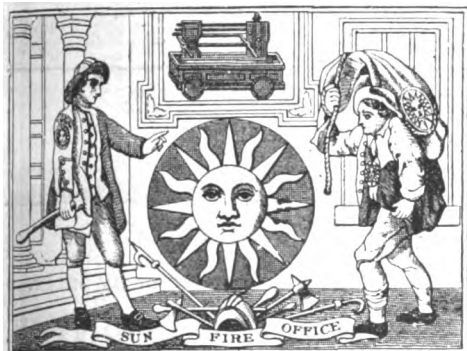
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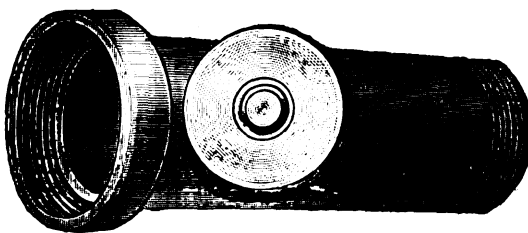
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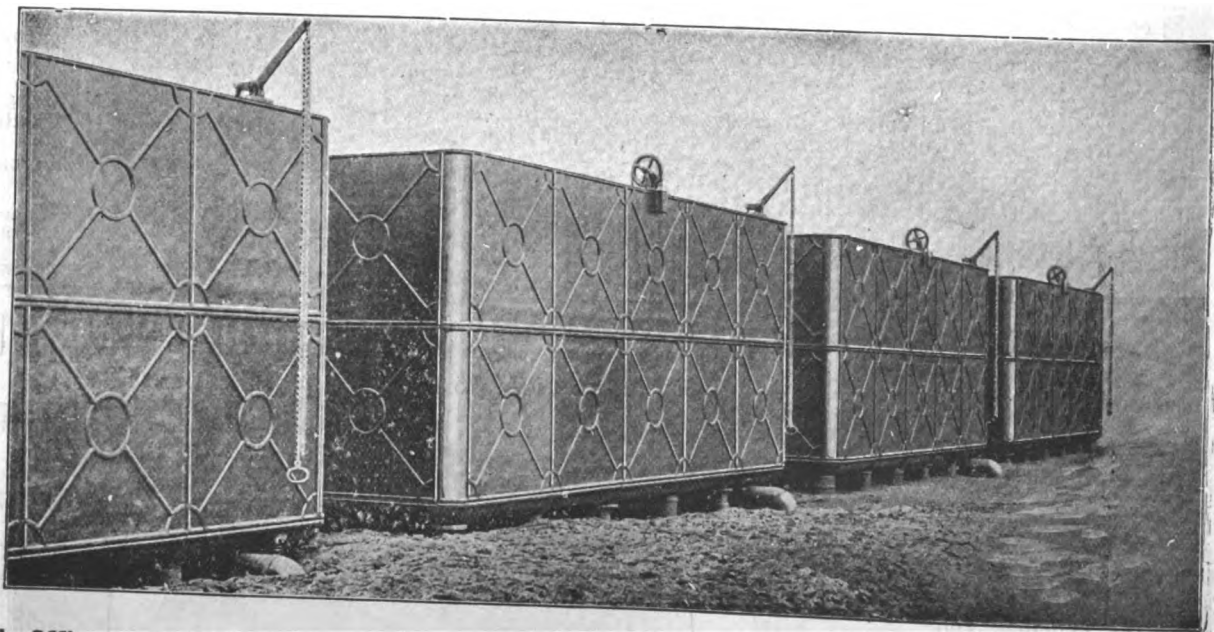
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GRIMSBY.—Sept. 3.—For the erection of a public convenience in the Duke of York Gardens, West Marsh. Deposit 1*l.* 1*s.* Mr. H. Gilbert Whyatt, borough engineer and surveyor, Town Hall Square, Grimsby.

HALIFAX.—Sept. 14.—For erecting eleven dwelling-houses and appurtenances in Leamington Avenue (Clapton Lodge estate). Mr. Medley Hall, architect, 1 Harrison Road, Halifax.

HAZEL GROVE.—Sept. 7.—For the erection of stables and coach-house, &c., at the Stepping Hill hospital, Hazel Grove, near Stockport. Deposit 2*l.* 2*s.* Mr. W. H. Ward, architect, Paradise Street, Birmingham.

HENLEY-ON-THAMES.—Sept. 10.—For converting the school buildings adjacent to the workhouse at Henley-on-Thames into an infirmary, for the Guardians of Henley union. Names before August 15 to Messrs. Charles Smith & Son, architects to the Board, 164 Friar Street, Reading.

HOUNSLOW.—Sept. 13.—For the erection of an infants' school at Spring Grove, to accommodate 350 children. Deposit 2*l.* 2*s.* Mr. A. Lancelot Lang, architect, Council House, Hounslow.

IRELAND.—Sept. 3.—For building two houses at Strawberry Hill, Sunday's Well, Cork. Messrs. W. H. Hill & Son, architects, 28 South Mall, Cork.

IRELAND.—Sept. 4.—For alteration and additions to Oatlands, Ballinderry. Mr. William J. Fennell, architect, 2 Wellington Place, Belfast.

ISLEWORTH.—Sept. 4.—For the following works:—(a) The reconstruction of Oak Bridge, Isleworth; (b) the

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reconstruction of Queen's Bridge, Isleworth, for the Heston and Isleworth Urban District Council. Deposit 1*l.* 1*s.* for each contract. The Acting Engineer and Surveyor to the Council, Council House, Hounslow.

KEA.—Sept. 8.—For the erection of a stable at Calenick farm in the parish of Kea, Cornwall. The Farmhouse, Calenick, Cornwall.

KETTERING.—Sept. 8.—For construction of service reservoir and laying mains; 560 tons of cast-iron pipes and specials; sluice valves, air valves, hydrants, &c.; gas engines, suction gas plant and pumps. Messrs. Everard, Son & Pick, 6 Millstone Lane, Leicester.

LONDON.—Sept. 4.—For the execution of ordinary works and repairs to buildings, &c., in their charge in the London district for three and a half years from October. Deposit 1*l.* H.M. Office of Works, Storey's Gate, Westminster.

LONDON.—Sept. 6.—For the following, for the Guardians of St. Mary, Islington:—Providing and fixing (1) hot-water and heating arrangements, (2) fire mains and hydrants, (3) gas supply and fittings, (4) electrical installation at the two new blocks now being erected at the St. John's Road workhouse, Upper Holloway, London. Deposit 2*l.* Mr. Wm. Smith, architect, 65 Chancery Lane, W.C.

LONDON.—Sept. 13.—For the provision and erection of iron bridges and connecting up same between A and E blocks at the workhouse, Ladywell, S.E., for the Bermondsey Board of Guardians. Applications, together with a deposit of 5*l.*, by Sept. 6. Mr. E. Pitts Fenton, clerk, Guardians' Offices, 283 Tooley Street, S.E.

LONDON.—Sept. 18.—For erecting a public convenience and bath-houses at Bell Green, Lower Sydenham, for the Lewisham Borough Council. Deposit 5*l.* Surveyor's Department, the Town Hall, Catford.

LONDON.—Sept. 27.—For additions and alterations in the building at the electricity works, Osborn Street, White chapel, E., for the Stepney Borough Council. Deposit 5*l.* Mr. M. W. Jameson, A.M.I.C.E., borough engineer, 15 Great Alie Street, Whitechapel, E.

MANCHESTER.—Sept. 5.—For alterations and additions to the Abbot Street Municipal school, Rochdale Road. Deposit 2*l.* 2*s.* The Education Offices, Deansgate, Manchester.

MANCHESTER.—Sept. 5.—For the erection of the Domett Street Municipal school, Blackley. Deposit 2*l.* 2*s.* The Education Offices, Deansgate, Manchester.

NORTHUMBERLAND.—Sept. 5.—For the erection of Chevington parish hall, &c. Particulars on application to the Diocesan architect, Mr. Arthur B. Plummer, F.R.I.B.A., Newcastle-on-Tyne.

NORWICH.—Sept. 7.—For the following works for the Norfolk education committee:—Enlargement of Filby school and for the erection of a teacher's dwelling-house. Mr. T. Inglis Goldie, architect, Bank Plain, Norwich. For alterations and improvements at Lessingham school, Winterton school and at Stalham school. Messrs. Olley & Haward, architects, Queen Street, Great Yarmouth. Deposit 1*l.* 1*s.* in each case.

PINNER.—Sept. 5.—For the construction of a covered septic tank at the sewage farm, in the parish of Pinner, Middlesex, and other works in connection therewith. Mr. J. A. Webb, engineer, the Hendon Rural District Council.

POOLE.—Sept. 10.—For the erection of a secondary school at Seldown, Poole. Mr. Walter Andrew, architect, Parkstone.

REIGATE.—Sept. 8.—For the erection of cart sheds and a store at the Corporation depôts in Brighton Road, Redhill, London Road and Blackborough Road, Reigate. Mr. F. T. Clayton, C.E., borough surveyor, Municipal Buildings, Reigate.

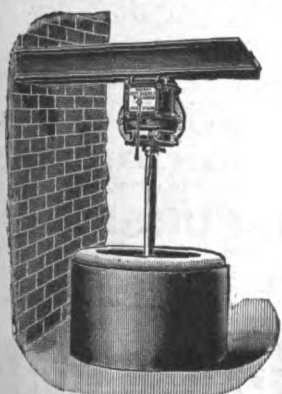
SALFORD.—Sept. 10.—For the following works, for the tramways committee:—(Contract 145) constructional steel-work; (Contract 146) builders' work, in erection and completion of extensions to the central car depôt, Frederick Road, Pendleton. The General Manager, Tramways Department, 32 Blackfriars Street, Salford.

SCOTLAND.—Sept. 4.—For the erection of the Lochmaben combination hospital. Mr. F. Carruthers, architect, 35 Buccleuch Street, Dumfries.

SMALL HEATH.—Sept. 4.—For the erection of stables, cattle pens, &c., at Small Heath, Birmingham, for the Great Western Railway Co. The Resident Engineer at Acocks Green Station.

SOUTHPORT.—Sept. 6.—For the construction of a cooling pond filter-beds and other works at or near Royal Oak, in

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SOUTH SHIELDS.—Sept. 28.—The South Shields education authority invite preliminary schemes and estimates for the warming and ventilation on the Plenum system of a block of four school departments, accommodating a total of 1,950 scholars, to be erected on the site of the Mowbray Council school, South Shields. Mr. Henry Grieves, architect, Albany Chambers, King Street, South Shields.

TETTENHALL.—Sept. 3.—For the pulling-down and re-erection of a brick wall (about 50 square yards) situate at the Barnhurst sewage farm, Tettenhall, near Wolverhampton. Mr. George Green, borough engineer, Town Hall, Wolverhampton.

THORNLEY.—Sept. 5.—For the erection of 100 workmen's dwelling-houses between Thornley and Wheatley Hill, Durham. The Company, Thornley Colliery Office, Thornley, R.S.O.

TYSELEY.—Sept. 4.—For the erection of an engine-shed, &c., at Tyseley, near Birmingham, for the Great Western Railway Co. Resident Engineer at Acocks Green Station.

WAKEFIELD.—Sept. 14.—For whole or separate tenders in connection with the following schools, for the West Riding education committee:—Thornton-in-Craven new school, Elslack new school, Cudworth new school, Kirkhamgate new school. Bolton-on-Dearne: Goldthorpe (infants) provided school (enlargement)—builder, joiner, slater, plumber, plasterer, painter. Mytholmroyd: Scout Road provided school (sanitary alterations), Burnley Road provided school (sanitary alterations)—builder, joiner, slater, plumber, painter; Cragg Vale provided school (sanitary alterations)—builder and plumber; Harthill-with-Woodall provided school (alterations and new cloak-room)—builder, &c.; Adwick-on-Dearne provided school (alterations and repairs)—builder and asphalt. Mr. J. Vickers-Edwards, county architect, County Hall, Wakefield.

WALES.—For rebuilding the White Hart hotel, Oxford Street and Union Street, Swansea. Mr. John H. Morewood, architect, Welwyn Lodge, Mackworth Terrace, Swansea.

WALES.—Sept. 5.—For building a house at Llandyfriog, near Newcastle Emlyn. Mr. J. Coates Carter, architect, Bank Buildings, St. Mary Street, Cardiff.

WALES.—Sept. 5.—For the erection of forty cottages at Penrhiwceiber. Mr. T. W. Millar, architect and surveyor, Mountain Ash.

WALES.—Sept. 6.—For additions to Castle Square English Congregational church, Treforest. Mr. Arthur Ll. Thomas, architect, Church Street Chambers, Pontypridd.

WALES.—Sept. 8.—For the following works:—(1) New police station at Glyn Neath, (2) alterations and additions at the Bridgend police court buildings. The Glamorgan County Council Offices, Westgate Street, Cardiff.

WALES.—Sept. 10.—For the erection of a chapel house, for the trustees of the Calvinistic Methodist church, Senghenydd. Mr. John Davies, butcher, Caerphilly Road, Senghenydd.

WALES.—Sept. 12.—For additions and improvements to Bethesda Congregational chapel, Merthyr Tydfil. Mr. John Thomas, 90 Brecon Road, Merthyr Tydfil.

WALES.—Sept. 17.—For the erection of schools for boys, girls and infants, together with cookery and manual instruction rooms at Willowtown, Ebbw Vale, Mon. Deposit 3/ 3s. Mr. H. Waters Waungoeh, architect, Beaufort. Separate tenders are required for (1) the infants' block, (2) mixed block, (3) cookery and manual block, (4) the remainder of the works and (5) the whole of the works.

WALES.—Sept. 22.—For erection of a stone and steel bridge at Gwyddrug, near Pencader, for the Carmarthen-shire County Council. Mr. Charles H. Mounsey, county surveyor, Carmarthen.

WINGATE, & C.—Sept. 4.—For alterations to the following schools, Wingate, Wingate Grange and Station Town, for the Durham County education authority. Mr. W. Rushworth, architect, County Education Offices, Shire Hall, Durham.

YORK.—Sept. 12.—For alterations at the public library and for supplying and fixing of furniture and fittings. Mr. A. Creer, city engineer, Guildhall, Yorks.

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West	4,075	0	0
Doughty	3,860	0	0
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Cochrane	136	19	11
Holwell Iron Co.	136	7	6
STANTON IRON Co., Nottingham (accepted)	133	5	7

DODDINGTON.

For alterations and enlargement of the Council school. Mr. WILFRED H. ROBINSON, architect.

BISHOP, Sittingbourne (accepted)	£715	0	0
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DURHAM.

For the construction of a new outfall sewer and sewage disposal works for the eastern portion of Sherburn village.

Oliver	£1,497	17	9
Aitken	1,347	0	0
CARRICK (accepted)	1,212	4	8
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POWELL, Hereford (accepted)	691	0	0

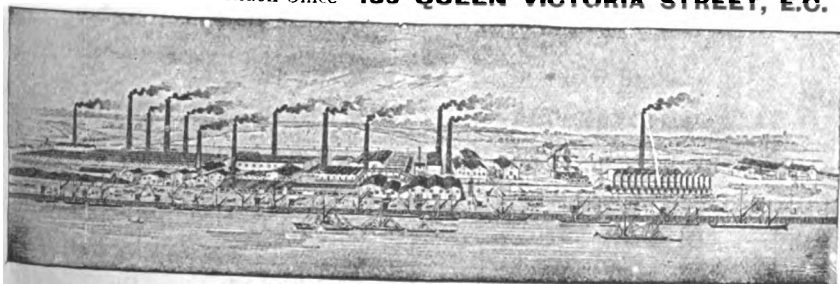
FRINTON-ON-SEA.

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Wilson, Border & Co.	1,690	0	0
Adams	1,667	11	4
French	1,650	0	0
Free & Sons	1,646	16	0
Lee	1,636	0	0
Wilkins	1,625	0	0
Watkins	1,590	0	0
Jackson	1,572	19	2
Wilson	1,555	0	0
Zadig & Co.	1,549	0	0
Bower Bros.	1,517	0	0
Worthington	1,508	5	3
Goss	1,508	0	0
Johnson	1,470	0	0
Brown (accepted)	1,369	0	0

Sussex Road.

Fry Bros.	717	1	0
Mowlem & Co.	712	0	0
Shepherd & Sons	705	16	4
Hardy, Bate & Co.	699	14	6
Mann	688	0	0
Lee	686	0	0
Adams	683	7	6
Jackson	680	14	9
Wilson, Border & Co.	680	0	0
French	675	0	0
Zadig & Co.	662	0	0
Free & Sons	660	1	0
Watkins	656	0	0
Wilson	640	0	0
Bower Bros.	619	0	0

WATFORD—continued.

Worthington	£614	3	1
Johnson	604	0	0
Brown	596	0	0
Goss	588	0	0
BRACEY & CLARK (accepted)	580	0	0

For sewerage works, Hagden Lane. Mr. D. WATERHOUSE, engineer and surveyor.

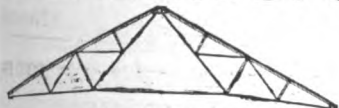
Starkey	£777	2	2
Mann	766	0	0
Bate & Co.	675	7	8
Lee	660	14	8
French	655	0	0
Adams	653	16	2
Bracey & Clark	640	0	0
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Jackson	555	17	9
Brown	555	0	0
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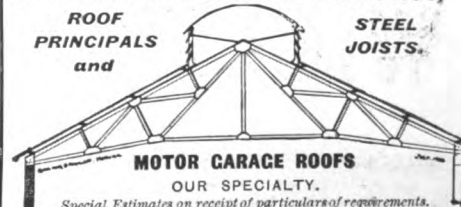
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TRADE NOTES.

THE Burgh Hospital, Peterhead, is being warmed and ventilated by means of Shorland's patent Manchester grates, the same being supplied by Messrs. E. H. Shorland & Brother, of Manchester.

THE London and Lancashire Fire Insurance Company announce that Mr. A. Percy Eccles, of the firm of Alexander Eccles & Co., has joined the head office board of the company in succession to his late father, Mr. Alexander Eccles, who had been a member of the board for sixteen years.

THE Safety Water Elevator Company some two years ago, under the management of Mr. W. Scott, started the manufacture of the safety water elevator, or Jonet's patent well gear, in High Street, Dunstable, but the rapid growth of their business necessitated larger premises, and early this year they acquired the Chiltern Engineering Works, with two acres of ground, situated just opposite the Great Northern Railway station. These works have now been fully equipped with machinery, and the company will be in a position to cope with the ever-increasing number of orders.

MR. CONSUL MACLEAN has reported on the trade of the consular district of Dar-al-Baida, comprising half Morocco, for the year 1905 and part of 1906. He states that public works will shortly be undertaken in all the coast towns, and adds:—"Changes are in the air; the Algieras conference has unlocked the door of Morocco to enterprise, and has made it clear that all public works are to be tendered for in the open market, and a State bank is to be established which will watch over the administration of finances. There is to be no favouritism. Private individuals are likely to build extensively in the near future, and everything appertaining to the building trades may find a market, but the orders are not likely to go to the United Kingdom unless the trades concerned combine to send out shrewd and tactful experts to take stock of local requirements and conditions and to make acquaintance with the men on the spot who could assist them to obtain business. Catalogues alone will not attract orders."

ELECTRIC NOTES.

SIR A. B. W. KENNEDY has been engaged to investigate and report upon the Woolwich Borough Council's electricity undertaking.

AN American Consular report from Reichenberg gives particulars of a discovery of a complete substitute for celluloid, which is not yet patented nor on the market. It is stated that the new invention overcomes all shortcomings, although retaining all the desirable qualities of celluloid. The substitute is but little dearer than glass, which is much cheaper than celluloid and of about the same weight. The material is a non-conductor of electricity and can be used for insulation.

MR. DALRYMPLE, general manager of Glasgow Corporation tramways, has prepared a report for his committee in view of the drafting of a provisional order for further extension of the city's tramway system. In this report he suggests, amongst other things, the opening of a new tramway route from Eglinton Toll, on the south of the river Clyde, over the Clyde into Dixon Street and St. Enoch Square. This would necessitate the erection of a steel bridge across the river, connecting South Portland Street and Dixon Street. The congestion of traffic on Jamaica Street is, he says, growing annually greater, the number of cars crossing each way at present being at the rate of one every eighteen seconds. The extensions suggested in the report for different parts of the system would make a total of $4\frac{1}{2}$ miles of double track.

ACCORDING to the annual report of the manager of the Bradford Corporation tramways, the undertaking in that city suffers seriously on account of the gradients. Two heavy items of expenditure are directly attributable to this fact, namely, power and car repairs. In a level city the consumption of power per car mile is, roughly, one unit, as against 1.9 units in Bradford. This would mean a difference of nearly 20,000*l.* Car repairs in a level city were generally about 0.5*d.* per car mile, as against 0.8*d.* in Bradford, a difference of 0.3*d.* per car mile, amounting roughly to 6,300*l.*, so that to the gradients an extra expenditure of 26,000*l.* was directly attributable. The net profits were 11,637*l.* and over 9,000*l.* was paid by the department as rates.

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A SCHEME is under consideration for utilising the water power of Loch Awe and the river Awe for commercial uses. It involves the construction of an embankment or dam 11 feet high, at a point about midway between where the river Awe debouches and the bridge which carries the public road over the river, so as to raise the dam to the normal level of the loch. The effect will be to prolong the narrow tongue of water in the Pass of Brander to the site of the embankment. From the embankment an open canal will conduct the water for two miles and discharge it through steel pipes to the power-house stationed at Bonawe. The electric energy generated at the power-station will be transmitted by overhead cables to works which it is proposed to construct at Achnacree more, an extensive peat moss near the North Connel station of the new branch of railway to Ballachulish. At these works the promoters contemplate the manufacture of steel by means of electric furnaces.

VARIETIES.

MR. JOHN HANCOCK, aged eighty-four, of Clifton Hill, Exeter, brick and tile manufacturer, bequeathed various sums to charities. His estate has been proved at 120,524*l.*, net personalty being 93,630*l.*

THE baths committee of the Camberwell Borough Council have decided to arrange the principal bath at Church Street during the winter for cricket practice. Three good pitches will be made.

THE United States Government will build at Manila two steel wharves with concrete piers. One of the wharves will be 650 feet long and 110 feet wide, and the other 600 feet long and 70 feet wide.

At the next regular quarterly meeting of the Association of American Portland Cement Manufacturers, to be held at Chicago, Ill., on September 11 and 12, Mr. R. L. Humphrey will give a talk, accompanied by stereopticon views, on "The Behaviour of Structural Materials under Earthquake Shock and Fire at San Francisco."

THE Midland centre of the Sanitary Inspectors' Association held their annual meeting at Lichfield on Saturday.

The officers elected for the ensuing year are as follows:— Messrs. W. Wilkinson (Derby) chairman, J. T. Cowderoy (Kidderminster) vice-chairman, A. Kent, hon. secretary.

THE Stockport Town Council has decided to proceed with the construction of an earthen dam in connection with the Kinder reservoir. About a year ago the Council gave up the attempt to reach suitable foundations for a masonry dam after expending over 70,000*l.* to no purpose. New contracts will be invited.

THE Heywood and Middleton Water Board have decided to promote a Bill in the next session of Parliament giving them powers to borrow 125,000*l.* for the purposes of the waterworks undertaking, and for the extension of time for the completion of works authorised by the Act of 1901. The Board have already expended over 160,000*l.* in connection with a scheme comprising the construction of a reservoir on Ashworth Moor.

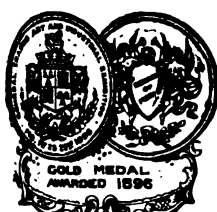
THE Brechin district committee have agreed to build a bridge at Justinhaugh at a cost of 4,000*l.*, build a bridge at Powmill at a cost of 500*l.*, and alter a bridge between Brechin and Edzell at a cost of 1,500*l.* For new bridges and alterations in the district the sum of 10,000*l.* will be expended. Mr. A. Goodwillie, road surveyor, Alford, son of Mr. Goodwillie, surveyor, St. Andrews district of the Fifeshire County Council, was appointed surveyor for the Brechin district.

THE United States Bureau of Labour has issued a bulletin in which the rates of wages paid in America, Great Britain and Germany from 1890 to 1903 are compared. The figures cover thirteen of the most important branches of labour, and show that the British employer pays nearly 50 per cent. more for his labour than does the German, while the difference as against the American employer is 191 per cent. At the same time it is shown that the German worker is increasing his rate of wages toward the British standard.

THE designs of the new technical school for Burnley have received the approval of the Board of Education. The site in Ormerod Road was purchased for 5,000*l.*, and the cost of the entire institution is expected to be 65,000*l.* The accommodation provides for 736 day scholars, with additional provision in the chemical and physical laboratories,

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art-rooms, workshops, &c.; and 1,351 scholars can be accommodated at one time in theoretical and practical science, art and technology. The designs for the new school were prepared by Mr. G. H. Pickles, the borough surveyor.

THE Liverpool Corporation estate committee have agreed to recommend the City Council to sell to the Royal Liver Friendly Society, for 70,000*l.*, about 6,000 square yards of land on the site of the Old George's Dock for the erection of new offices. This is one of the best positions in the business part of the city, being close to the landing-stage and to the new office of the Mersey Dock Board. It is stated that the Royal Liver Society's new building is to cost nearly a quarter of a million sterling. Part of the building, it is believed, will be occupied by one of the large shipping companies.

As a result of protests by Blackburn ratepayers against any portion of the valuable Blakey Moor property being used as a site for fire brigade headquarters and drill yard, the architects for the scheme have prepared two alternative plans for adapting the existing headquarters in Clayton Street. One is estimated to cost 36,781*l.* and the other 42,574*l.*, but the architects point out that neither provides for the required minimum of firemen's dwellings and drill-yard space, as laid down in the original Blakey Moor scheme. The fire station forms only a small part of a comprehensive scheme which includes the erection of police headquarters and courts, grand jury room, magistrates' offices, &c.

FISHGUARD HARBOUR, which was formally opened for traffic on Thursday, is situated in South Cardigan Bay, on the Pembrokeshire coast. There is a sufficient depth of water to accommodate vessels of the largest draught at all states of the tide, and excellent anchorage on a soft, rockless bed is afforded. The quay space at present available is 1,120 feet in length, which is sufficient to enable three vessels of large tonnage to be berthed simultaneously, and a surplus of 1,000 feet will be utilised for extensions when these are necessary. Nine electric cranes, each able to handle loads of 30 cwt., are available for dealing with mails and cargo direct from the steamer to the quay or train, or *vice versa*. In addition there is a 21-ton stationary

electric crane, capable of lifting a laden coal waggon in a cradle and tipping the coal direct into steamer or lighter.

At the meeting on Tuesday of the Liverpool water committee Alderman W. J. Burgess, the chairman, remarked that a very alarming report had appeared in the newspapers that a burst had taken place between Oswestry and Malpas. It was said to be a burst of the main pipe 42 inches in diameter, but as a matter of fact the burst was of quite a subsidiary character, being only 12 inches in diameter. Although the occurrence was unfortunate, it was not nearly so serious as the public might be led to imagine from the somewhat vivid description which had appeared in the newspapers. Little or no damage had been done, and he was glad to say the pipe had been sufficiently repaired.

THE directors of the Busby Water Company have informed the Glasgow Corporation that they are prepared, subject to the consent of Parliament being obtained by the Corporation, to advise a sale of the company's undertaking to the Corporation at the price of 30,413*l.* 17*s.* 2*d.*, subject to adjustment when the actual amount of the further expenditure has been ascertained. The company will pay off all loans and debts due by them, and retain and uplift all sums in their hands or due to them. The company's stores will be taken over at a valuation in addition to the price. Two committees, being unanimously of opinion that it would be in the public interest that the Corporation should acquire the sole right to supply water in the area at present supplied by the company, have recommended the Corporation to accept the offer.

SIR WILLIAM WARD, in a memorandum on German ceramic industries and German trade in ceramic products, has informed the Foreign Office that the extent of German industry and trade in the various descriptions of ceramic ware, including bricks, &c., has largely increased during the past thirty years, and it appears likely to develop further during the near future. One or the other branch of ceramic industry is now to be met with in almost every part of Germany. Common clays which can be utilised for brick-making, and also those which can be used for the manufacture of common earthenware goods, are of frequent occurrence. The rather superior kinds, and among them those kinds which turn white after burning, are likewise not unfrequent.



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NEW OFFICES FOR THE HEARTS OF OAK BENEFIT SOCIETY, EUSTON ROAD, N.W.—COMMITTEE-ROOM—PUBLIC OFFICES.

THE Egham (Surrey) surveyor reported to the Council that the tar surface of the main road, which had been placed for a certain distance, was breaking up. He had written to the county surveyor asking him to express an opinion on consolidating macadam by rolling only, as against using a grouting material while the rolling was in progress. The county surveyor had replied that, although he had often tried to roll the granite dry, he had never succeeded in consolidating a single yard without some binding material. He believed that if it was ever done at all it was only after the roller had crushed the granite sufficiently to produce some fine material to fill up the interstices. He was absolutely certain that if large experiments were made in trying to roll granite dry on such roads as those through Egham, which are used by thousands of motorists, the motorists and drivers of other vehicles using the road would soon be begging the Council to go back to the old method.

At Lambeth Mr. John Troutbeck held an inquest touching the death of William Robins, forty-six. According to the evidence it appeared that on January 8 deceased was erecting scaffolding on some flats which were being erected in Chester Street, Lambeth. The deceased was in the act of tightening the rope around the scaffold when it broke, and he fell out over the scaffold into the road, a distance of 28 feet. The jury returned a verdict of "Accidental death," and added a rider that "the ropes should be overlooked before leaving the works for the job." The

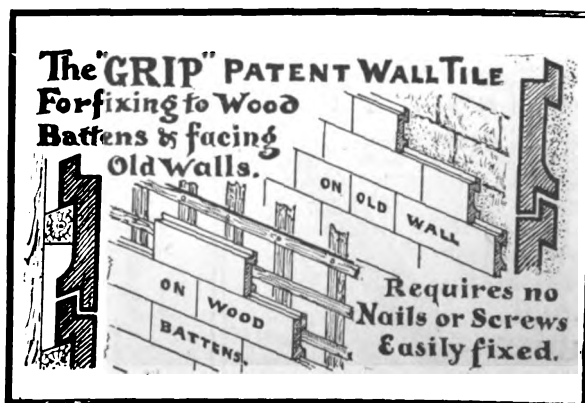
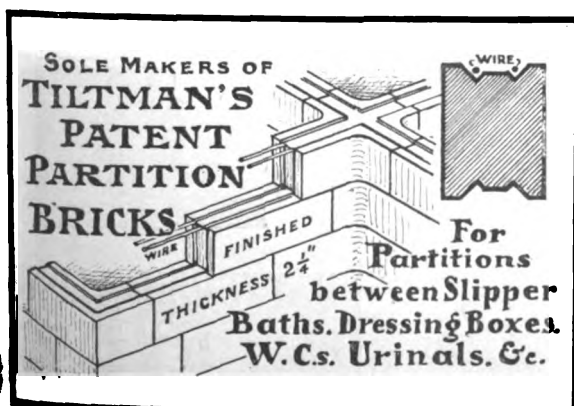
coroner said the question of the dangers of scaffolders was being very carefully considered by Government authorities in order to see whether rules could not be drawn up whereby the dangers would be materially lessened. Cases such as the one the jury had heard that day were valuable in showing precisely what the dangers were and how they could be guarded against.

MR. C. F. WIKER, the Sheffield city surveyor, in his annual report states that the number of houses erected and certified for occupation was 1,982, being 19 houses more than the number in 1904; other buildings to the number of 420 were satisfactorily completed, an increase of 49. No fewer than 46,990 houses have been erected under the by-laws since 1864; there are now 16,600 back-to-back houses, and a total number of 100,700 houses in the city, of which from 3,500 to 4,000 are unoccupied. Consideration of the details of the great sewage scheme, estimated to cost 270,000*l.*, for remodelling and extending the present works, has occupied close attention. The Local Government Board now being prepared to allow the Corporation to proceed at once with work to the value of 100,000*l.*, a commencement is being made. The section of the work includes an alteration of the catch-pits and inlet channels, the construction of settling tanks and contact beds of sufficient capacity to treat from 10,000,000 to 12,000,000 gallons per day. The volume so to be provided for is practically equal to the present dry-weather flow. On the completion of this section of the work a considerable improvement in the purity of the effluents may be anticipated, as well as an increase in the volume of storm water treated.

THE medical officer to the Berks County Council in his annual report says:—The importance of a pure and plentiful water supply cannot easily be overrated. It is true that communities may for many years be dependent on a polluted supply, such as is drawn from shallow wells in a soil impregnated with sewage, and yet no outbreak of illness directly traceable to it occur, but not a year passes without affording an object-lesson on the possibility of waterborne disease being introduced. It is against common sense to use the same land for refuse disposal and water supply, but this is what is unintentionally being done in some villages. The area of land around individual houses

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is usually so small that any leakage from privy middens, leaking cesspools and refuse heaps must find its way, in a very imperfectly filtered condition, into the wells. These facts are fortunately becoming more generally recognised, and in the sinking of new wells proper construction and selection of site with regard to sources of pollution are receiving better attention. Every urban district in the county now has a public water supply available, and the number of unsatisfactory wells in use is steadily diminishing.

SCAFFOLD ACCIDENTS.

At the London City Coroner's Court Mr. Francis Thomas held an inquest recently on the body of Nathaniel Dickerson (55), a stonemason's labourer. Deceased was working on the top of the new Bartholomew's Hospital buildings which are being erected in Giltspur Street. About seven o'clock he was sent below for more cement, and had started to come down when he missed his footing and fell nearly 50 feet. He was taken to St. Bartholomew's Hospital, where he died two hours after admission from shock following fracture of the skull and other serious injuries. The general foreman said the ladder down which the deceased was coming had been tied to a horizontal "ledger," which had been depressed by the weight of material on it. As the material was taken away the "ledger" lost its depression, and getting back to its normal position caused the ladder to swing clear of the scaffolding so that the moment deceased got on it it swung and threw him off. Replying to the coroner, the foreman stated that he had never heard of such an accident before. The jury returned a verdict of "Accidental death," and expressed the opinion that more care should be taken in such cases in the future. Several witnesses engaged in the building trade said they had never heard of such an accident before.

A CAREFUL investigation has shown that the reconstruction of San Francisco will involve an expenditure of about 80,000,000*l.*, of which skilled and unskilled labour will reap a reward of 38,000,000*l.* These figures are based upon the cost of building material and the rate of wages current.

A NEW STEEL PROCESS.

PARTICULARS of a new steel process are given in a report by Mr. D. H. Ross, Canadian commercial agent at Melbourne. The results achieved are said to be so successful that the process is to be exploited throughout the world. It is called the Heskett-Moore process for directly converting iron ore into malleable iron or steel by a continuous system, and, it is claimed, effects a saving of 25 per cent. in the manufacture. The ore is simply concentrated by ordinary methods, or if it is magnetic it is separated electrically until the pure oxide of iron is obtained. The oxide of iron is passed through a revolving cylinder heated by waste gases from subsequent operations and brought in that cylinder to a dull red heat. It drops from the cylinder to a second similar cylinder, and in the latter it is brought into contact with the deoxidising gas, which is forced through and brought into contact with the heated ore. The heated ore is thus converted into a pure iron. Accompanied by and protected by the deoxidising gas, it is passed into a third chamber or melting hearth, where it falls into a bath of molten iron and is converted directly into steel or balled up as malleable iron. The savings claimed for the process are those of time, labour—the whole process being automatic—fuel and avoidance of flux. The inventors claim that they have discovered a direct method of producing steel from one operation instead of using the blast furnace and converter.

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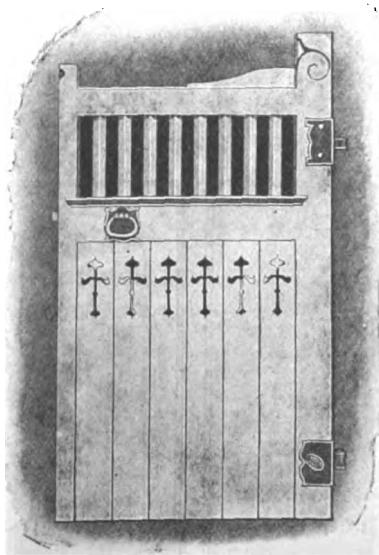
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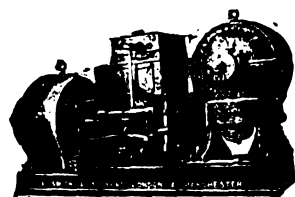
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BIRMINGHAM SCHOOL OF ART.

THE session at the Central school of the Birmingham Municipal School of Art will begin on Monday, September 10. During the previous week the school will be open to public inspection from eleven A.M. to nine P.M. daily, and the head master (Mr. R. Catterton-Smith) will attend on four days in order, as far as possible, to arrange the courses of study of intending students. Classes will be held there throughout the session on five mornings, six afternoons and five evenings a week. The courses of study cover elementary and advanced drawing, painting and modelling, including work from plants, living animals and birds, the antique, groups of still life, life, and an outdoor painting class; and highly-skilled experts will teach the following processes:—Bookbinding, embroidery and other needlework, metalwork and enamelling, including carving, chasing, chipping, damascening, engraving, mounting, raising, repoussé, setting, &c.; ironwork, book illustration, pictorial design, &c.; stained-glass work and figure design applied to decoration; surface design, gesso, leatherwork, &c.; wood-carving, writing, illumination and heraldic drawing, house-painting and decoration.

Mr. W. H. Bidlake, M.A., will begin the session with lectures upon the development of Gothic architecture in France, Germany, Spain and Italy, and will conclude with references to recent architecture. Mr. H. T. Buckland and Mr. Edwin F. Reynolds have prepared new syllabuses respectively in the advanced and elementary stages of architectural design. Mr. Francis B. Andrews, assisted by Mr. Ralph Berrill, remains in charge of the classes in building construction, and Mr. Alfred W. Baylis retains the teachership of taking builders' quantities.

NEW MANCHESTER INFIRMARY.

A MEETING of the Manchester Royal Infirmary Board was held on Tuesday. Messrs. Hall & Brooke, the architects, reported on the progress of the works of the new Infirmary. They stated that the steelwork of the first floors was fixed over the large wards of six pavilions, and the other pavilions were being pushed on with rapidity, the walls being from 4 to 10 feet high above the ground level. The surgical theatres were also about 4 feet above the ground

floor. There was a large quantity of material on the site, amounting in value to many thousands of pounds. There were more than 460 men at present at work on the site, and this number would be augmented as rapidly as possible. It appears that there had been correspondence with the waterworks committee of the Corporation as to an assured supply of water to the institution when water was cut off from private houses in cases of drought. The architects now expressed their satisfaction that there would be no conceivable risk of the Infirmary being deprived of water at any time.

A WORKING SCULPTOR.

A CORRESPONDENT of the *Glasgow Weekly News* gives the following account of an interview with Mr. Pittendrigh Macgillivray, R.S.A., of Edinburgh:—

When I called on Mr. Macgillivray at his studio at Ravelstone Elms the other morning I found him busy with a very important commission which he has now in hand, and which, when completed, will be the sculptor's masterpiece. I refer to the national monument to the memory of the Right Hon. W. E. Gladstone, which is to be erected in St. Andrew's Square, Edinburgh. On a pedestal 18 feet high will stand the figure of Mr. Gladstone in Court dress as a member of the Privy Council, and robed in the gown of the Chancellor of the Exchequer. In his portrayal of the great statesman the artist has set himself to express the strong mental calibre of the subject, while as accessories there are to be a series of symbolic figures. On the pedestal will stand representations of "Faith," "Fortitude," "Vitality" and "Measure" (the classic term for harmony in arrangement). On the base, on a scale larger than life, figures symbolic of "Eloquence" and "History" will find a place, while on a prow-shaped peak in front stand two Greek youths holding aloft a large laurel wreath, with depending bands, on which are inscribed Homeric quotations.

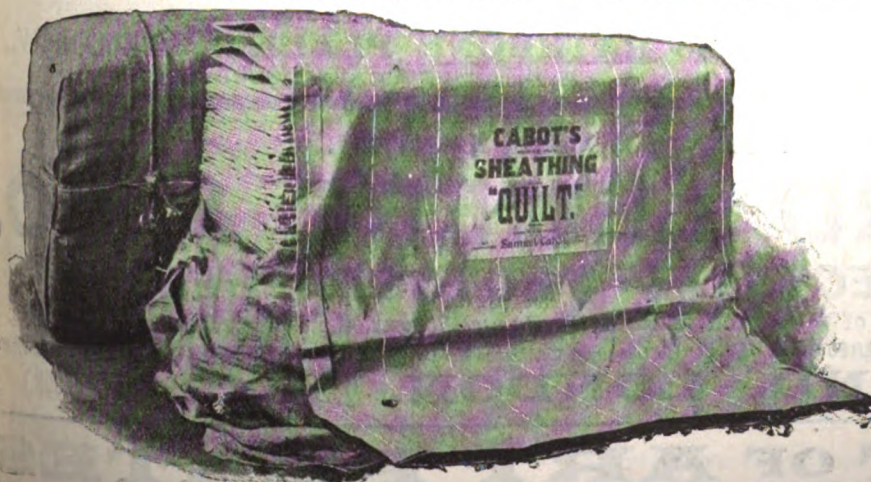
As I glanced over the sketch models of this creation I could not help feeling that the idea was indeed worthy of the great memory it was to honour, and Mr. Macgillivray's achievements in the past leave no doubt that its execution will be equally worthy the occasion.

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"Do you prefer to work in bronze?" I asked, as I noticed that much of his best work had been completed in that material.

"No, I have no preference. The bulk of my work has been in bronze, because it has been work of a public nature."

"You studied abroad, of course?"

"I did not," replied the artist with emphasis. "I have been abroad, but not as an art student in the sense you imply. I acquired the technical part in the studio of a man who, like myself, had little or no scholastic training—Mr. William Brodie, R.S.A. I have spent most of my time in Edinburgh and Glasgow. To Mr. Brodie's studio in Edinburgh I went when only about fourteen years of age to serve an apprenticeship to the technical side of sculpture. I was also with Mr. James Steel, who was a clever ornamentist in Glasgow. Later I was with Mr. John Mossman, R.S.A."

"It was Mr. Mossman who had the commissions for the statues of Livingstone and Thomas Campbell in St. George's Square, in Glasgow?"

"Yes. I was Mossman's assistant at that time, and was engaged on those statues. It was as a craftsman I worked in the studios of those men. All the art training I received was from books, and the works of men in these and other cities I have visited at home and abroad—sources open to anybody."

"But don't you think, Mr. Macgillivray, that we don't do enough in the way of art teaching in this country?"

"One hears a great deal of talk, as if much could be done to instil a knowledge of art into pupils. Some talk about the time they were in such and such a famous artist's studio, and received from him the spirit, as if it were something of the nature of the laying on of hands. Personally, I don't believe in that sort of thing. My opinion is that unless a man has got that in him which will stamp him as an artist in the true sense of the word he cannot be educated to it. You can train him to use his hands and eyes, but that is all."

"For instance, you come across a young fellow who is interested in art, and would like to know something about it, but that may be really the sum total of his capabilities. He takes a course of lessons from an art teacher, and gets the length of painting pretty subjects. Somebody comes

along, admires them and advises him to take a studio. But all the while he has been painting a variety of things for which there seems to be no use, for which there is no market, and the opening of the studio does not create that demand."

"Education will not solve that problem. What, then, is the remedy you would suggest?" I asked.

"That the student study his art in relation to a craft on a practical basis. For instance, when the painter sets out on his artistic career we would teach him the use of his tools and the materials with which he is to work—teach him everything about the paint he is to handle, and how to use it in a practical way. In fact, first make him a craftsman, then follow that up with instruction in the higher branches. In that way, if he were not a success as an artist he would still be able to earn his living."

"That was your own experience?"

"It was. I began by cutting marble and preparing clay."

"But it would require a tremendous revolution in art circles to bring that about?"

"Perhaps; but remember it is scarcely more than what has been going on in Paris and elsewhere in connection with some of the schools. A great many people have the idea that to succeed in art one has to go abroad and study under great masters. I hold that more is done by training a man to be a workman, and if he has the talent it will show itself once he knows his tools."

STAINING MARBLE.

THE art of staining or colouring marble was at one time a very lucrative secret, though there was scarcely anything in the process that has not, at one time or other, been made known. Kincher was one of the first who published practicable information about it. This author, meeting with stones in some cabinets presumed to be natural, but having figures too nice and particular to be supposed of nature's making, and these not only on the surface, but sunk through the whole body of the stones, was at the pains of finding out the artist who did the business; and on

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his refusing to part with the secret on any terms, Kincher, with Albert Gunter, a Saxon, endeavoured to find it out, in which they succeeded at length. Their method was the following:—Take aqua fortis and aqua regia, of each two ounces, sal armoniac one ounce, spirit of wine two drams, about twenty-six grains of gold and two drams of pure silver; let the silver be calcined and put into a vial, and pour upon it the aqua fortis; let this stand for some time, then evaporate it, and the remainder will first appear of a blue and afterwards of a black colour. Put the gold into another vial, pour the aqua regia upon it, and when it is dissolved evaporate it as the former. Put the spirit of wine upon the sal armoniac, and let it be evaporated in the same manner. All the remainders, and many others made in the same manner from other metals, dissolved in their proper acid menstria, were kept separate and used with a pencil on the marble. These will penetrate without the least assistance of heat, and the figures being traced with a pencil on the marble the several parts are to be touched over with the proper colours, and this renewed daily till the colours have penetrated to the desired depth into the stone. After this the mass may be cut into thin plates, and every one of them will have the figure exactly represented on both surfaces, the colours never spreading. The nicest method of applying these or the other tinging substances to marble that is to be wrought into any ornamental works, and where the back is not exposed to view, is to apply the colours behind and renew them so often till the figure is sufficiently seen through the surface on the front, though it does not quite extend to it. This is the method that, of all others, brings the stone to a nearer resemblance of natural veins of this kind.

INDUSTRIAL OCCUPATIONS.

A CORRESPONDENT of the *Times* gives some remarkable figures bearing upon industrial occupations. During the last twenty years the persons engaged in productive work have increased by 19 per cent., while the occupied persons merely rendering services to others have increased at the rate of 41.2 per cent. The population engaged in agriculture has diminished 11.4 per cent., and that engaged in textiles has been stationary. It has only increased 0.7 per cent., and has fallen from the third to the seventh place among the occupational groups. Mining shows an increase of 52.3 per cent., due to the increased export of coal. Metals, machines, &c., show an increase of 49.8 per cent.; building, an increase of 47.5 per cent., much of it due to municipal activity in effecting improvements; the brick, pottery and glass industry shows an increase of 36.9 per cent.; and paper, &c., no less than 76.3 per cent. On the other hand, in the unproductive occupations every group, except domestic service, shows a large and in many cases an enormous increase. Thus Government (general and local), 60.2 per cent.; defence, 57.1 per cent.; professions, 45.3 per cent.; commercial, 40.3 per cent.; conveyance, 59.7 per cent.; gas, water and sanitary service, 170.8 per cent.; drapers and some other dealers, 73.0 per cent.; clerks have increased 100 per cent.; railway men, 98.6 per cent.; carmen and carriers, 117.7 per cent.; dockers, 134.8 per cent. Trade and export have replaced productive industry, particularly transport, which has risen from the sixth to the second place among occupational groups. The writer whose figures we are quoting concludes that "the root cause of this change in the occupations of the people, with its consequences, is the system of free imports, which fosters

trade and transport, combined with restricted foreign markets, which discourage productive industry." However that may be, his figures, which are not open to controversy, invite serious consideration.

PRESERVATION OF SQUARES.

THE Act 6 Edward VII., Session 1906, provides that the freeholders, or persons otherwise interested in the sixty-nine squares or enclosures in the administrative County of London, having consented to its provisions, it shall not be lawful to erect any building or structure upon any part of the scheduled lands, save such buildings as are necessary or convenient for the use of such lands as gardens, or for the purposes of recreation. In certain cases the persons now interested cannot bind their successors, who are therefore specifically protected in the Act by a provision which is probably more a legal expedient than a prospective difficulty. The maintenance of "scheduled lands" now managed by the Commissioners of Woods shall be undertaken by the London County Council if it is required to do so, and as to the open spaces generally the operations of the Act may cease if the owner for the time being of an estate of which any of the scheduled lands form part shall set apart other lands which the County Council regard as an equivalent area.

The value of this effort of the London County Council to perpetuate these areas as air-spaces can only be gathered from a list of the "scheduled places" giving the name of the square or enclosure or the locality of the lands. It is as follows:—

City of Westminster.—Bessborough Gardens (triangular garden enclosure), Montpelier Square (garden enclosure).

Camberwell.—Leyton Square and Camberwell Green (garden enclosures), One Tree Hill, Summer Road, Varcoe Road, Grove Lane (recreation grounds), South Grove, Rye Lane and Cox Walk, Forest Hill (enclosures).

Deptford.—Wickham Gardens (garden enclosure).

Finsbury.—King Square, Bartholomew Square, Finsbury Square, Northampton Square (garden enclosures), the Triangle of St. John (triangular enclosure), Wilmington Square (public garden enclosure and fountain).

Greenwich.—Westcombe Hill (enclosed lands).

Hackney.—St. Thomas's Square (enclosed garden), Shacklewell Lane (green and triangle), Stonebridge Common (garden enclosure), Kenton Road Triangle, (enclosed land).

Hampstead.—Stanley Gardens, Chalcot gardens (garden enclosures).

Islington.—Alwyne Square, Canonbury Square, Penn Road, Caledonian Road Triangle, Edward's Square (garden enclosures), Thornhill Crescent (enclosure), Thornhill Gardens, Thornhill Square (garden enclosures), Islington Green (triangular garden enclosure), Newington Green, Kingsdown Road (garden enclosures), Market Road (playground and garden), Highbury Park (enclosed land).

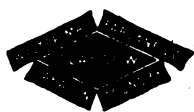
Kensington.—Hereford Square, Emperor's Gate (garden enclosures), St. Quintin's Avenue (triangular enclosure).

Lambeth.—Melbourne Square, Clayland's Road Triangle (garden enclosures).

Lewisham.—Addington Grove, Adelaide Road, Dermody Road Triangle (garden enclosures), Queen's Road Circle (garden), Stanton Square (enclosure), Stanstead Road Triangle (garden enclosure), High Street, east side (enclosure), High Street, east side (three garden enclosures), High Street, strips, west side (nineteen garden enclosures), Rushey Green (five garden enclosures).

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St. Pancras.—Camden Gardens (garden enclosure), Munster Square (two garden enclosures), Clarence Gardens (two garden enclosures), Pond Square (three enclosures of land), College Gardens, Lismore Circus (garden enclosures).

Shoreditch.—Charles Square, Hoxton Square (garden enclosures), Windsor Terrace (enclosure), Goldsmith Square (recreation ground).

Southwark.—Redcross Gardens (garden enclosure), Portland Terrace (enclosed land).

Stepney.—Trafalgar Square (garden enclosure).

Wandsworth.—West Hill Road (triangular garden enclosure), West Hill Road (triangular enclosed space), Melrose Road Triangle (garden enclosure), Paget Terrace (three garden enclosures).

THE EMBANKMENT TRAMWAYS.

THE London County Council are making the necessary arrangements for the construction of the tramways over Westminster Bridge and along the Victoria Embankment. They have entrusted to their works committee the work of constructing the subway from the Strand to the Embankment which is intended to carry the trams and form, when connected with the existing tramway subway, a through route between the north and south of the Thames. When this is completed the subway will extend from the Embankment to Southampton Row. It is also proposed to construct a subway station for the trams near the Strand beneath Wellington Street. The work, which is estimated to cost about 65,000*l.*, will be begun as soon as the necessary property has been acquired, and every effort is being made to expedite this matter. Contracts are also being let for constructing the lines over Westminster Bridge and along the Embankment as far as John Carpenter Street, with connection with the proposed subway at Waterloo Bridge. The cost of the trackwork on these lines is estimated at 96,000*l.* Ultimately the lines will be extended to the south side of Blackfriars Bridge, but this will not be possible until, according to the arrangement arrived at when the subject was before the Parliamentary committee, that bridge has been widened by the City Corporation. Pending the com-

pletion of the circular services it is not anticipated that any extra rolling stock will be required, and the power for driving the tramcars will be secured from the Council's own generating station at Greenwich. Arrangements are being made for the erection of a permanent sub-station in the Gray's Inn Road. The lines across the bridge and along the Embankment will, in accordance with a suggestion made by the select committee of the House of Commons, be laid on one side of the road near the kerb, on the downstream side of the bridge and the river side of the Embankment. Certain necessary alterations will be made at the present Westminster Bridge Road terminus, and connections with the Battersea and Wandsworth tramways are included in the proposals. It is anticipated that the tramways will be finished and ready to be worked by the end of the present year or early in 1907.

STONE IN AMERICA.*

THE points that it is important to consider, if one would write stone specifications that will leave no loopholes for dishonesty or slackness, are the mineral and chemical composition of a stone, strength and durability, effect of weathering, porosity, texture and crystallisation, mode of occurrence (whether massive or stratified), freedom from impurities and method of quarrying. There have been so many serious delays in the furnishing of stone for important buildings that it is getting to be the custom for architects and building committees to inspect competing quarries before large contracts are given out. The man who writes the specifications should also have the benefit of extensive quarry observations, if he is to do his best. A study of the weathering of stone can be made with far better effect as it lies in its natural bed than after it has been placed in a building. Besides, we have few stone buildings of any great age. Many of the most popular varieties of stone now in use have been only a few years on the market. No idea of their durability and weathering qualities can be had unless they are carefully examined where nature laid them down.

* From a narticle in the *American Architect*, by F. W. Hoyt.

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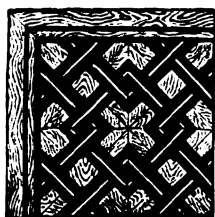
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The marvellous growth of our cities and the constant shifting of the centres of business and population have heretofore given but a short life to the average city building. But we occasionally erect monumental structures that are intended to endure through generations. With our great public and office buildings, costing millions of dollars each, we have probably now reached a more permanent stage, and the selection of a durable material of construction becomes important.

A great deal of stress is laid on the strength of stone. When crushing tests show a high result the producer of the stone makes a leading argument of the fact in favour of his material. For ordinary building purposes it makes no practical difference whether a stone can withstand a crushing test of three to four thousand or thirty to forty thousand pounds per square inch. A variation of thousands of pounds in crushing strength can be shown by stones from the same quarry, merely by the skill with which the cubes are prepared for testing. Therefore the ordinary crushing-strength tests made for commercial purposes are largely empirical, and the most careful specification need take no further heed of this question than merely to call for stone of "approved strength."

It is strange that specifications rarely, if ever, make a distinction between varieties of stone of the same general class, but widely different in themselves. For instance, if white marble is wanted, the true carbonate of lime marbles and the dolomites are treated in the specifications as if they were absolutely identical. It is not intended in this place to compare the relative merits of the true marbles and the dolomites. Each has its strenuous advocates. But they should not be confused in the specifications. These documents should always give plain evidence that in the office from which they come the two stones will be distinguished one from the other, and an intelligent choice made. One of the most conspicuous and important public edifices in New York is built of the most coarsely crystalline of the carbonate of lime marbles. Some years after it was erected it was desired to build an addition. The choice fell on a very fine-grained dolomite. The former stone is noted for its non-absorbent qualities. A drop of red ink can be allowed to stand on its surface for hours, and when washed off leaves scarcely a trace. The dolomite absorbs the ink

as a lump of sugar takes up coffee from a saucer. It needs no scientist to predict what a lack of harmony there will be between the original building and the addition in a few years time. If the specifications had been carefully drawn so as to require an accord between the stones of the two parts, the choice of this particular dolomite would have been impossible.

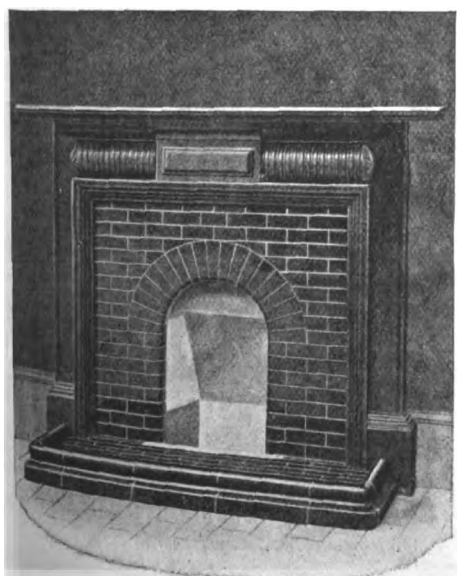
Granite specifications present few difficulties. As this is a bedded stone that is won from the earth by blasting, it is necessary, of course, to provide against "starts and powder-shakes." It is also well to require a freedom from sap, as occasionally stains penetrate the stone for a few inches from the surface and along open seams. Many fine granite fronts and columns are disfigured by splotches of black. These could be avoided by a clause requiring that there be no "knots or concretionary nodules on exposed surfaces." The only objection to this is that with some granites it is an instance of asking too much from nature. If a fine-grained granite is desired the words "of uniform texture throughout" should always be included in the specifications. There are often bands of porphyritic formation running through the fine granites, and these must be excluded. If granite is called for and a strongly laminated gneiss finds its way into the building, as frequently happens, this is no fault of the specifications, and need not be dwelt upon.

There is a great deal of looseness in the requirements for granitework. The specifications for a handsome business building recently erected in New York called for "bush-hammered finish," but mentioned no particular cut. The contractor gave a good six-cut job, as this is the usual finish for buildingwork and may be understood in the absence of precise instructions. When the stone was delivered the architect objected; he had specified bush-hammered, he said. After he had been finally convinced that the work came strictly within this category, he showed what it was that he wanted. He pointed to a soft stone, finished with a diamond hammer. As a particular effect was desired, it was necessary to rehammer and painfully rub the stone by hand after it was set in the wall. There have been constant disputes over hammered granitework, but these could all be avoided by care in the specifications. Five grades of fineness are generally recognised,

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REPORT

(See page 25 of Supplement in Issue of June 8).

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4-cut, 6-cut, 8-cut, 10-cut and 12-cut. The cost increases with each degree of fineness. If there is any opportunity to substitute the coarser for the finer finish, the contractor is tempted to avail himself of it. The patent or bush hammer was originally made in no other size than with a head seven-eighths of an inch in thickness. The cut then had reference to the number of blades in the head. But if the head is increased to an inch or more in thickness while the number of blades remains the same, it is apparent that this will make an appreciable difference in the fineness of the finish. So it has come about that some people interpret the finish to mean so many cuts to the inch, while others make it mean the number of blades in a standard hammer. Owing to this confusion, specifications should always read:—"To be bush hammered with a patent hammer containing six [or any number desired] blades to a seven-eighths inch head."

With a stone of strongly stratified formation, often running into shalelike laminations, like many sandstones, attention must be paid to the bedding planes. A large part of the trouble that followed the use of brownstone a generation or two ago was caused by a failure to lay the stone on its natural bed. A block would be set on edge and it would continue to scale off, sometimes to a depth of several inches. The architects learned a lesson from this, but they learned it too well. Some of them cannot write a specification without the words "to be laid on its natural bed." Unless a stone is very thin-bedded or of a decided laminated formation, this clause should never be inserted. An expert examination would fail to show the natural bed of very many stones once they are away from the quarry. In these cases the requirement cannot be enforced and so it is worse than useless. Here is one evil that the "natural bed" fallacy may work. A contract is given for a building in white marble, the stone to be free from colour, and to be laid on the natural bed. In most quarries there are bands of colour that generally run at a slight angle to the bed. They do not affect the strength in the slightest degree, but according to the specifications we have in mind, they could not appear on the surface of acceptable blocks. Marble quarries are operated in so-called floors, and one entire floor may be marked by a band of colour. If the blocks were set on edge the colour would not show,

but this the architect will not permit, although any sound marble will weather just as well on its edge as on its bed. Consequently this entire floor of marble must be rejected, and for what the quarryman cannot help thinking is a mere unreasonable whim.

Even in stratified sandstones the bedding planes do not play the all-important part in disintegration that is usually supposed. A striking proof of this is frequently seen. If one will examine the quoins in a building he will very often find that one has scaled with equal freedom on the front and on the side. Both of these cannot be bedding planes, and, in fact, neither one may be.

Special care should be observed, of course, in the preparation of specifications for additions to existing buildings, unless contrast is sought. It is not enough to call for stone of the same general class and appearance. Chemical analysis, texture and strength must all be taken into account. It would be well, if possible, to obtain the new stone from the same neighbourhood from which the old was taken. The same stone varies sometimes in its weathering qualities according to the local conditions under which it was deposited or erupted. An instance showing the danger of using two different stones in the same building is furnished by the State Capitol of Washington at Olympia. Use was made of two sandstones, from different localities, that appeared almost identical at first. Under the influence of weathering they grew very dissimilar. An effort was made to bring the inferior stone back to its original appearance by the use of acid washes. It was an unfortunate expedient, for the treatment only made the defects worse. A striking example of the effect of changing from one material to another is also to be seen in the Washington Monument. The variation in colour, 50 or 75 feet from the base, is so distinct that it can be noticed miles away when the sunlight falls on the shaft.

Apart from the choice of stone, there are certain details connected with the setting that must be cared for in the specifications unless disappointment is to result. It should be remembered that the word "non-absorbent" is only a relative term as applied to stone. The slightest porosity, and all stone is more or less porous, means the possibility of staining, unless it is carefully guarded against. Iron rust will deeply penetrate most stones in a short time,

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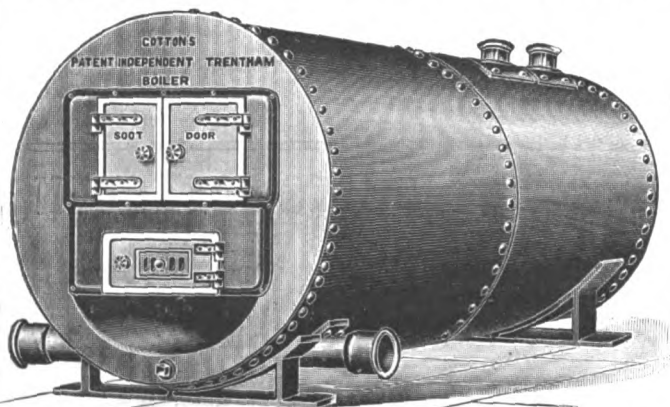
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and oil is a common disfiguring agency. In the central part of the State of New York is a handsome public building erected of a choice marble. It was set in Portland cement instead of a non-staining cement, and the blocks were not even treated with asphaltum. As a result the stone is terribly stained. The quarry that furnished the material was almost ruined, for the natural assumption of those who did not know the facts was that the marble itself was worthless. This is a case where the specifications were evidently at fault. Carelessness or ignorance in inspection and supervision of buildingwork frequently works an injury to the material itself. The blame in such cases, too, unjustly falls on the quarry. In the erection of one of the costliest and most elaborate buildings in New York the exhaust pipes of the hoisting engines were turned towards the walls. Day after day they continued to belch against the delicate stonework showers of steam impregnated with dirty oil from the cylinders. The effect was not noticed until the engines had long been removed and the walls were cleaned down. To this day many architects and stone men believe that the stains, which cannot be eradicated, are a natural defect in the stone.

If one were permitted to sum up the question of stone specifications epigrammatically, it would be, "Do not ask of nature more than she can give. But where she has been generous let not greed, nor ignorance, nor carelessness spoil her gifts."

FIRE RISKS.*

NEXT to matches as a cause of accidental fire comes the firing of woodwork by faults in flues or overheating in the vicinity of the fireplace. One would imagine that such a thing as building a beam into a chimney, or laying a joist close under the hearth of a firegrate would be so manifest a danger as to insure it never occurring, but such criminal carelessness is by no means so uncommon as one might imagine, and in such cases it is only a question of time and chance for a fire to be caused by it.

* From the Cantor Lectures on Fire, Fire Risks and Fire Prevention, by Professor Vivian B. Lewes.

A beam, the end of which impinges on the interior of a flue, may be so far above the grate that for years no trouble arises, but the hot upcurrent of gases in the chimney will gradually dry and carbonise the wood, whilst any collection of soot in the chimney catching fire will start a smouldering combustion in the beam that may go on for a considerable time before it gets sufficient air to cause it to break into active combustion.

A more usual source of danger is to be found in the perishing of the mortar used in building the flue, and so leaving gaps in the brickwork behind which the woodwork is situated. Mortar practically consists of a mixture of slaked lime and sharp sand, and when brickwork has been laid with this, the first hardening of the mortar is dependent upon the slaked lime absorbing carbon dioxide from the air, which converts it into carbonate and causes it to harden, whilst after a lapse of many years a further action takes place by the silica of the sand acting on the calcium carbonate to form a silicate of great hardness and strength. With modern buildings, however, the first action is the only one that has taken place.

The brickwork in the interior of a flue is often very roughly laid, being out of sight, and the bricks, instead of being laid true and nearly touching, are made up with broken bricks and a considerable quantity of mortar. After this has set, the action of heat upon it is again to burn the calcium carbonate back to lime, so causing the crumbling down of the mortar, and should a joist have been built in close to the casing of the flue, hot gases will find their way through the perished mortar to it, and gradually bring about slight carbonisation of the wood, and occasionally cause its ignition.

Another fruitful source of danger is to be found in the replacement of one form of grate or fireplace by a new one. For instance, a grate is getting rather old, and you determine to have it replaced by one of modern construction, say one of the well fires. In the old grate the hearthstone was flush with the floor, and under this was a sufficient mass of concrete or mortar amply to protect the joists below from undue heat. You probably buy a new grate from a local ironmonger and entrust him with the job of fixing it, and the old hearthstone and insulating material having been removed to make way for the entirely different struc-



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ture, the inexperienced workman fails properly to insulate the bottom of the well-grate, with the result that the joists below get overheated.

Dangers of these characters can only be got over by strict supervision during the building of a house, and by entrusting alterations and repairs only to workmen who thoroughly understand the work which has to be done.

All heating dangers are largely increased, and indeed chiefly exist from the fact that lightly charred wood becomes almost pyrophoric in its character, and can readily be set on fire at temperatures considerably below those needed to start the combustion of either uncharred wood or charcoal. The changes taking place in wood under the influence of long-continued heating are of a complex and interesting character.

Wood consists mainly of a definite chemical compound called cellulose, a body formed from carbon, hydrogen and oxygen, and besides cellulose we find wood contains the constituents of the sap and a varying quantity of water. The amount of water present depends upon the season of the year and the portion of the tree from which it is taken, whilst the percentage is as a rule greater in soft than in hard woods, the following table giving an idea of the quantity present in various kinds of wood:—

Beech	18.6 per cent.
Oak	34.7 ..
Common fir	32.7 ..
Alder	41.6 ..
Elm	44.5 ..
Poplar	50.6 ..

When wood is placed under cover and exposed to the air for about a year the moisture is reduced to about 20 per cent., and the remaining moisture can be got rid of by subjecting the wood to the action of heat, the last portions requiring a temperature sufficient to char the wood. If, however, the wood be heated somewhat below this point the greater part of the moisture is removed; but on again allowing the wood to cool to atmospheric temperatures and exposing it to the air, the hygroscopic nature of the wood gradually attracts moisture until the percentage reaches about 20, at which point a sort of equilibrium is established between the moisture in the air and the wood.

When wood is exposed to the long-continued action of

heat it undergoes progressive changes nearly akin to those which have taken place during the conversion of vegetation into coal. Up to 100 degs. C. (212 degs. F.) practically only moisture is expelled from the wood, and at a few degrees above this point not only water but volatile hydrocarbons are slowly driven out, whilst at 150 degs. C. (302 degs. F.) oxides of carbon, together with more hydrocarbons, are disengaged, and slightly above this temperature the wood commences to assume a scorched appearance and to turn brown. At about 250 degs. C. (482 degs. F.) wood is converted into a soft brownish form of charcoal, which is its most dangerous form, being highly pyrophoric and self-igniting at comparatively low temperatures. At 300 degs. C. (572 degs. F.) the carbon begins to assume the appearance of soft black charcoal, getting harder and more metallic in its properties as the temperature increases.

The chemical changes which are taking place in the charcoal at these varying temperatures are strictly shown by the following table:—

Temperature.	Carbon.	Hydrogen.	Oxygen.	Ash.
270 degs. C.	71.0	4.60	23.0	1.40
363 degs. C.	80.1	3.71	14.55	1.64
476 degs. C.	85.8	3.13	9.47	1.60
519 degs. C.	86.2	3.11	9.11	1.58

It is seen that as soon as 270 degs. C. is reached the action consists in a gradual increase in the percentage of carbon, owing to the elimination of hydrogen and oxygen, and it is clearly due, therefore, to compounds still containing these three elements in comparatively large proportions that the pyrophoric carbon owes its dangerous character. If the contact of the wood with the heated surface be continued for a sufficiently long period of time, a temperature of a few degrees only above the boiling-point of water is enough to produce a semi-carbonised film on the wood, which will start smouldering at a very low temperature, the heat rising from an oil lamp or gas flame some distance away being sufficient to start the smouldering combustion. Indeed, the temperature of a steam-pipe has been found sufficient to cause ignition, this being due probably to the long-continued heat generating certain hydrocarbons of low ignition point, which remain occluded in the pores of the semi-charred wood, and are there brought into close contact with the occluded oxygen.

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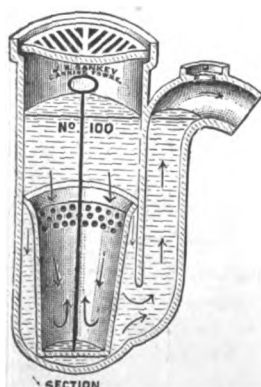
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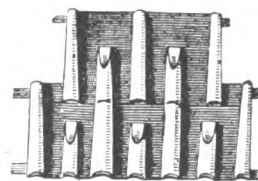
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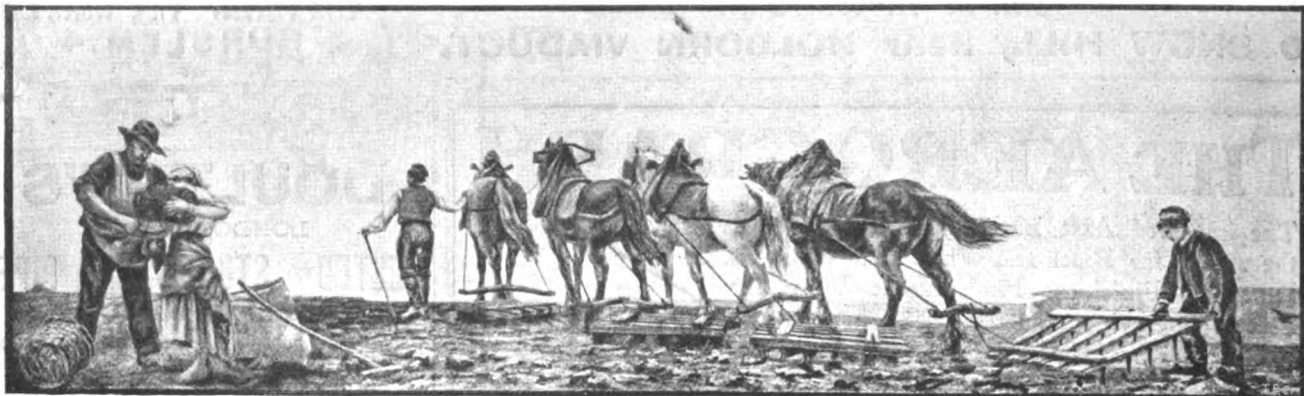
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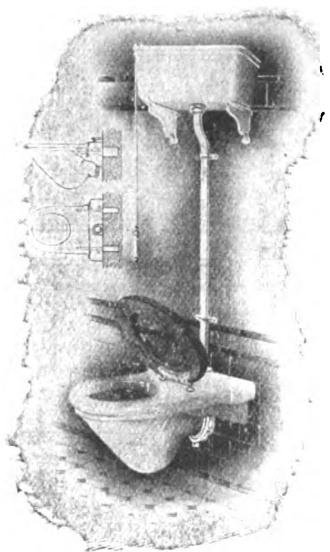
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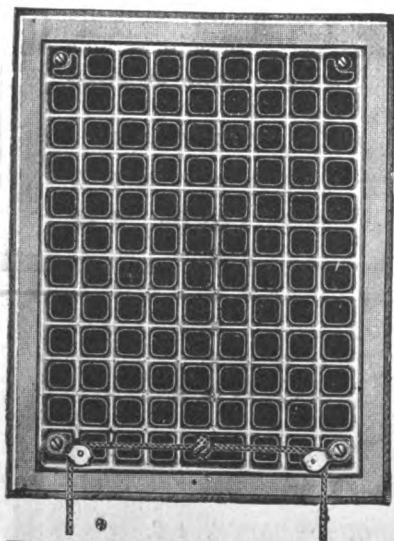
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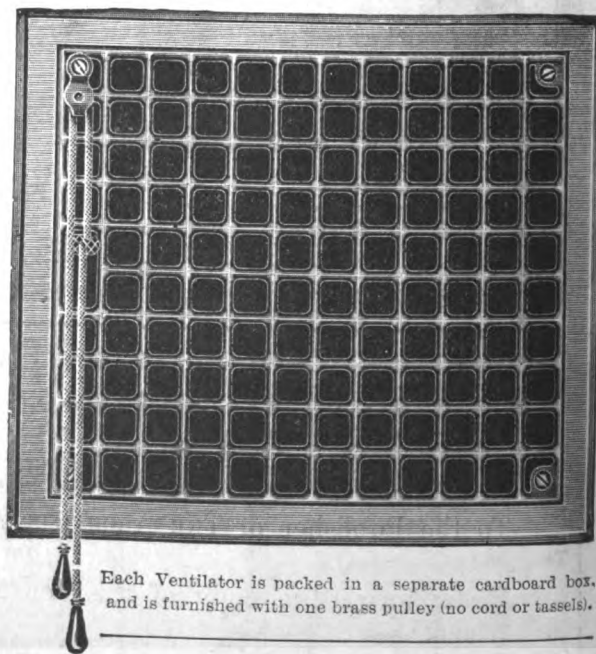
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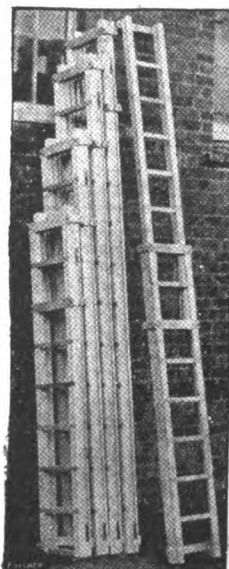
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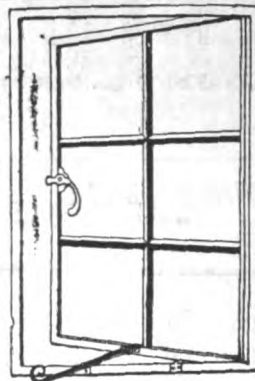
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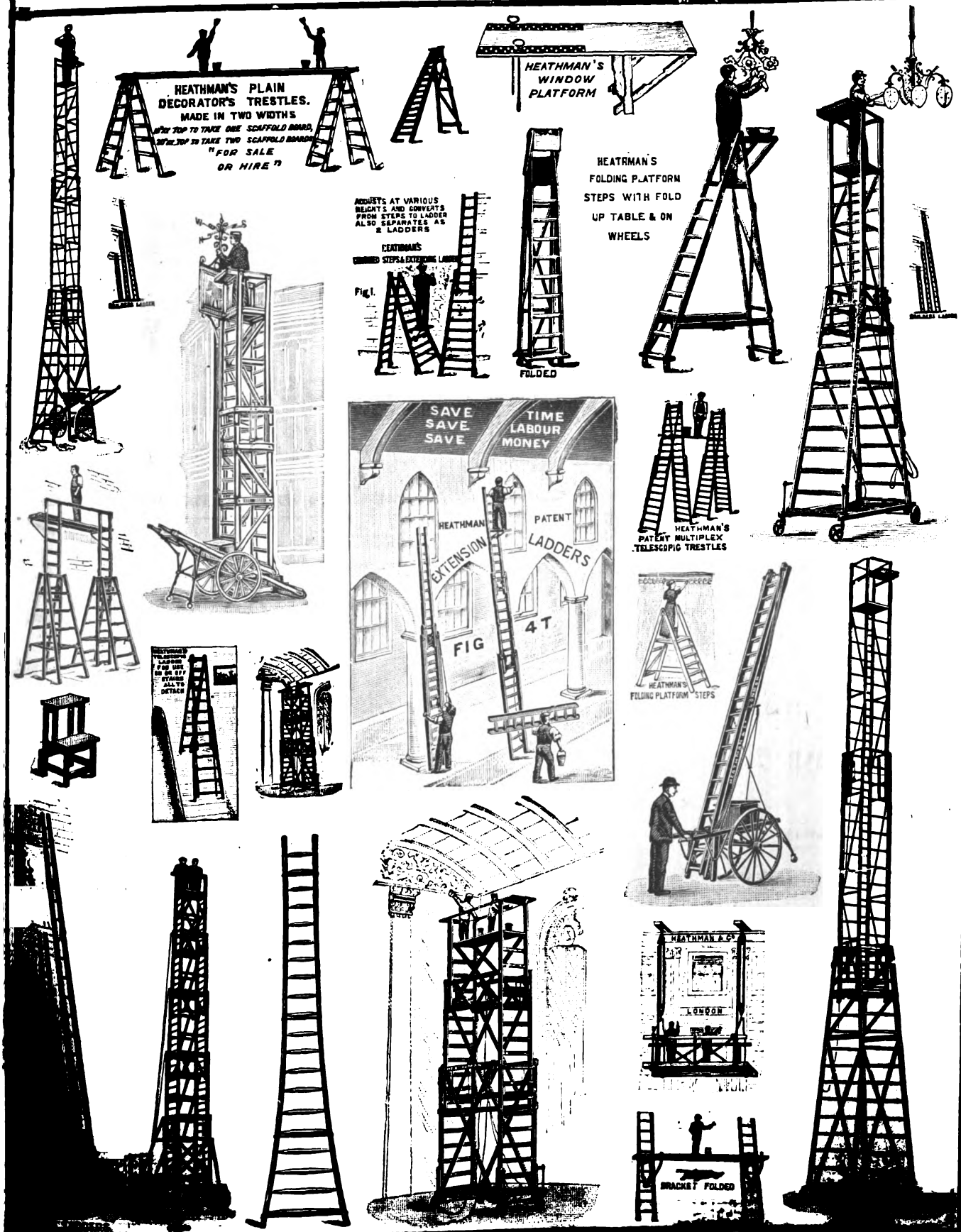
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THE Architect and Contract Reporter.

FRIDAY, SEPTEMBER 7, 1906.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

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Important Notice to the Architects and Civil Engineers of Westminster.

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further

answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

TENDERS, ETC.

** As great disappointment is frequently expressed at the non appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 p.m. on Thursdays.

COMPETITIONS OPEN.

GAYWOOD.—Oct. 22.—The Norfolk education committee invite plans, specifications, elevations and estimates for a new school. The plan (if any) selected will be accepted subject to the approval of the Board of Education. Particulars can be obtained on application to the Secretary, at the County Education Office, 57 London Street, Norwich.

MONTEVIDEO.—Dec. 14.—La Comision Nacional de Caridad require competitive plans for new foundling hospital with approximate cost. Plans and report, under mottoes, and, in sealed envelope, name and address of competitor. The four selected plans will receive 212/ each, and will be asked to further compete. Further particulars from the Consulate-General for Uruguay, 5 and 6 Clement's Inn, Strand, W.C.

CONTRACTS OPEN.

ALNWICK.—Sept. 10.—For the erection of branch premises. Mr. E. G. E. Kino, architect, Co-operative Wholesale Society, West Blandford Street, Newcastle-on-Tyne.

AUDENSHAW.—Sept. 11.—For the erection of a public elementary school at Audenshaw, Lancashire. Deposit 2/.

Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

BELFAST.—Sept. 8.—For building factory in Mountpottinger Road. Messrs. D. M. Cooper & R. Sharpe Hill, architects, 35 Wellington Place, Belfast.

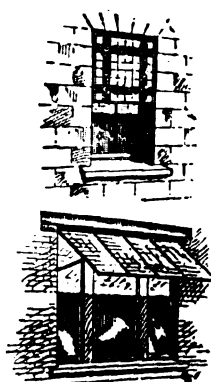
BRISTOL.—For building warehouses upon the Bath Road. Messrs. John Harding & Son, architects and surveyors, Salisbury.

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BURY ST. EDMUNDS.—Sept. 10.—For alterations and additions to the county school, Northgate Street. Mr. A. Ainsworth Hunt, county architect, Sudbury and Bury St. Edmunds.

CHARTHAM.—Sept. 13.—For the alteration and enlargement, to accommodate forty additional children, of the Council school at Chartham Hatch, near Canterbury, Kent. Mr. W. J. Jennings, architect, 4 St. Margaret's Street, Canterbury. Application, together with a deposit of 1*l.*, by Noon on September 4.

COVENTRY.—Sept. 14.—For alterations to 182 Spon Street, for the General Municipal Charities Trustees. Mr. Herbert W. Chattaway, surveyor to the Trustees, Trinity Churchyard, Coventry.

COVENTRY.—Sept. 8.—For the works required and materials supplied in the erection of a sub-station and boiler-seatings at the electricity works, Sandy Lane. Deposit 1*l.* 1*s.* Mr. J. E. Swindlehurst, city engineer and surveyor, St. Mary's Hall, Coventry.

ELDON LANE AND SEDGEFIELD.—Sept. 18.—For the erection of schools at Eldon Lane and Sedgefield, for the Durham County education committee. For Eldon Lane, Messrs. Vaux & Mark, architects, 29 Norfolk Street, Sunderland; for Sedgefield, the Education Committee's Architect, Shire Hall, Durham.

GAINSBOROUGH.—Sept. 17.—For pulling-down and re-building premises in Bridge Street. Applications together with a deposit of 2*l.* 2*s.* by Sept. 5. Messrs. Scorer & Gamble, architects, Bank Street Chambers, Lincoln.

GRAVESEND.—Sept. 11.—For the erection of a registrar's room at the Gravesend hospital. Mr. F. H. Stevens, hon. secretary.

HALIFAX.—Sept. 14.—For erecting eleven dwelling-houses and appurtenances in Leamington Avenue (Clapton Lodge estate). Mr. Medley Hall, architect, 1 Harrison Road, Halifax.

HENLEY-ON-THAMES.—Sept. 10.—For converting the school buildings adjacent to the workhouse at Henley-on-Thames into an infirmary, for the Guardians of Henley union. Names before August 15 to Messrs. Charles Smith & Son, architects to the Board, 164 Friar Street, Reading.

HOUNSLOW.—Sept. 13.—For the erection of an infants' school at Spring Grove, to accommodate 350 children. Deposit 2*l.* 2*s.* Mr. A. Lancelot Lang, architect, Council House, Hounslow.

HUTTON.—Sept. 19.—For staining and polishing the floors of the day-rooms and dormitories at the new schools at Hutton, Essex, comprising a superficial area of between 5,000 and 6,000 square yards, for the Poplar Union. Mr. G. Herbert Lough, clerk, 45 Upper North Street, Poplar, E.

ILLOGAN.—Sept. 12.—For building four dwelling-houses at Peace, Illogan, Cornwall. Mr. John Jewell, Treskillard, Illogan.

IRELAND.—Sept. 11.—For building a dispensary medical officer's residence at Knocknaskagh, for the Guardians of Dungarvan Union. Mr. Michael Flynn, acting clerk of union.

KEA.—Sept. 8.—For the erection of a stable at Calenick farm in the parish of Kea, Cornwall. The Farmhouse, Calenick, Cornwall.

KEIGHLEY.—Sept. 10.—For the erection of an alkali storehouse at the filter beds, Oldfield. Mr. Walter Fowlds, borough surveyor.

KENWYN.—Sept. 8.—For the erection of a wall and forming an entrance gateway to premises at Rosehill Cottage, Greenbottom, Kenwyn. Mr. R. Painter, 7 Cotehele Terrace, Truro.

KETTERING.—Sept. 8.—For construction of service reservoir and laying mains; 560 tons of cast-iron pipes and specials; sluice valves, air valves, hydrants, &c.; gas engines, suction gas plant and pumps. Messrs. Everard, Son & Pick, 6 Millstone Lane, Leicester.

LEEDS.—Sept. 19.—For the enlargement of the branch post office, Chapeltown. Deposit 1*l.* 1*s.* H.M. Office of Works, &c., Storey's Gate, S.W.

LEIGH.—Sept. 19.—For the supply of two girder troughs and supporting standards, together with 14-inch steel tubes for the purpose of crossing certain railways in West-houghton, for the Leigh gas and water committee. Mr. James Gibson, gas and water engineer, Town Hall, Leigh, Lancs.

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LEVENSHULME.—Oct. 4.—For the erection and completion of technical school at the rear of the Chapel Street Council school, Chapel Street. Deposit 3*l*. 3*s*. Mr. Henry Littler, architect, 16 Ribblesdale Place, Preston.

LINCOLN.—Sept. 13.—For alterations and additions to the Black Goats hotel, High Street. Messrs. Sheppard & Lockton, architects, Bargate, Newark.

LONDON.—Sept. 11.—For the following works at their workhouse, situated at Upper Edmonton, near Silver Street Station (G.E.R.), for the Guardians of Strand Union:—(1) General exterior repairs, cleaning, painting, &c.; (2) (a) repairs to roof of laundry building and alternately (b) construction of new roof altogether. Mr. A. A. Kekwick, architect to the Guardians, 18 and 19 The Outer Temple, Strand.

LONDON.—Sept. 13.—For the provision and erection of iron bridges and connecting up same between A and E blocks at the workhouse, Ladywell, S.E., for the Bermondsey Board of Guardians. Applications, together with a deposit of 5*l*., by Sept. 6. Mr. E. Pitts Fenton, clerk, Guardians' Offices, 283 Tooley Street, S.E.

LONDON.—Sept. 18.—For erecting a public convenience and bath-houses at Bell Green, Lower Sydenham, for the Lewisham Borough Council. Deposit 5*l*. Surveyor's Department, the Town Hall, Catford.

LONDON.—Sept. 18.—For extensions to the Central Public Library, Tottenham. Deposit 5*l*., charge of 1*os*. 6*d*. for quantities. Mr. W. H. Prescott, engineer to the Council, Council Buildings, The Green, Tottenham.

LONDON.—Sept. 27.—For additions and alterations in the building at the electricity works, Osborn Street, -White chapel, E., for the Stepney Borough Council. Deposit 5*l*. Mr. M. W. Jameson, A.M.I.C.E., borough engineer, 15 Great Alie Street, Whitechapel E.

LOW BRADFELD.—Sept. 14.—For the erection of additions, &c., to Low Bradfield Provided school, near Sheffield. Mr. J. Vickers-Edwards, county architect, County Hall, Wakefield.

MITCHAM.—Sept. 20.—For repairs and painting at the isolation hospital, Beddington Corner, for the Croydon Rural

District Council. Deposit 1*l*. Mr. R. M. Chart, surveyor, Town Hall, Croydon.

POOLE.—Sept. 10.—For the erection of a secondary school at Seldown, Poole. Mr. Walter Andrew, architect, Parkstone.

RASKELF.—Sept. 24.—For the erection of a farmhouse at Cold Harbour, Raskelf, near Easingwold, for the Ecclesiastical Commissioners. Mr. Thomas Stokes, architect, Thirsk.

REIGATE.—Sept. 8.—For the erection of cart sheds and a store at the Corporation depôts in Brighton Road, Redhill, London Road and Blackborough Road, Reigate. Mr. F. T. Clayton, C.E., borough surveyor, Municipal Buildings, Reigate.

ROTHERHAM.—Sept. 19.—For laundry machinery and fittings required at the public baths, also from builders for structural alterations. Mr. J. Platts, Corporation architect.

SALFORD.—Sept. 10.—For the following works, for the tramways committee:—(Contract 145) constructional steelwork; (Contract 146) builders' work, in erection and completion of extensions to the central car depot, Frederick Road, Pendleton. The General Manager, Tramways Department, 32 Blackfriars Street, Salford.

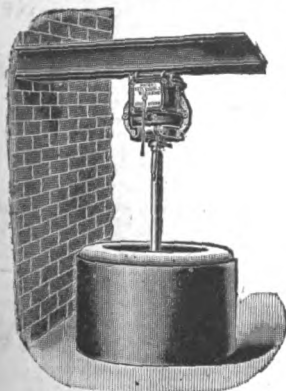
SCOTLAND.—Sept. 12.—For the following works, for the Greenock Burgh School Board:—(1) Digger, mason and brickwork; (2) carpenter, joiner and ironmongerywork; (3) cast-iron and steelwork; (4) plumberwork; (5) slaterwork; (6) plastererwork; (7) granolithicwork; (8) tilework; (9) electric-lighting; (10) painterwork, required in connection with erection of Cartsburn public school, Greenock. Mr. A. F. Niven, clerk, Burgh School Board Offices, Municipal Buildings, Greenock.

SHIPLEY.—Sept. 8.—For alterations and additions to the Salt school. Mr. Sam Bradley, architect, Yorkshire Bank Chambers, Shipley, Yorks.

SIX-MILE-BOTTOM.—Sept. 14.—For alterations and additions to the Green Man inn, Six-Mile-Bottom, near Cambridge. Mr. Herbert W. Chattaway, surveyor to the Trustees, Trinity Churchyard, Coventry.

SOUTH SHIELDS.—Sept. 28.—The South Shields education authority invite preliminary schemes and estimates for

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the warming and ventilation on the Plenum system of a block of four school departments, accommodating a total of 1,950 scholars, to be erected on the site of the Mowbray Council school, South Shields. Mr. Henry Grieves, architect, Albany Chambers, King Street, South Shields.

TREGREHAN.—Sept. 8.—For alterations and additions to three cottages at Tregrehan, Cornwall. Mr. John Mutton, architect, Charlestown.

WAKEFIELD.—Sept. 14.—For whole or separate tenders in connection with the following schools, for the West Riding education committee:—Thornton-in-Craven new school, Elslack new school, Cudworth new school, Kirkhamgate new school. Bolton-on-Deane: Goldthorpe (infants) provided school (enlargement)—builder, joiner, slater, plumber, plasterer, painter. Mytholmroyd: Scout Road provided school (sanitary alterations), Burnley Road provided school (sanitary alterations)—builder, joiner, slater, plumber, painter; Cragg Vale provided school (sanitary alterations)—builder and plumber; Harthill-with-Woodall provided school (alterations and new cloak-room)—builder, &c.; Adwick-on-Deane provided school (alterations and repairs)—builder and asphalt. Mr. J. Vickers-Edwards, county architect, County Hall, Wakefield.

WALES.—For the erection of a vestry at Bargoed, for the Welsh Baptist denomination. Mr. P. Vivian Jones, architect and surveyor, Hengoed.

WALES.—Sept. 8.—For the following works:—(1) New police station at Glyn Neath, (2) alterations and additions at the Bridgend police court buildings. The Glamorgan County Council Offices, Westgate Street, Cardiff.

WALES.—Sept. 10.—For the erection of a chapel house, for the trustees of the Calvinistic Methodist church, Senghenydd. Mr. John Davies, butcher, Caerphilly Road, Senghenydd.

WALES.—Sept. 10.—For making alterations and building additions to Tymawr, Rhymney. Mr. T. Roderick, architect, Ashbrook House, Aberdare.

WALES.—Sept. 11.—For the erection of four bungalows at Coed-Ely, near Llantrisant. Mr. P. J. Jones, architect, Cilfynydd, Pontypridd.

WALES.—Sept. 12.—For additions and improvements to Bethesda Congregational chapel, Merthyr Tydfil. Mr. John Thomas, 90 Brecon Road, Merthyr Tydfil.

WALES.—Sept. 13.—For the erection of pastor's villa, Ebenezer, Tylorstown. Mr. John Ed. Jones, chairman, Hendrefadop Shop, Tylorstown.

WALES.—Sept. 14.—For the erection of a school and classrooms and sundry other works at the Calvinistic Methodist church, Garndiffaith, near Pontypool. Mr. D. J. Lougher, architect, Bank Chambers, Pontypool.

WALES.—Sept. 15.—For the erection of thirty-eight houses at Penywn, Dowlais, for the Corporation of Merthyr Tydfil. Deposit 17. 1s. The Borough Surveyor, Town Hall, Merthyr Tydfil.

WALES.—Sept. 17.—For the erection of schools for boys, girls and infants, together with cookery and manual instruction rooms at Willowtown, Ebbw Vale, Mon. Deposit 37. 3s. Mr. H. Waters Waungoeh, architect, Beaufort. Separate tenders are required for (1) the infants' block, (2) mixed block, (3) cookery and manual block, (4) the remainder of the works and (5) the whole of the works.

WALES.—Sept. 18.—For building a sanitary block at the Carmarthenshire infirmary, Carmarthen. Messrs. George Morgan & Sons, architects, Carmarthen.

WALES.—Sept. 22.—For erection of a stone and steel bridge at Gwyddgrug, near Pencader, for the Carmarthenshire County Council. Mr. Charles H. Mounsey, county surveyor, Carmarthen.

YORK.—Sept. 12.—For alterations at the public library and for supplying and fixing of furniture and fittings. Mr. A. Creer, city engineer, Guildhall, York.

YORK.—Sept. 12.—For the erection of a clubhouse near York, for the committee of the York Golf Club. Mr. J. Edmund Jones, solicitor, 1 Market Street, York.

As an American firm has decided to erect a big hotel in Kingston, Jamaica, which will cost over 60,000l., will be the largest in the West Indies and capable of accommodating 500 guests.

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Ponders Ltd. London, N.

TENDERS.**ASHBURTON.**

For the erection of villa residences on the Druid estate, &c.
Mr. R. MONTAGUE LUKE, engineer, Plymouth.

White, Chatton & Co.	£1,989	15	7
Coneybeare	1,795	12	1
Yeo & Sons	1,732	9	3
Wakeham Bros.	1,685	0	0
Drew	1,587	0	0
BADCOCK, Ashburton (accepted)	1,525	11	0
Narracott	1,474	11	6

BARNSELEY.

For the erection of new schools in Racecommon Road.

Accepted tenders.

W. G. & C. Eveland, Barnsley, excavating and building	£4,780	0	0
Ouram, Barnsley, joiners' work girls and infants' school	1,788	0	0
Goodyear, joiners' work boys' school	1,010	0	0
Medley, Barnsley, boundary walls, drainage and yard	959	0	0
Dransfold, Barnsley, plumbers' work boys' school	616	6	6
Hillam Bros., Bradford, slaters' work	606	18	0
Marsden, Huddersfield, plumbers' work girls' school	539	0	0
Salmon, Cudworth, plasterers' work	314	6	7
Barter & Co., Horwich, plumbers' work infants' school	308	5	4
Stephenson & Son, Barnsley, painting	194	0	0

BRADFORD.

For enlargement of post office, for H.M. Office of Works, &c.

			Credit.
Schofield & Son	£9,863	0	0
Booth & Sons	9,400	0	0
Moulson & Son	8,840	0	0
Murgatroyd & Son	7,958	0	0
Fearnley & Sons	7,500	0	0
FARNISH (accepted)	7,390	0	0
Arundel	6,380	15	0
			70 8 6

BARRY.

For the erection of public offices in Holton Road. Messrs. HUTCHINSON & PAYNE, architects, 29 John Street, London, W.C.

Richards	£8,610	0	0
Jones Bros.	8,600	0	0
Lloyd & Tape	8,547	15	10
Britton	8,275	0	0
Rendell	8,050	0	0
Evans & Bros.	7,770	0	0
Davies & Sons	7,750	0	0
Allen & Sons	7,701	10	6
D. W. DAVIES, Cardiff (accepted)	7,488	0	0

BECCLES.

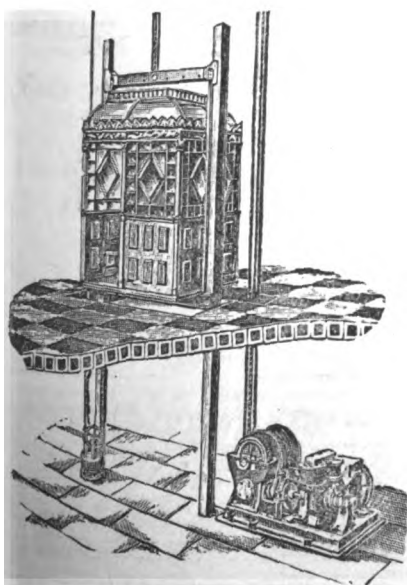
For alterations and additions to the Ship inn. Mr. ARTHUR PELLIS, F.S.I., architect, Beccles.

King	£292	0	0
Hindes & Co.	284	0	0
Hipperson Bros.	263	0	0
ELSEY, Lowestoft (accepted)	228	0	0

BIRKENHEAD.

For the erection of post office, for H.M. Office of Works, &c.

	York stone.	Portland stone.
Waring-White Building Co.	£15,574	£15,174
Thomas & Sons	14,756	14,417
Henshaw & Sons	13,855	14,197
Desoer	13,655	14,055
Dilworth	13,285	13,535
Jones & Sons	13,260	13,365
Rothwell & Sons	13,000	13,250
Merritt	12,994	13,098
Webster	12,979	13,250
Paterson & Son	12,897	13,147
Thornton & Sons	12,753	12,453
Brown & Backhouse	12,678	12,937
Allen	12,180	12,395
Greener & Co.	11,890	12,140
Forde	11,841	12,068
GABBUTT (accepted)	11,666	11,666
Costain & Sons	11,599	11,849

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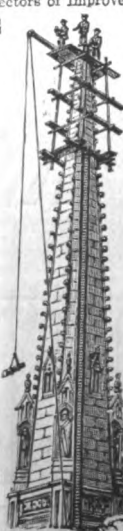
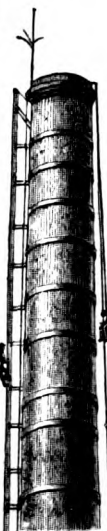
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CHARFIELD.

For the erection of a pair of labourers' cottages at Starveall Farm, for Governors of Lady Berkeley's Grammar schools. Messrs. T. SCAMMELL, SON & PERKINS, architects.

Clarke	£500	0	0
Simmonds	496	0	0
Blaken	453	0	0
Pitcher	450	0	0
Jotcham	439	0	0
Brown	430	0	0
HAWKINS & SONS, Ridgeway (accepted)	395	0	0

DERBY.

For enlargement of Midland Road post office, for H.M. Office of Works, &c.

Brown & Son	£3,237	0	0	Credit.
Young	3,190	0	0	20
Barnsley & Sons	3,148	0	0	40
WALKER & SLATER, Derby (accepted)	3,134	0	0	55

DUBLIN.

For main drainage works in the Clontarf Township. Messrs. CHATTERTON & SON, engineers, Westminster. KELLY, Kilkenny (accepted)

£46,631 5 8

DUNDEE.

For the work connected with the electrification of the Main Street section of the tramways and for the reconstruction of that part of the Perth Road route between Airlie Place and Windsor Street.

Accepted tenders.

Bolckow, Vaughan & Co., Middlesbrough, rails.
Maclellan, Glasgow, anchor plates and tie bars.
Fyffe, Aberdeen, granite setts and chippings.
Martin & Macfarlane, Errol, whinstone setts.

ENFIELD.

For erecting first portion of central premises for the Enfield Highway Co-operative Society. Mr. F. BETHELL, architect, Enfield.

P. & R. Paul	£2,686	0	0
L. & W. Patman	2,684	0	0
Lawrence & Son	2,593	0	0
Newman	2,578	0	0
Lane & Harvey	2,545	0	0
Fairhead & Son	2,545	0	0
JENNINGS & GRENFIELD (accepted)	2,500	0	1

GRIMSBY.

For the erection of premises at Humber Bank. Mr. HERBERT HEAP, architect, Grimsby.

Kirton	£768	14	9
G. & J. Smith	683	8	3
Kitchin	664	0	0
Henries & Goodhand	639	0	0
Times Land Building and Contracting Co.	610	0	0
SIMONS & BROWN, Cleethorpes (accepted)	543	15	9

HALESWORTH.

For altering dwelling-house, supplying and fixing new shop front. Mr. ARTHUR PELL, F.S.I., architect.

Elsey	£275	0	0
Gibbs & Rodwell	260	0	0
Woodyard	237	0	0
Morriss	225	0	0
Hazell	206	0	0
SMITH, Ipswich (accepted)	200	0	0

For the erection of residence. Mr. ARTHUR PELL, architect, Beccles.

Boddy & Son	£1,027	0	0
Woodyard	1,020	0	0
Botwright	930	0	0
HOWARD BROS., Halesworth (accepted)	812	0	0

HECKINGHAM.

For additions and alterations and repairs at Beacon Hill Farm. Mr. ARTHUR PELL, architect, Beccles.

Hipperson Bros.	£475	0	0
Elden	439	12	0
Grimson & Chasten	390	0	0
TILLS (accepted)	332	0	0

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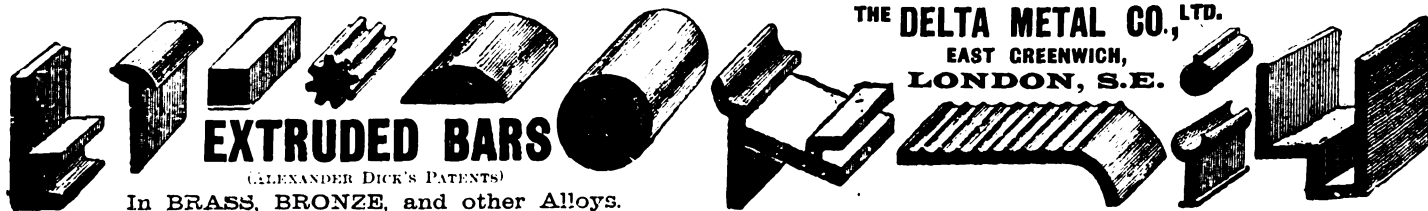
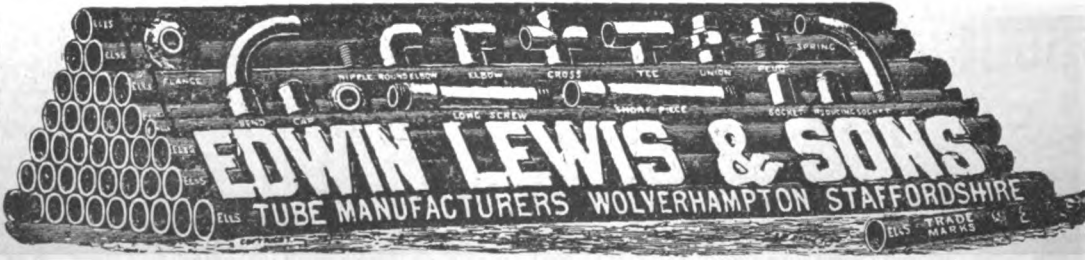
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HOCKLEY.

For the erection of homes, Rochford Union. Messrs. GREENHALGH & BROCKBANK, architects, Southend.			
F. & E. Davey	£1,079	0	0
Moss	995	0	0
Ducat	878	10	0
Potter & Son	875	0	0
Flaxman	825	0	0
Elvy & Son	770	0	0
Norden	749	10	0
Davey	649	0	0
BURRILL, Great Wakering (accepted)	625	0	0

HULL.

For the erection of post office, for H.M. Office of Works, &c.			
Scott	£52,997	0	0
Panton	49,900	0	0
Quibell, Son & Greenwood	41,804	0	0
Levitt	41,654	0	0
Houlton	39,200	0	0
Padgett	38,720	0	0
Goates	38,315	0	0
Wright & Sons	38,150	0	0
Scorrier	37,954	0	0
Marsden & Sons	37,750	0	0
Dawber, Townsley & Co.	37,750	0	0
Bowman & Sons	36,595	0	0
ARNOLD & SON (accepted)	30,275	0	0

LONDON.

For converting house in Brownhill Road, Catford, into shop, &c. Messrs. NORFOLK & PRIOR, architects, Catford Bridge.			
Howick	£132	15	0
Watt	128	0	0
WALKER (accepted)	115	11	0

MIDDLEWICH.

For alterations and extensions of premises for the Winsford Industrial Co-operative Society.			
Birchall Bros.	£407	0	0
FOWLES & SONS, Winsford (accepted)	390	0	0

NORTH BERWICK.

For the erection of post office, for H.M. Office of Works, &c.			
Wilson & Sons	£3,999	0	0
Parkinson & Son	3,628	0	0
Muirhead	3,478	10	10
Beattie & Sons	3,265	0	0
Denholm & Murray	3,161	0	0
Barton	3,000	0	0
Hunter & Co.	2,994	10	0
Scott & Brown	2,878	14	0
Elliott	2,801	16	0
J. & R. Stewart	2,795	0	0
Calder	2,791	0	0
J. & F. Forrest	2,780	3	0
McLeod & Sons	2,753	0	0
Baikie & Peattie	2,779	8	8
ANGUS (accepted)	2,769	10	0

PETERBOROUGH.

For the erection of school and cookery centre. Messrs. J. G. STALLEBRASS & SONS, architects, Peterborough.			
Cracknell	£5,534	0	0
Beech	4,950	0	0
Watson	4,849	0	0
Shanks	4,790	0	0
Guttridge	4,774	0	0
Heath	4,712	10	0
Gray	4,712	10	0
Lucas	4,649	0	0
Bridgefoot	4,631	18	0
Hicks, Peterborough (accepted)	4,544	18	0

RUABON.

For construction of storage tank in cement concrete and erection of caretaker's house, &c. Mr. J. PRICE EVANS, engineer, Wrexham.			
Moss	£1,696	4	9
Holme & King	1,663	16	9
Davies Bros.	1,527	17	0
Tysilio, Jones & Sons	1,526	0	0
Simmons	1,410	16	11
Davies	1,372	17	7
JENKINS, Johnstown, Ruabon (accepted)	1,270	12	3

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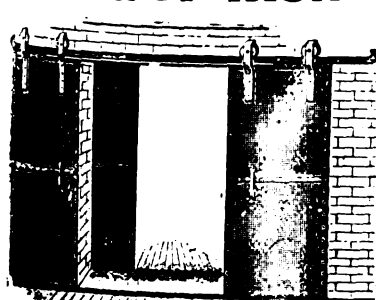
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**LIVERPOOL.**

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ROSS.

For erecting a detached house at Bridstow. Messrs. GROOME & BETTINGTON, architects and surveyors, Palace Chambers, Hereford. Quantities by architects.

First contract.

	Amount of Tender.	Additional for Oak, &c.
Rowbery	£1,433 7 0	£55 18 8
W. Jones	1,400 0 0	55 0 0
J. T. Jones	1,370 0 0	82 1 0
Kemp & Sons	1,355 0 0	52 4 0
James	1,339 0 0	25 0 0
Lewis	1,320 0 0	47 16 6
Powell	1,260 0 0	46 10 1
Bolt	1,230 0 0	70 15 0
Cooke	1,209 0 0	54 8 4
WILKS (accepted)	1,135 0 0	42 2 0

SUDBURY.

For alterations and additions to the hospital. Mr. ALFRED HOWARD, architect, Sudbury.

Stringer	£450 0 0
Brown & Graham	420 0 0
Theobald & Sons	368 12 0
BENNETT, Ipswich (accepted)	395 0 0
Grimwood & Sons	388 0 0
Potter & Son	384 0 0
Goody	376 14 11

SUNDERLAND.

For erection of customs offices, for H.M. Office of Works, &c.

Davidson	£6,499 0 0
Lowry	5,620 0 0
Cooper	5,558 0 0
Ferguson	5,389 0 0
Stott	5,346 0 0
D. & J. Ranken	5,224 0 0
Lumsden	4,840 0 0
White	4,778 0 0
Middlemiss Bros.	4,584 0 0
Armitage	4,450 0 0
Wright	4,297 0 0
Huntley	4,285 0 0
WAREURTON (accepted)	4,000 0 0

SHARDLOW.

For construction of waterworks at Stanley and West Hallam, including laying cast-iron pipes and construction of brick service reservoir. Messrs. ELLIOTT & BROWN, engineers, Nottingham.

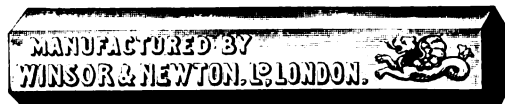
General contract.

Ratcliffe, Frankling & Proctor	£5,244 16 0
Oakes	3,388 8 0
Meredith	3,062 5 0
Totty	2,944 6 0
Taber	2,776 19 0
Williamson	2,695 0 0
Hill	2,649 0 0
Craig	2,643 0 0
Cox & Co.	2,636 14 0
Lock, Andrews & Price	2,600 0 0
Bower Bros.	2,562 0 0
Collingwood & Co.	2,538 0 0
Buckley	2,531 0 0
Evans	2,475 0 0
Egan & Sons	2,449 13 0
Mitchell & Sons	2,429 0 0
Lane Bros.	2,425 18 0
Shardlow	2,393 13 0
Dawson	2,369 5 2
Siddans	2,300 19 0
Harper	2,210 0 0
Tomlinson	2,185 0 0
Robinson	2,105 0 0

TRANSVAAL.

For the erection of post-office at Benoni.

Kelly, Anderson & Co.	£2,564 0 0
Gibson & Turnbull	2,297 0 0
Smith	2,277 0 0
Mackie & Rawley	2,150 0 0
Hunell	2,105 7 0
Jorgenson	2,015 0 0
Wilson	1,744 0 0
McCHLERY & BAIRD (accepted)	1,720 0 0

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TRANSVAAL—continued.

For the erection of police barracks and stables at Roodepoort

Birch	£12,853	12	6
Sprott	12,000	0	0
Penrose & Lillico	10,598	0	0
Birnie Bros.	9,800	0	0
Begg	9,749	0	0
Buckler	9,562	0	0
Van Reenan Mostert & Co.	9,000	0	0
Henderson & Gordon	8,999	0	0
Sellick & Co.	8,335	0	0
Pearce Bros.	8,309	0	0
Langley	8,230	0	0
Spurr	8,033	0	0
COULL (accepted)	8,025	0	0

(Received too late for classification.)

REDBOURN (HERTS).

For the erection of a seven-roomed cottage at Church End, for Mr. G. A. Dunn. Mr. E. A. FERNAUD, architect, 11 Chichester Street, London, S.W. Quantities by architect.

Negus	£392	0	0
Edwards & Medway	380	0	0
Neal	367	0	0
Payne	352	0	0
Salisbury & Son	340	0	0
PEEK, Redbourn (accepted)	339	9	0

For the erection of three detached cottages at Church End, for Mr. G. A. Dunn. Mr. E. A. FERNAUD, architect, 11 Chichester Street, London, S.W. Quantities by architect.

Hoon & Sons	£897	0	0
Newton	882	0	0
Neal	875	0	0
Salisbury	859	0	0
Payne, Watford*	783	0	0
Souster	738	0	0

* Accepted subject to reduction.

TRADE NOTES.

THE Columbian Fireproofing Company, Ltd., 37 King William Street, E.C., have been successful in securing the following contracts:—*Morning Post* buildings, Strand, London; new building adjoining Bond Street Tube station, London; Washington Street bonded warehouse, Glasgow.

MESSRS. CARTER & Co., of Poole and Hamworthy, have removed their London offices from 43 Essex Street, W.C., to 29 Albert Embankment, where they have ample facilities for showing their designs and samples of tiles, glazed fire-places, dadoes, floors, &c.

BUILDING AND BUILDERS.

A SYNDICATE are negotiating for the purchase of a site at Sleaford, Lincolnshire, for the purpose of erecting a sugar-beet factory at an estimated cost of 60,000l.

A MOVEMENT has been started among the various trade unions in Blackburn to erect a large central Trades Hall in which all the business connected with the unions can be transacted.

THE Blackburn Town Council will consider a resolution proposed by one of the members with the object of enforcing more stringently the fair contracts regulations of the Corporation. It provides, among other things, that no contractor shall be allowed to tender who prohibits his work-people from joining their respective trade unions, and includes also the following remarkable clause:—"Should any dispute arise as to whether a contractor is carrying out the provisions of this fair contracts clause any charge made against the contractor shall be deemed to be established unless he shall disprove the charge."

THE auditor of the accounts of the Manchester education committee makes the following remark on the elementary education accounts:—"The whole cost of the internal painting, whitewashing, &c., of non-provided schools has been paid out of the education funds by the education committee, and no part of the cost of such work would appear to have been recovered from the managers. Attention was called in my last report to the cost of certain repairs being

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wholly met by the committee, whereas only a proportion of such expenses should have been borne by you (vide section 7 (1) (d) of the Education Act, 1902). In connection with this matter the Board of Education in a letter dated October 5, 1905, addressed to the Norfolk education committee, stated, *inter alia*, that 'the Board consider that internal painting, whitewashing, colouring, varnishing the walls, ceilings and woodwork are *prima-facie* the duty of managers, subject only to the obligation of the local education authority to defray so much of the expenses as they consider due to fair wear and tear, &c.'

ELECTRIC NOTES.

AN electric-light power-station is being erected at Portland. It will generate all the power required for use in the Government offices, hospital, canteen, &c.

THE Government of New Zealand intend to erect a power-house for the purpose of utilising the waters of the Kaituna river in connection with a scheme to supply the Waihi goldfields with electricity.

THE electricity committee of the Salford Corporation have decided to recommend the Council to make application to the Local Government Board for sanction to borrow a sum of 10,000*l.* to cover the cost of the purchase of motors to be hired out to the public, as authorised by the Salford Corporation Act, 1900. They also desire sanction to borrow 25,000*l.* to cover necessary extensions and work on services during the next two years.

THE Carron Company are in keeping with the times by introducing "electric radiators" for general use. No. 1, consisting of ornamental cast-iron front and top, ground and berlin-blackened, four powerful electric heating lamps connected in circuits of two lamps controlled by separate switches, polished copper reflector in three pieces, complete with 6-feet lengths flexible cable, plug and socket for fixing, 18 inches wide by 25½ inches high, can be obtained for 100*s.* 6*d.* each. The maximum consumption per hour 1.06 Board of Trade units. Glow-lamps will burn 1,000 hours without renewal.

MR. J. F. C. SNELL, electrical engineer of the Sunderland Corporation, has decided to relinquish his appointment and

set up as a consulting engineer. The sixty-nine applicants for the vacancy have been reduced to the following:—Mr. Alfred S. Blackburn, of Bradford; Mr. A. A. Day, Bolton; Mr. H. F. Proctor, Bristol; Mr. C. E. C. Shawfield, Wolverhampton; Mr. C. D. Taite, Salford; and Mr. T. P. Wilms-hurst, Derby. The salary begins at 800*l.* and rises to 1,000*l.*

VARIETIES.

THE Altrincham Urban Council are going to proceed with a scheme providing for the erection of six blocks of workmen's dwellings.

THE inventory of the heritable and movable estate of the late John Fyfe, granite merchant, Aberdeen, has been lodged with the Sheriff-Clerk at Aberdeen. It amounts to 306,218*l.*, on which 9,986*l.* estate duty has been paid.

THE Sanitary Inspectors' Association will hold their congress at Blackpool from September 12 to September 17. Sir James Crichton Browne will deliver the presidential address. The delegates are expected to number nearly 400.

THE Waterloo-with-Seaforth Council have received the sanction of the Local Government Board to a loan of 14,500*l.* in connection with an improvement in the sewerage of Waterloo. The work is to be carried out by the Council's workmen.

THE sanitary committee of the Manchester Corporation are desirous of having included in the next Parliamentary Bill a clause for power to obtain a clearer definition of "sewer" and "drain" under the Public Health Act, 1875. The Parliamentary committee have informed them that as at present advised it is not anticipated that any application will be made in Parliament for a General Powers Bill in the next session.

THE brass and iron hinge-makers of the country, who have for a long time past complained of excessive competition and low prices, have just formed themselves into an organisation for putting the trade upon a better footing. The whole of the makers of the kingdom have consented to join and a list of prices has been agreed upon which shows a considerable advance upon those lately ruling, and places the trade in a position to obtain a profit on the orders executed. Severe penalties attach to underselling.

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ILLUSTRATIONS.

NEW PREMISES, NO. 27 MADDOX STREET, W.

LANTEGLOS-BY-POWEY, AFTER RESTORATION.

CARLE KEMP, NORTH BERWICK.

AN automobile bridge, the first of its kind as far as is known, has been erected by the Roswell-Torrance Mail and Passenger Stage Line in New Mexico, to span the Macho, a creek on the route. The bridge is so constructed as to prevent the passage of cattle, and is built without supports in the bed of the stream because of the heavy freshets. There is no floor, so that cattle can get no footing, and the automobiles cross on low-railed tracks on either side. The bridge has a total length of 64 feet.

THE Parliamentary committee of the Manchester Corporation, in response to a letter asking what assistance the Corporation would render to a scheme for an underground railway and tramway (plans for which, it is understood, will be deposited in November next), have replied that they adhere to their resolution of October 22, 1903, and that they are not prepared to grant any facilities as regards the promotion of such a scheme.

THE Worcester City Council decided on Tuesday to obtain closing orders with reference to a number of old buildings. The Mayor assured the councillors that no buildings of archaeological interest would be destroyed if possible, but old buildings, however interesting to the antiquarian, could not be allowed to remain at the expense of health or to prevent necessary street widening. It was decided to take photographs of buildings previous to their demolition.

COLONEL A. G. DURNFORD held a Local Government Board inquiry at Clutton into the application of Clutton Rural District Council for sanction to borrow 22,000*l.* to supply various parishes with water. It was asked that repayment be extended over the longest period—preferably forty years and even sixty years, if that could be done. The inspector said that probably thirty years would be the longest period. Mr. W. F. Bird, C.E., is acting as engineer.

THE Scarborough Harbour Commissioners reported at the annual meeting that the state of the foundation of the east pier for about 150 feet adjoining the connection with the wall of the Marine Drive had given much concern. Some damage had evidently been caused by the heavy sweep of the sea along the wall of the drive, and the Commissioners had asked the Corporation to build a groyne or groynes out from the wall, or to take some other steps to stop the scour of the sea.

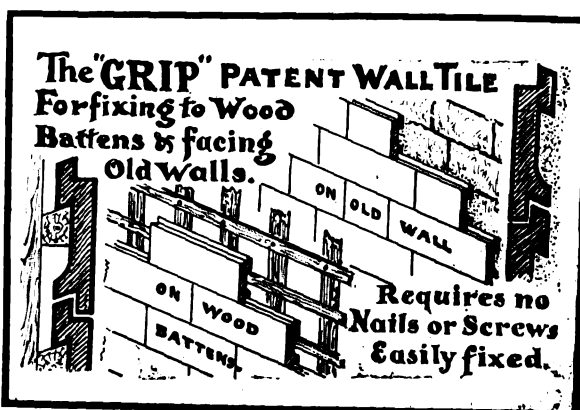
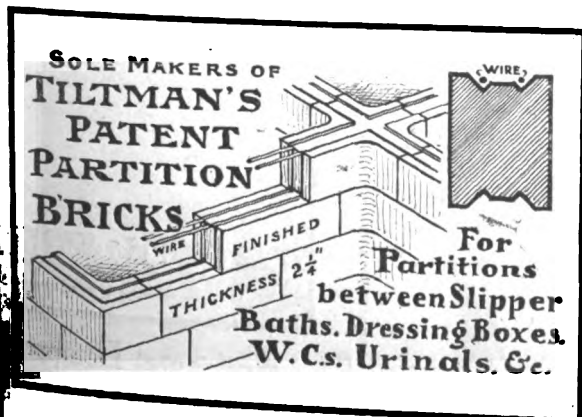
THE water committee of Aberdeen Town Council have agreed to recommend to the Town Council that steps be taken to obtain Parliamentary powers for a new water-supply for the city from the river Avon. The scheme has been under consideration for some time, and it is now proposed to proceed at once with the engineering survey. A plan of the proposed line of aqueduct from the Avon to Countesswells was submitted to the committee, along with a supplementary report, in which it was set forth that the total cost of the Avon scheme, including the purchase of land, wayleaves, &c., would amount to the sum of 940,000*l.*

THE Lincoln Corporation, in the course of their boring operations for a new water-supply at Boultham, have reached a depth of 2,014 feet, the red sandstone, which is the water-bearing strata, having been well pierced, and the experts have now advised that there will probably be no necessity to penetrate the rock to a greater depth. Accordingly the waterworks committee of the Lincoln Corporation have decided to suspend boring operations and proceed to erect pumping machinery. Then probably a month will be taken up in making a thorough and complete test of the water, as to its fitness for domestic use, and should this test prove satisfactory, as there is every reason to believe it will, the Boultham water will be turned into the mains.

FOR the man whose business takes him from London to Doncaster for the whole of the race week special arrangements have been made by the Great Central Railway Company, enabling him to accomplish his journey not only in comfort but at a very cheap fare. On Monday, September 10, a special luncheon car express will leave Marylebone at 1.15 P.M. Return fares, first class, 28*s.*; third class, 14*s.* On Wednesday and Friday you may

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THE epileptic colony established at Langho, near Blackburn, by the Manchester and Chorlton Boards of Guardians was opened on the 3rd inst. The estate comprises 166 acres of elevated and undulating land. The number of buildings at present erected is sixteen. These, however, occupy only a small portion of the estate, which affords ample space for future expansion of the colony. The existing buildings provide accommodation for 272 patients and the necessary officers and staff. The patients will be housed in separate "homes," each containing forty beds. The entire cost will be about 180,000/. The contractors were Messrs. Mill & Sons and the architects were Messrs. Giles, London.

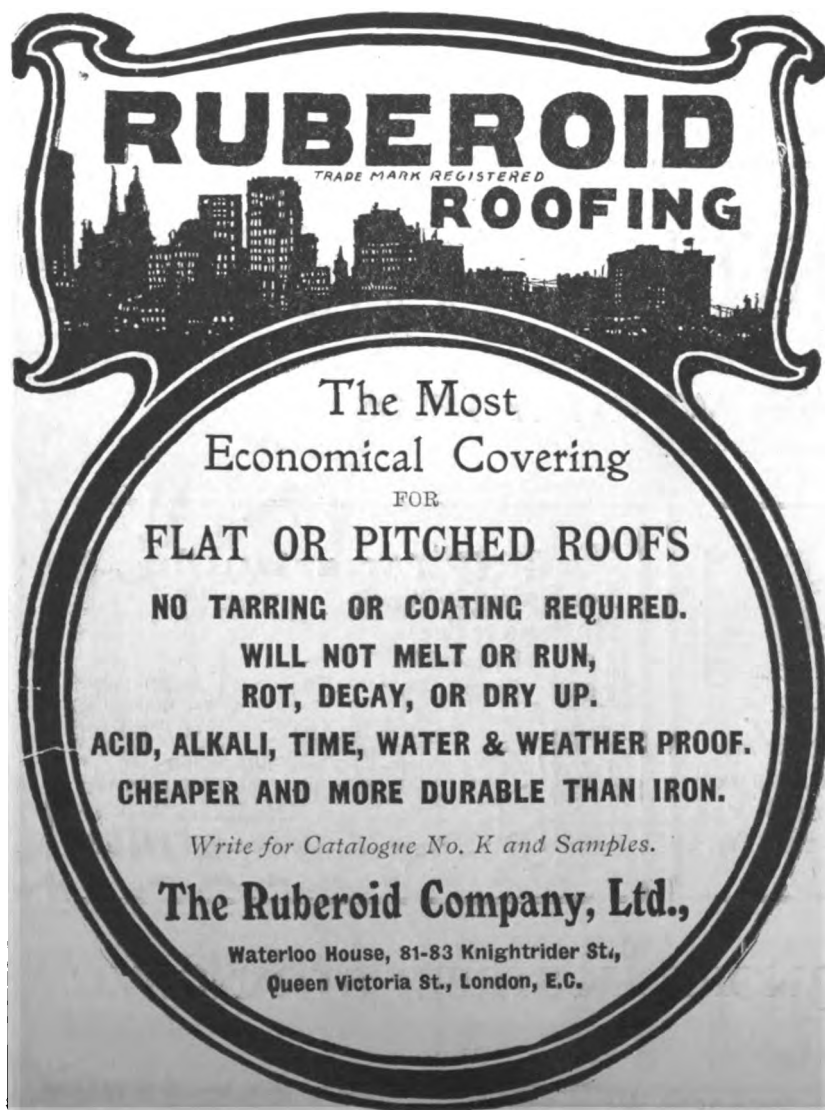
THE Concreters and Asphalters' Association met in Manchester on Saturday, and passed a resolution to the effect that one month's notice be given to architects, surveyors and builders, and all others concerned, that in future members of the Association will refuse to prepare any ground for patent flooring, terrazzo, &c., where cheap foreign labour is employed to displace British labour. It is contended that in future such work should be done by members of the Association, and under proper conditions. The meeting also approved of an alteration of rules for admitting to membership those who follow the wood-block flooring trade. It was further agreed to create a section of the Association for the concrete and asphalt labourers, who number five hundred in Manchester and the surrounding districts, and another section for bricklayers' labourers and others.

LORD SELBORNE'S RESIDENCE.

THE Transvaal has had a history of makeshifts, and it was quite in the nature of things that when the centre of South African politics was removed to Johannesburg the High Commissioner should have a makeshift residence in a suburban villa only a little less modest than its neighbours. Social as well as administrative duties attach to the office, and the little house at Parktown was never adequate to the fulfilment of these. In his new residence at Pretoria, however, which is almost ready for occupation, Lord Selborne, according to the *Transvaal Leader*, will have a home worthy of the King's representative.

A country makes its own impress upon architecture sooner than on any of the other arts. In new lands the styles are at first naturally importations, but the conditions inevitably modify the type until something distinctive is produced—something which bears the local stamp as unmistakably if not as obviously as the configuration of the land. It was to be expected that South African architecture would be an adaptation of the Dutch form, but the style has evolved in a manner which makes it the ideal type of residence in a land of perpetual sunshine and a crystal atmosphere. Groot Schuur is the outstanding example of the work from which a South African school of architecture may spring, and the new house which has been built for the High Commissioner at Pretoria carries the type a stage further. Both are the work of the same architect—Mr. Herbert Baker, of Baker, Macey & Sloper—and in both Mr. Baker has achieved full artistic success.

The Pretoria residence, still unnamed, is on the estate of Bryntirion, at the eastern spur of the ridge overlooking the valley, which rises on the other side in the circle of fort-crowned kopjes that girdle the capital. The view is a magnificent one—quite as extensive if not as green as that from Queen Mary's Lookout in Stirling Castle. The house has been designed on Dutch lines, with South African adaptations, and is much larger than Groot Schuur, though the inquiring taxpayer will be pleased to learn that it was less costly. The main front is surmounted with three quaint Dutch gables, and a square-roofed low-windowed



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wing on the western side relieves the precision of the design while harmonising admirably with the general plan. The visitor's first impression is that of a spacious and stately mansion, brilliantly white against a brilliant sky, flanked on one side by the wing referred to and on the other by vine-clad pillars and a beautiful lawn. The central gable rises above the entrance and a stone-columned porte cochère gives dignity to the porch. The vestibule is small but in capital taste. Red Warmbaths stone has been used throughout, and a massive block over an inglenook bears an inscription which testifies that it was laid by Sir Arthur Lawley in September of last year. A short flight of red stone stairs leads to the spacious corridor, which gives access to the rooms on the first floor. Chief among these is the great banqueting-hall, the principal room of the house and the finest apartment in any dwelling in South Africa. Dignity has not been sacrificed to decoration, and the interior is magnificently plain. Above the polished teak panelling the walls are white, and the roof is crossed by dark joists of roughly-dressed timber. The feature of the room is a splendid bay window two storeys in height, and as deep as an ordinary room, which at once lights the hall and gives one a glimpse of the wide panorama of veld and kopje without. The fireplace is of Steenpan stone, unornamented save for the Royal arms, and the fire-back is a handsome specimen of bronzework. A gallery for musicians has been placed above the door, and the upper corridor forms a balcony destined to witness many historical gatherings.

Adjoining the banqueting-hall is the drawing-room, a spacious light apartment, entirely decorated in white. The dining-room is opposite—less large than the others and less brilliantly lit, but commodious and dignified. Modern convenience is consulted in the placing of a serving-room in contiguity with the dining-room. The private apartments at this end of the house include a very pleasant morning-room looking out on the garden, and a billiard-room with a dark rafted roof, and all sorts of ingenious devices for storing cues and the other fittings of the game. The upper floor of the main block is entirely private. There are several state suites of bedrooms remarkable for their comfort no less than for their elegance.

The side block contains the kitchen and kindred offices

and the servants' quarters generally. The kitchen deserves particular mention as an example of common sense applied to Domestic architecture. It is not a particularly large room, but the architect has made it almost as lofty again as it is broad and long. This means perfect ventilation, as much coolness as is possible in a kitchen, and insures that the culinary odours shall not penetrate other parts of the house. The fittings here and in the pantry are models of completeness, and the servants' quarters are models of comfort. At the opposite end of the house, away from the private apartments, is a suite of offices in which the High Commissioner will transact affairs of State. The A.D.C.s have their rooms directly under.

But the most charming feature of the house is not within the walls. Directly behind, Mr. Baker has designed one of the most delightful gardens in the country. A white-columned atrium and colonnade, with paved floor, shady and cool and airy, reminds one of a Spanish courtyard, and when a few orange-trees have been planted in pots the resemblance will be perfect. Beginning at the wing which looks over the valley, all the space between the house-walls and the rocky edges of the kopje has been made garden. Just outside the High Commissioner's office a long pergola, whose white pillars will by-and-by support creeping vines, shades a quaint little lawn and rockery, in which the Administrator may stroll when he is weary of the cares of State. There is a lovely English lawn, already as green and smooth as a Devonshire bowling-green, its borders gay with flowers. Every nook and cranny of this private garden, which is almost part of the house, has been beautified. The edges of the kopje have been built up with rock, and from this flower-bed one may look down into the valley as from a glorified balcony of nature's making, and view the rolling veld and the grim hills beyond. It is an unrivalled example of making the wilderness into a garden for the house beautiful. The park—if an old English name may be borrowed for the acres of veld before the house—will be used partly as a paddock, and in the lower stretches the clever gardener who has done so much for the adornment of the estate has already established a splendid garden. In a few years, when the trees have passed their infancy, they will enfold a residence fit for a High Commissioner.

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The furniture will harmonise with the general character of the building, and many fine examples of old Cape Dutch furniture have been bought within the last few months. Dutch tiles have been brought from Holland and set into the walls for which they are suited.

Altogether the new residence is in every way a notable work and one which confers credit on all connected with it. The builders were Messrs. Edmanson & Thomas, of Johannesburg, and Mr. D. F. Ellis supervised the practical details of construction, while Mr. Herbert Baker, the architect, of course superintended the whole.

NATIONAL HARBOUR OF REFUGE.

In 1857, owing to strong pressure on the part of shipowners, underwriters and others interested in the safety of shipping and of the lives of fishermen and seamen, a select committee was constituted, and was followed by a Royal Commission in the following year. Nothing of a sufficiently definite character having resulted from these inquiries, the County Councils of Devon and Cornwall took the matter in hand, and called upon Sir Wm. Matthews. Discarding, for various reasons, Clovelly, Lundy Island (which affords a natural shelter from south-west gales), Newquay, and other suggested sites, Sir William Matthews has adopted St. Ives as the best suited for a harbour capable of admitting the largest of the ocean liners, while also affording a refuge for the mass of shipping associated with the fishing industry and the coasting trade.

In this judgment he is supported by the Select Commission of 1858, which recommended an expenditure of 174,000*l.* in the construction of a breakwater 2,000 feet in length, a sum which he declares, however, to be manifestly inadequate for the purpose. The Royal Commission of 1859 recommended St. Ives Bay also, and suggested that 400,000*l.* should be expended on the construction of a breakwater 3,750 feet long. "This estimate," Sir William declares, "is also entirely insufficient, and was based on a section consisting of external walls filled in with a hearting of loose rubble, a mode of construction which would certainly have proved disastrous in view of the heavy seas to

which such a work on the lines recommended would have been subjected." Sir William's own estimate of what is required involves an expenditure of 847,000*l.*, and the building of a breakwater 2,500 feet long, extending from just off the Merran Rock commencing on a curve generally in an east-south-east direction, and subsequently trending towards Hayle Bar. In addition (and included in the estimate of cost) he suggests the building of a spur on the Feather Bed Rock just south of the Merran, the outer end of which would be 500 feet landward of the western end of the proposed breakwater, leaving a good opening of that extent for circulation purposes.

As an alternative scheme Sir William recommends the building of a breakwater 1,500 feet in length as an isolated work, and leaving an opening between its western end and the shore at a cost, including the spur on Feather Bed Rock, of 400,000*l.* As soon as the report is printed a joint committee of the two County Councils, with, it is hoped, Mr. H. T. Ker and Mr. A. T. Goode, who assisted Sir William, will consider the details and the raising of the necessary funds. It is hoped that a larger scheme may prove practicable, and have national support as providing means for the saving of many thousands of pounds' worth of shipping and cargo and many thousands of lives each year.

THE LATE MR. GEORGE WOOLLISCROFT.

The well-known brick and tile manufacturer, Mr. George Woolliscroft, died last week at his residence, Cornhill, Leek, in the eighty-second year of his age. Mr. Woolliscroft had been confined to the house for a month and the cause of death was cancer. Mr. Woolliscroft, who was a most active, busy man for a long period, was, according to the *Staffordshire Advertiser*, the son of a farmer, and was born at Fulford, near Stone, on March 7, 1825. He was educated at the village school, afterwards at Mr. Robey's, Longton, and finished his education at a school at Shooter's Hill. Commencing his business career as an apprentice to a cabinet-maker at Longton, he enlarged his experience at Manchester, Liverpool and London. He had a brother who took the Crown inn in the village of Red Street, near

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Chesterton, together with a malt-kiln and some land adjoining, but was unexpectedly prevented going into occupation. Mr. Woolliscroft returned to North Staffordshire with a view of temporarily filling the vacancy, but he remained there for six or seven years. In 1851 he took the Eagle and Child, Chesterton, and a brickyard and land near the inn. About that time he entered the round timber trade for the purpose of supplying props used in mining operations. Soon afterwards he commenced buying encaustic tiles, and about 1878 he purchased the tileworks formerly conducted by Mr. W. Ridgway at Hanley. About the same time he leased some land at Etruria and began to manufacture quarries, ridge and roofing tiles. When Mr. Woolliscroft became the proprietor of the tile works at Hanley nothing was made there but flooring tiles. He quickly added the manufacture of ordinary glazed tiles, and later decorated tiles of every description. Mr. Woolliscroft engaged one of the best ecclesiastical artists to be met with, and some wonderful work has been executed by him at St. Columba's Church, Sunderland; the Church of the Blind, Liverpool; Armagh and Letterkenny cathedrals, and elsewhere. Some remarkably fine examples of faience work have also been produced by the firm. At the Etruria works at the outset Mr. Woolliscroft was faced by an almost overwhelming difficulty, which by persistent efforts he not only overcame, but turned to advantage. Several feet below the surface a solid bed of rock was met with, rendering it difficult to get the clay. But it was found by tests that by mixing the rock with the clay the material was greatly improved for wearing purposes. Much success was met with in paving and other bricks. Not only was the material suitable to the purpose, but a special system of firing was adopted, and the firm patented a machine by which the bricks were subjected to a squeeze of 40 tons both at top and bottom. Another patent at the works is a coping press which makes the most perfect and true coping. In 1892 Mr. A. E. Blizzard joined Mr. Woolliscroft as a partner in the business, and two years later the firm was converted into a limited liability company, of which for some years Mr. Blizzard was managing director and chairman. Mr. Woolliscroft some time ago relinquished his place on the directorate, but was represented on the Board by members of his family, while he continued in other respects to retain a large interest

in the concern. There are employed at the works at Chesterton, Etruria and Hanley about 400 hands. In March 1905 when he attained his eightieth birthday, he entertained the workpeople at dinner, and the staff and operatives on their part testified their esteem for him by presenting him with a life-size portrait of himself, accompanied by an illuminated address. For the last six or seven years Mr. Woolliscroft has resided at Leek, but he continued till quite recently to visit the works at Hanley almost every day in the week. He was a surprisingly alert business man, who was held in the greatest respect by his fellow men in the borough of Hanley and the town of Leek.

FIRES IN FACTORIES.

THE President of the Local Government Board has had a circular prepared relating to provisions for aiding in the escape from fire by workers in factories. Section 15 of the Factory and Workshop Act, 1901, empowers every district council to make by-laws providing for means of escape from fire in the case of any factory or workshop, and by-laws so made are subject to the confirmation of the Local Government Board. Model by-laws have been drawn up after consultation with the Secretary of State. In view of provisions made in Section 14 of the Act of 1901 for factories and workshops in which more than forty persons are employed, the model by-laws have been confined to cases not coming within the limits of that section. The chief clauses are as follows:—

"3.—(1) Every building of more than one storey which or any part of which is used as a factory or workshop shall be provided with adequate stairs or steps, permanently fixed, which shall be constructed so as to be adequately lighted by natural or artificial means, and as to afford direct and unimpeded access from every part of the factory or workshop to the ground floor of the building, and where practicable to an open space on the outside of the building or a public thoroughfare. All such stairs or steps shall be directly connected with landings, corridors, lobbies or passages giving access to every part of the factory or workshop, and shall be provided with a suitable and sufficient handrail. Provided

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always that for a period of twelve months after the appointed day the foregoing requirements of this by-law shall not be deemed to apply in the case of a building used as a factory or workshop prior to the appointed day [i.e. the date of confirmation of the by-laws]. (2) In the case of any building constructed for use as a factory or workshop after the appointed day, and in the case of any building constructed for use otherwise than as a factory or workshop in which alterations affecting the form and structure of the premises are made after the appointed day for the purpose of converting the building for use as a factory or workshop, all stairs or steps required to be provided in pursuance of this by-law shall, together with the supports thereto, be of fire-resisting materials. (3) The foregoing requirements shall not apply in the case of a building of which the ground floor only is used as a factory or workshop.

"4. Every building to which the foregoing by-law applies, any floor or floors of which being more than 30 feet from the ground, is or are used for factory or workshop purposes, and in which either more than ten persons are employed or readily inflammable materials are stored, shall, in addition to the stairs or steps required by these by-laws, be provided with means of escape in case of fire by (i.) an external staircase constructed of fire-resisting material; or (ii.) an efficient and suitable fire-escape; or (iii.) ready means of access to the roof of the building, and where practicable to the roof of any adjoining building.

"5.—(1) Every factory or workshop shall in every room in which persons are habitually employed be provided with at least one window, which shall be constructed so as to open easily at the level of the sill, and so that the aperture of the window shall be of an extent sufficient for the easy passage of any person employed in the factory or workshop, and where in any such room there is any window not so constructed, the window or windows that are so constructed shall be distinctly marked for the information of the persons employed. (2) Every window or door giving access to any external staircase or any fire-escape or means of access to the roof shall be distinctively marked for the information of the persons employed.

"6. Every person who, after the appointed day, erects a new building for use as a factory or workshop shall, in and about the erection of the building, and in and about any

works connected with the adaptation or fitting of the building for use as a factory or workshop, comply with every requirement of these by-laws which applies to a building of the like description.

"7. The owner of a building which on or after the appointed day is used as a factory or workshop shall execute all such works and do all such things as are necessary to bring the factory or workshop into a condition satisfying all such requirements of these by-laws as apply to a factory or workshop of the like description. Provided that nothing in or done under these by-laws shall deprive the owner of the benefit of any covenant or condition in a lease or in any other contract of tenancy to which the occupier of any such building is a party, or otherwise prevent the owner from enforcing any right to recover from the occupier or any other person any expenses consequent upon compliance with the by-laws.

"8. Every person who shall offend against any of the foregoing by-laws shall be liable for every such offence to a penalty of 5*l.*, and in the case of a continuing offence to a further penalty of 40*s.* for each day after written notice of the offence from the Council. Provided nevertheless that the Court of Summary Jurisdiction before whom any proceedings may be taken in respect of any such offence may, if the Court think fit, adjudge the payment of any sum less than the full amount of the penalty imposed by this by-law."

PRIZE COTTAGES.

JUDGMENT has been given in the Cleveleys cottage competition. The judges were Mr. John H. Woodhouse, president of the Manchester Society of Architects; Mr. Charles H. Barnsley, Birmingham, past president of the Institute of Builders; and Mr. H. R. Aldridge, secretary of the National Housing Reform Council. Their report to Mr. David Abercrombie, chairman of the executive committee, is as follows:—

The task of adjudicating in classes 1 and 2 of these competitions was rendered very difficult by the great differences in cost among the buildings erected. The conditions asked for "the best and most economical cottage," either single or in pairs, without any limitation as to cost,

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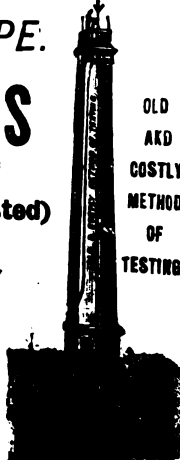
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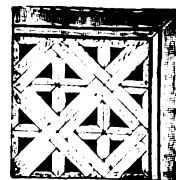
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and the competitors have built cottages, on some thirty different plans, which can be duplicated at a cost varying from 175*l.* to 500*l.* for each cottage. This variety adds to the interest of the exhibition, and we consider that most of the competitors are to be congratulated on their success in solving their differing problems on practical lines, and in many cases with pleasing architectural result, although we think that some of the buildings are too large to be considered as "economical cottages." Taking as our first consideration the ratio between cost and accommodation in each case, we selected, after careful study, a number of cottages which were fairly entitled to be called economical. Of these several were disqualified through faults of planning, while a few cottages, with very excellent and economical plans were so lacking in architectural character that we excluded them from the list of awards. Other cottages possessing many valuable features were disqualified as a result of their incompleteness at the time of our award. Of the remaining cottages we very carefully compared the architectural character, economy and convenience of planning, soundness of construction and cost of maintenance, and we award as follows:—

Class I.

First prize (100*l.*).—Exhibit No. 27. Architect, Albert E. Done, Blackpool; builder, various local builders.

Second prize (50*l.*).—Exhibit No. 14. Architect, Bertram Drummond, Blackpool; builder, J. Preston & Sons, Fleetwood.

Third prize (25*l.*).—Exhibit No. 22. Architect, Patrick Abercrombie, Chester; builder, E. Saville, Blackpool.

Honourable mention.—Exhibit No. 32. Architect and builder, Lancaster & Atkinson, Fleetwood. Exhibit No. 24. Architect, Gilbert Fraser, Liverpool; builder, Lancaster & Atkinson, Fleetwood. Exhibit No. 8. Architect and builder, Dickinson & Kirkham, Bolton.

Highly commended (not for competition).—Exhibit No. 13. Builder, J. P. Wilson, Fleetwood. Exhibit No. 31. Architect, Tom G. Lumb & Co., Blackpool.

Class II.

First prize (100*l.*).—Exhibit Nos. 42 and 43. Architect, G. Mangnall Bluhm, St. Annes-on-Sea; builders, Lancaster & Atkinson, Fleetwood.

Second prize (50*l.*).—Exhibit Nos. 25 and 26. Architect, T. Faulkner Shephard, Birkenhead; builders, Leech & Sons, Cleveleys.

Third prize (25*l.*).—Exhibit Nos. 11 and 12. Architect, Alfred T. Martindale, Bridlington; builder, T. V. Martindale, Bridlington.

Honourable mention.—Exhibit Nos. 28 and 29. Architect, John H. Mawson, Cleveleys; builder, Thomas Riley, Fleetwood.

THE CURZON COLLECTION.

At Bethnal Green Museum there is now on view in the central hall of the building, which it entirely occupies, a large portion of the Asiatic collection of Lord Curzon of Kedleston, made by him in the course of his travels in the East during the last twenty years, and notably during the seven years from 1898 to 1905, when he was Viceroy and Governor-General of India. This collection illustrates chiefly the art of India, Burma, Nepal and Tibet, but specimens are also included of the art productions of Turkey, Persia, Afghanistan, Siam and China. It thus embraces in a single survey the majority of the countries on the mainland of Asia, and presents a comprehensive picture of some at least of the principal artistic manufactures of the East, as well as many interesting personal mementoes of Lord Curzon's term of office in India.

Upon the right hand, on entering, are a number of objects connected with the celebration of the famous Coronation Durbar at Delhi on January 1, 1903, which was presided over by Lord Curzon. Here may be seen two of the embroidered coats worn by the trumpeters, one of the silver trumpets with banderoles used by them, and the tabard with the royal arms worn by the herald who read the proclamation.

Hard by are framed photographs of Lord Curzon and the late Lady Curzon in the robes that were worn by them at Delhi, and a sketch in oils made for the official picture of the State entry on elephants, which is the property of the Government of India.

The adjacent cases contain a number of caskets in silver, ivory, wood and other materials, presented to Lord Curzon

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by municipalities and other public bodies in India, many of them of purely Oriental design, the remainder showing Western ideas. With these are displayed a number of richly embroidered bags and cases for addresses, kharitas (official letters), and ceremonial garlands made of thread of pure gold.

The Indian silverwork also includes a footstool and anklets of Baroda workmanship, and jewellery from the remote hill States in the Himalayas.

In neighbouring cases may be seen two *lapis lazuli* and silver tables, presented to Lord Curzon by the Ameer of Afghanistan, as well as a tall brass candelabrum of curious pattern from Kabul; and a large selection of objects purchased by Lord Curzon at the celebrated Art Exhibition at Delhi in January 1903. These include specimens of the best Indian wood-carving in tables and screens, inlaid coffers and cabinets from many parts of India, ivory boxes from Vizagapatam, and articles in the various metals and in jade. A separate case is assigned to the carved sandalwood and the inlaid ivory and rosewood manufactures of Mysore. Beyond these are the delicate ivory carvings of Murshidabad in Bengal, representing groups of native life, chessmen and sacred images. Hard by is a collection of old Indian bronzes, representing figures in the Hindu Pantheon, which were dug up and sold as treasure-trove at Coimbatore in Madras. Jaipur is represented by several beautiful specimens of its costly enamelwork upon a background of pure gold.

At the upper end of the hall, upon either side, may be seen domestic utensils, temple lamps and furniture and sacred images collected by Lord Curzon in Sikkim, Nepal and Tibet, all of which illustrate a common religion and style. Several of the smaller seated figures of Buddha were presents to the Viceroy from the ruling lamas at Lhasa and Shigatse, in Tibet, and are still clothed in their original silk wrappings of the sacred colours.

Attention may also be drawn to the large collection of bronze and copper teapots, beer-jugs and water-pitchers in use among the Tibetan monks and people, and to the richly-carved upright temple lamps. Here also are a very decorative gilt pole, used as a trumpet-rest at Lhasa, a temple trumpet of prodigious length, a large manuscript with carved wooden covers, a handsome metal helmet, a

necklace of human thigh-bones, a drum composed of two skulls, and charm-cases, &c., as used by the Tibetan monks in their priestly incantations.

A sharp transition carries us to the more refined products and the less forbidding conceptions of two other Buddhist countries, Siam and Burmah. These consist of encrusted and lacquered woodwork, chased silverwork and coloured faience from Chantabun; and, in the case of Burmah, of the red and black lacquer of Pagahn, the gold lacquer of Prome, the chased silver ware of Mandalay and Rangoon, the carved ivory of Moulmein and objects from the remote Shan States on the Chinese border. In the centre of the hall are a carved teak steering-chair, such as is used in the boats on the Irrawaddy, a number of gilt poongyi boxes, or chests for sacred manuscripts on scarlet stands, and a very fine specimen of the latter, encrusted with coloured glass, and culminating in a Buddhist shrine.

These exhibits are succeeded by a number of objects in bronze, lacquer, cloisonné enamel and porcelain, many of which were procured from Boxers' houses at the relief of Peking in 1900.

Finally, there is a case containing Græco-Buddhist stone carvings from Gandhara on the North-West Frontier of India.

On the walls in the same order are to be seen first various textiles, including Persian silk and velvet carpets, Indian embroideries, saris, kincobs, &c., then Pathan and Afghan knives, old Mogul armour, damascened shields, matchlock and flintlock guns from the frontier (many of them bearing on the barrels the crest of the Honourable East India Company) and other arms. On the north wall are carved screens and other objects, mostly Indian, two old Burmese and two old Chinese gongs and a pair of fine Tibetan paintings representing Tsong-kha-pa, founder of the Jelupka sect of Lamaism. On the corresponding wall westward are two carved doorways and fragments of railing from a demolished building in the former palace enclosure of Mandalay.

The collection will remain on view for a considerable period, and will be varied or added to from time to time. It may be commended to those who desire a first-hand acquaintance with the still surviving art productions of the East.

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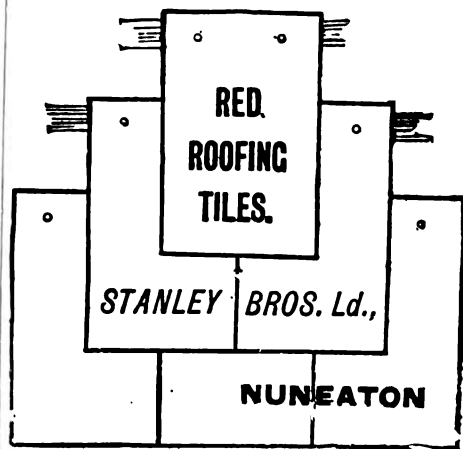
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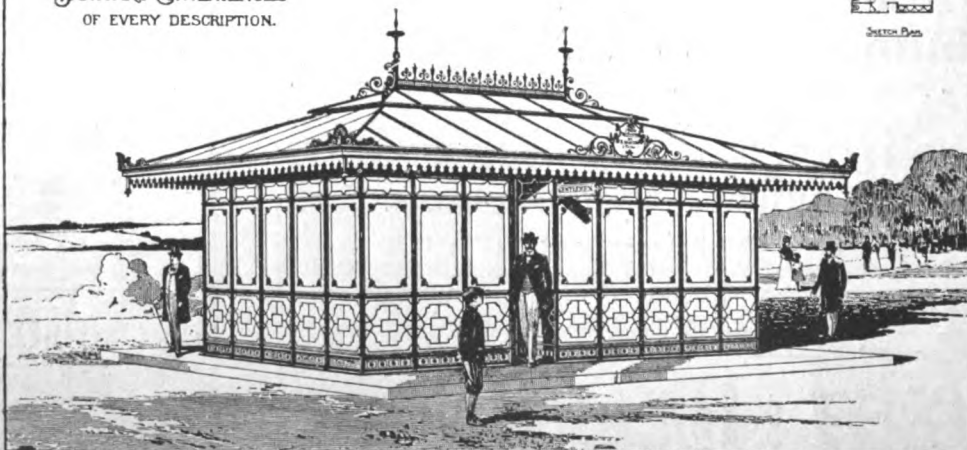
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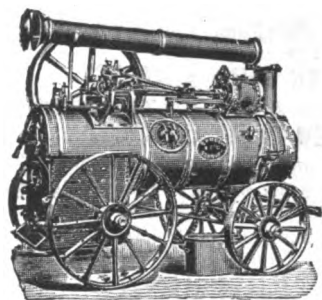
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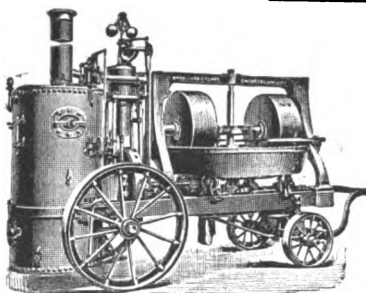
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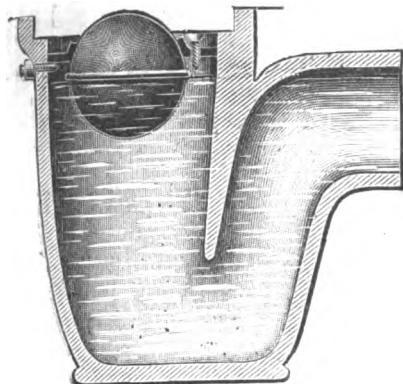
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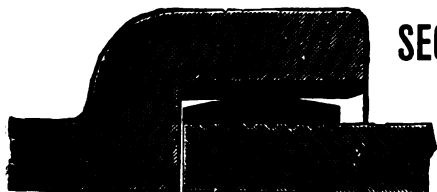
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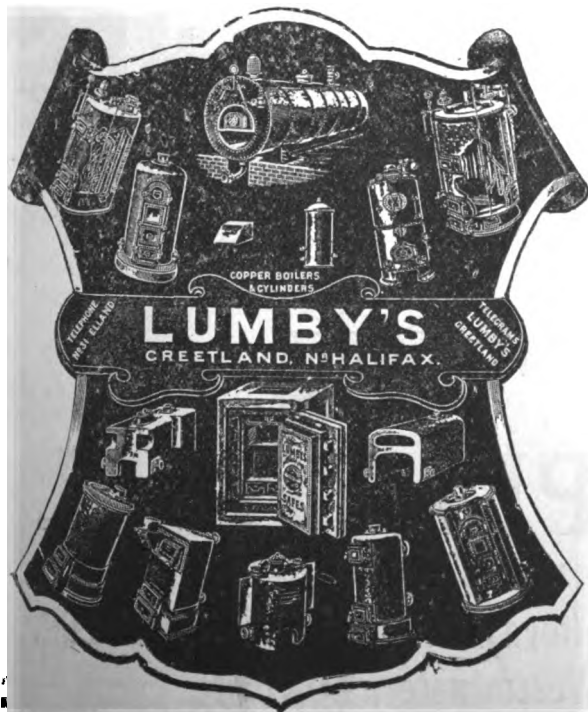
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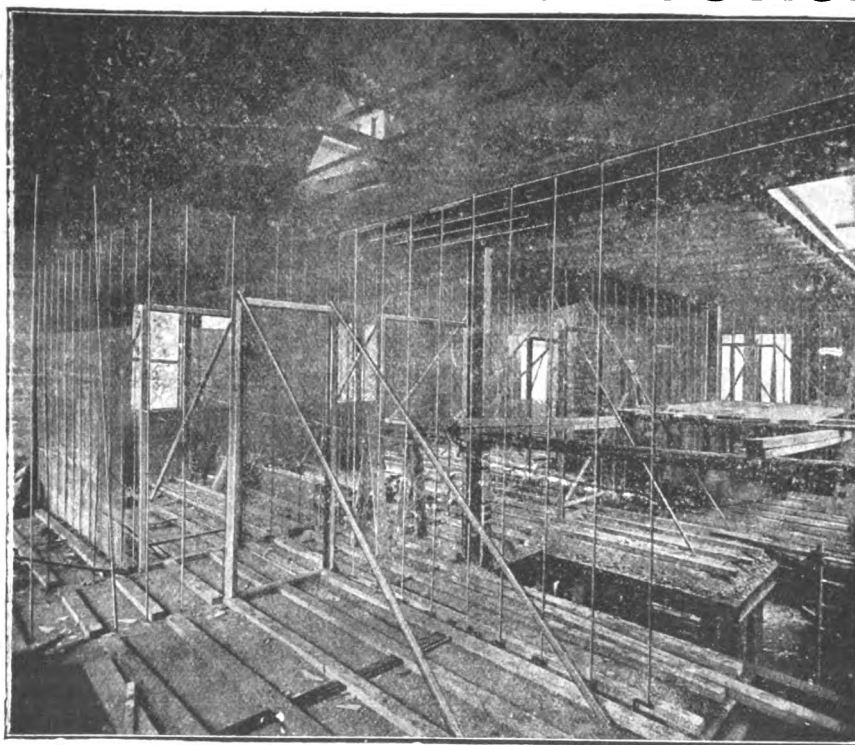
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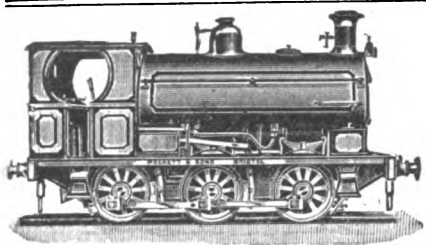
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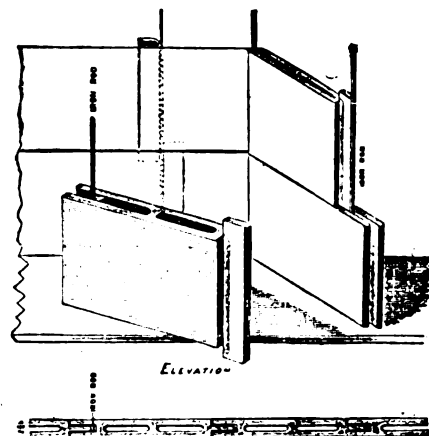
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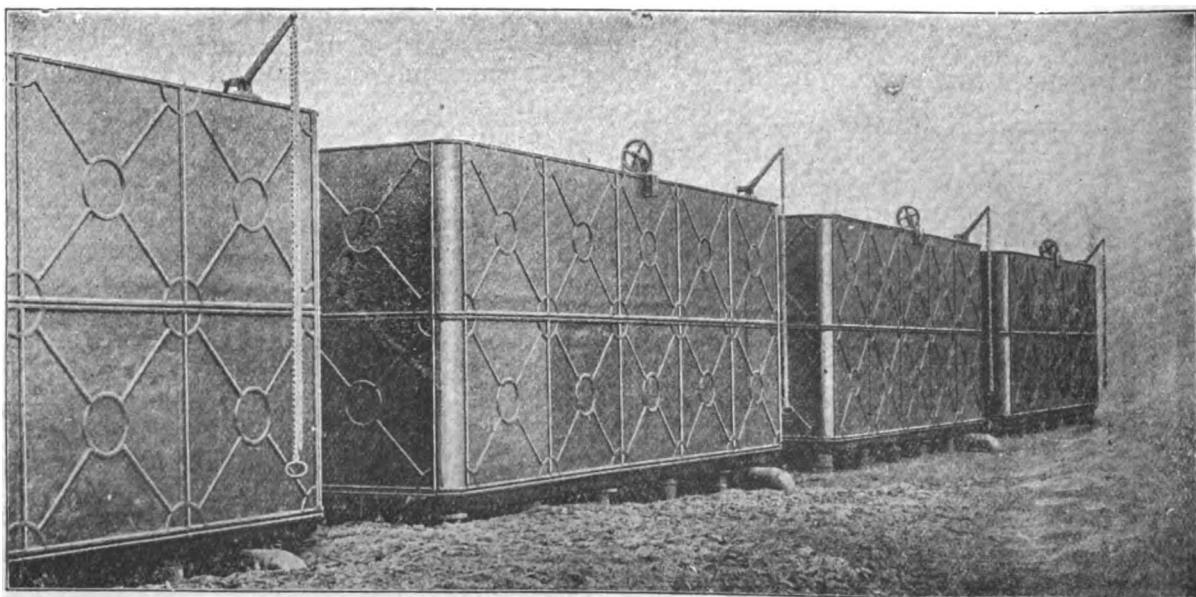
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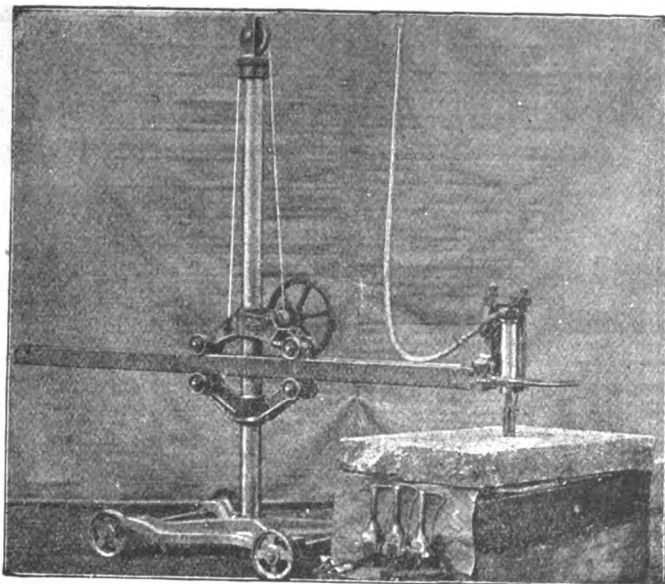
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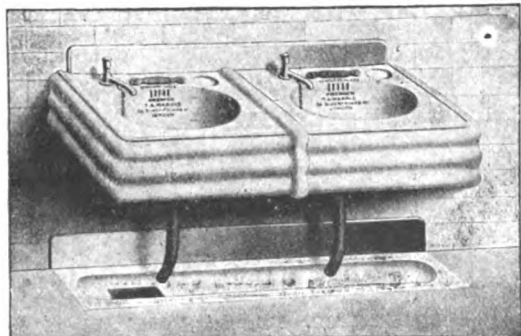
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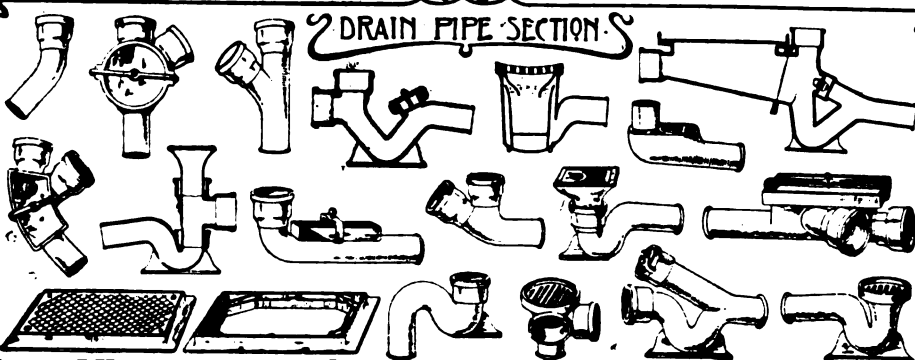
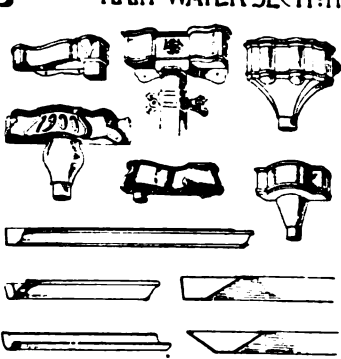
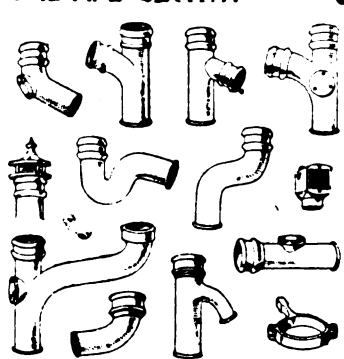
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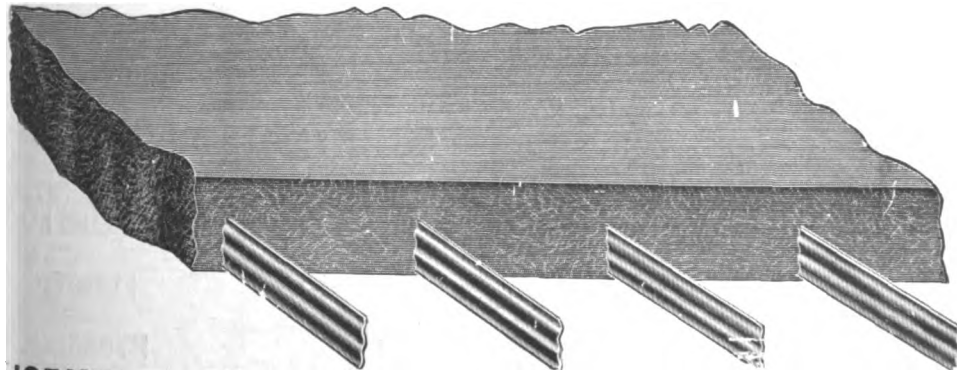
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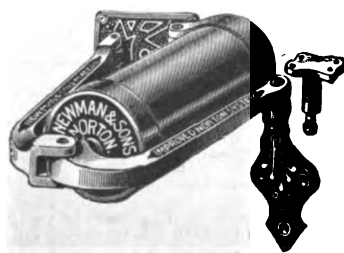


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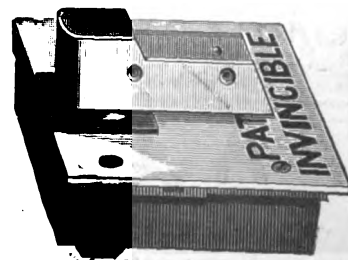
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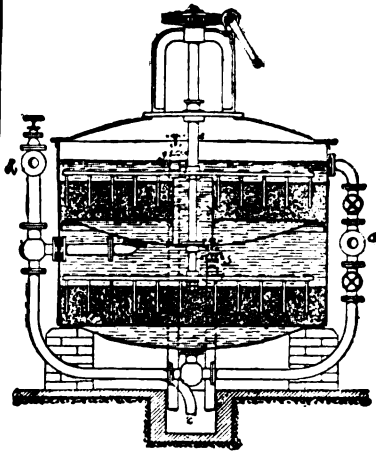
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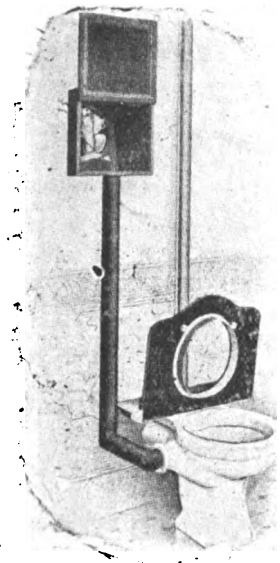
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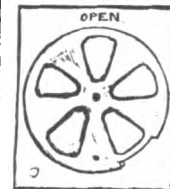
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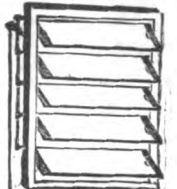
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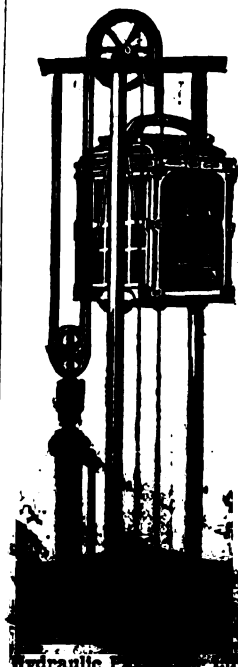


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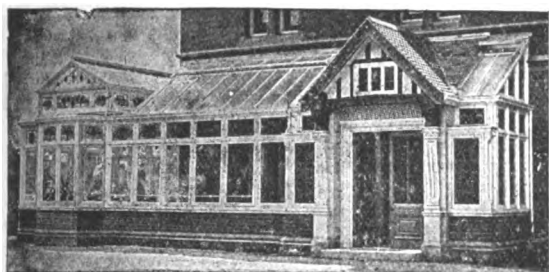
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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

**EDITORIAL NOTICES.**

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further

answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

**TENDERS, ETC.**

\*\* As great disappointment is frequently expressed at the non appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

**COMPETITIONS OPEN.**

GAYWOOD.—Oct. 22.—The Norfolk education committee invite plans, specifications, elevations and estimates for a new school. The plan (if any) selected will be accepted subject to the approval of the Board of Education. Particulars can be obtained on application to the Secretary, at the County Education Office, 57 London Street, Norwich.

MONTEVIDEO.—Dec. 14.—La Comision Nacional de Caridad require competitive plans for new foundling hospital with approximate cost. Plans and report, under mottoes, and, in sealed envelope, name and address of competitor. The four selected plans will receive 212l. each, and will be asked to further compete. Further particulars from the Consulate-General for Uruguay, 5 and 6 Clement's Inn, Strand, W.C.

**CONTRACTS OPEN.**

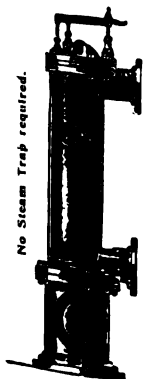
ASHERITTLE.—Sept. 18.—For the mason, carpenter, plasterer, plumber, slater and other works in connection with the erection of a farmhouse at Doble's Farm, Ashbrittle, Somerset. Mr. J. McWilliam, Abbotsford, Hemyock, Devon.

CATCHGATE.—Sept. 18.—For the additions and renovation, &c., of Lay Church, Catchgate, Lanchester. Mr. Thos. E. Taylor, architect and surveyor, Prospect House, Lanchester, or 2 Victoria Terrace, Annfield Plain.

DEVIZES.—Sept. 15.—For the erection of a laundry and alterations to existing premises at the union workhouse, Devizes. Mr. O. Sheppard, clerk, Union Offices, Devizes.

DEVIZES.—Oct. 3.—For the erection of shedding and the whole of the other necessary works in connection with the

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showyard for the meeting to be held at Devizes in 1907, for the Wiltshire Agricultural Association. Deposit 1*l.* 1*s.* Mr. James Welch, secretary, Market Lavington, Devizes.

DEWSBURY.—Sept. 27.—For the erection of extensions to the infirmary at the workhouse. Messrs. Holtom & Fox, architects, Corporation Street, Dewsbury.

ELDON LANE AND SEDGEFIELD.—Sept. 18.—For the erection of schools at Eldon Lane and Sedgefield, for the Durham County education committee. For Eldon Lane, Messrs. Vaux & Mark, architects, 29 Norfolk Street, Sunderland; for Sedgefield, the Education Committee's Architect, Shire Hall, Durham.

FITTLEWORTH.—Sept. 20.—For building a cottage at Fittleworth, Sussex. Mr. William Buck, architect, Horsham.

FOXEARH.—Sept. 20.—For building offices, &c., at the Foxearth brewery, Suffolk. Mr. A. Ainsworth Hunt, architect, Sudbury and Bury St. Edmunds.

GAINSBOROUGH.—Sept. 17.—For pulling-down and re-building premises in Bridge Street. Applications together with a deposit of 2*l.* 2*s.* by Sept. 5. Messrs. Scorer & Gamble, architects, Bank Street Chambers, Lincoln.

GREENODD.—Sept. 20.—For the erection of a house at Greenodd, Lancs. Messrs. Settle & Brundrit, architects and surveyors, Ulverston and Barrow-in-Furness.

HOUNSLOW.—Sept. 15.—For the erection of an infants' school at Spring Grove to accommodate 350 children. Deposit 2*l.* 2*s.* Mr. A. Lancelot Long, architect, Council House, Hounslow.

HULL.—Sept. 20.—For the erection of school buildings in Selby Street West. Deposit 2*l.* 2*s.* Mr. Joseph H. Hirst, city architect, Town Hall, Hull.

HUTTON.—Sept. 19.—For staining and polishing the floors of the day-rooms and dormitories at the new schools at Hutton, Essex, comprising a superficial area of between 5,000 and 6,000 square yards, for the Poplar Union. Mr. G. Herbert Lough, clerk, 45 Upper North Street, Poplar, E.

IRELAND.—Sept. 22.—For building and completing a manse at Raphoe. Mr. John M'Intyre, architect, Letterkenny.

IRELAND.—Sept. 26.—For the erection of artisans' dwellings on Banbrook Hill, in the city of Armagh, the clearing

and laying-out of the site, the construction of roads, paths, sewers, manholes and other works, for the Armagh Urban District Council. Deposit 1*l.* Mr. F. Bergin, B.E., 36 Westmoreland Street, Dublin.

IRELAND.—Oct. 5.—For building a technical school at Strand Road, Londonderry. Deposit 2*l.* 2*s.* Mr. Edward J. Toye, architect, 20 Great James Street, Londonderry.

LEEDS.—Sept. 19.—For the enlargement of the branch post office, Chapeltown. Deposit 1*l.* 1*s.* H.M. Office of Works, &c., Storey's Gate, S.W.

LEIGH.—Sept. 19.—For the supply of two girder troughs and supporting standards, together with 14-inch steel tubes for the purpose of crossing certain railways in West-houghton, for the Leigh gas and water committee. Mr. James Gibson, gas and water engineer, Town Hall, Leigh, Lancs.

LEVENSHULME.—Oct. 4.—For the erection and completion of technical school at the rear of the Chapel Street Council school, Chapel Street. Deposit 3*l.* 3*s.* Mr. Henry Littler, architect, 16 Ribblesdale Place, Preston.

LONDON.—Sept. 18.—For erecting a public convenience and bath-houses at Bell Green, Lower Sydenham, for the Lewisham Borough Council. Deposit 5*l.* Surveyor's Department, the Town Hall, Catford.

LONDON.—Sept. 18.—For extensions to the Central Public Library, Tottenham. Deposit 5*l.*, charge of 10*s.* 6*d.* for quantities. Mr. W. H. Prescott, engineer to the Council, Council Buildings, The Green, Tottenham.

LONDON.—Sept. 21.—For repairs, &c., at the mansion in the Island Gardens, Poplar, for the Borough Council. Deposit 10*s.* The Architect's Department, 15 Pall Mall East, S.W.

LONDON.—Sept. 21.—For the erection of a sorting office at Mill Hill, N. Deposit 1*l.* 1*s.* Mr. J. Wager, H.M. Office of Works, Westminster, S.W.

LONDON.—Sept. 21.—For the re-erection of a lodge at Wormwood Scrubs, W., for the London County Council. Deposit 10*s.* The Architect's Department, 15 Pall Mall East, S.W.

LONDON.—Sept. 27.—For additions and alterations in the building at the electricity works, Osborn Street, White-

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chapel, E., for the Stepney Borough Council. Deposit 5/. Mr. M. W. Jameson, A.M.I.C.E., borough engineer, 15 Great Alie Street, Whitechapel E.

MANCHESTER.—Sept. 22.—For the supply of terra-cotta for the Oswald Road municipal school, Chorlton-cum-Hardy. The Accountant, Education Offices, Deansgate, Manchester.

MITCHAM.—Sept. 20.—For repairs and painting at the isolation hospital, Beddington Corner, for the Croydon Rural District Council. Deposit 1/. Mr. R. M. Chart, surveyor, Town Hall, Croydon.

NEWCASTLE-UPON-TYNE.—Sept. 17.—For the construction of an underground public convenience in the Haymarket. Deposit 2/. 2s. The City Engineer's Office, Town Hall, Newcastle.

NEWCASTLE-UPON-TYNE.—Sept. 22.—For the erection of a register office for superintendent registrar, also for alterations to the union offices, Pilgrim Street. Names by September 22. Mr. A. Stockwell, architect, 11 Pilgrim Street, Newcastle.

OKEHAMPTON.—Sept. 22.—For rebuilding the county bridge at Broomford, in the parish of Jacobstowe, Devon. Mr. Samuel Hooper, surveyor, Hatherleigh.

RASKELF.—Sept. 24.—For the erection of a farmhouse at Cold Harbour, Raskelf, near Easingwold, for the Ecclesiastical Commissioners. Mr. Thomas Stokes, architect, Thirsk.

REDRUTH.—Sept. 25.—For erecting a secondary school. Mr. Morley Collins, architect, Clinton Road, Redruth, Cornwall.

ROTHERHAM.—Sept. 19.—For laundry machinery and fittings required at the public baths, also from builders for structural alterations. Mr. J. Platts, Corporation architect.

SHERBURN HILL.—Sept. 26.—For the erection of premises. Mr. J. Walton Taylor, architect, St. John's Street, Newcastle-upon-Tyne.

SOUTH SHIELDS.—Sept. 28.—The South Shields education authority invite preliminary schemes and estimates for the warming and ventilation on the Plenum system of a block of four school departments, accommodating a total of 1,950 scholars, to be erected on the site of the Mowbray

Council school, South Shields. Mr. Henry Grieves, architect, Albany Chambers, King Street, South Shields.

SWANSEA.—Sept. 17.—For the execution of certain works necessary to complete a villa in Wychtree Street, Morriston. Mr. Charles T. Ruthen, architect, Swansea.

TUNSTALL.—For new buildings at the Henry Richards Tileworks, Tunstall. Messrs. A. R. Wood & Son, architects, Tunstall.

TWEEDMOUTH.—Sept. 15.—For additions to business premises. Messrs. W. Gray & Nephew, architects, 2 Ivy Place, Berwick-on-Tweed.

WALES.—Sept. 15.—For the erection of thirty-eight houses at Penywern, Dowlais, for the Corporation of Merthyr Tydfil. Deposit 1/. 1s. The Borough Surveyor, Town Hall, Merthyr Tydfil.

WALES.—Sept. 17.—For the following works, for the Glamorgan County Council, viz.:—(1) Heating the Gowerton Council School with the low-pressure hot-water system; (2) alterations and additions at the Blaenllynfi Council school, Careau, near Maesteg; (3) new temporary cookery and infants' school at the Troedrihiwfwuch Council school; (4) new classrooms to the mixed department at Ely Council school; (5) minor alterations and additions at Pontyrhyl Council school. Mr. T. Mansel Franklen, clerk, Glamorgan County Offices, Westgate Street, Cardiff.

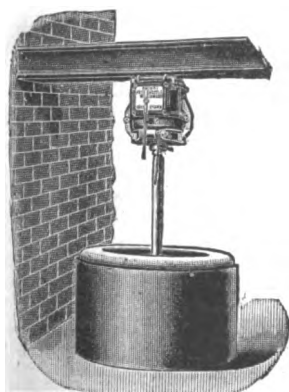
WALES.—Sept. 17.—For the erection of a C.M. chapel at Gwauncaegurwen. Deposit 2/. 2s. Mr. David Jones, Anchor House, Cwmgorse.

WALES.—Sept. 17.—For the erection of schools for boys, girls and infants, together with cookery and manual instruction rooms at Willowtown, Ebbw Vale, Mon. Deposit 3/. 3s. Mr. H. Waters Waungoeh, architect, Beaufort. Separate tenders are required for (1) the infants' block, (2) mixed block, (3) cookery and manual block, (4) the remainder of the works and (5) the whole of the works.

WALES.—Sept. 18.—For building a sanitary block at the Carmarthenshire infirmary, Carmarthen. Messrs. George Morgan & Sons, architects, Carmarthen.

WALES.—Sept. 22.—For erection of a stone and steel bridge at Gwyddrug, near Pencader, for the Carmarthenshire County Council. Mr. Charles H. Mounsey, county surveyor, Carmarthen.

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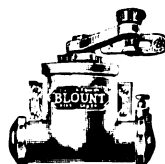
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**CLAYTON SON & CO., Ltd., LEEDS.**

WALES.—Sept. 24.—For the erection of two shops at Altwen. Mr. Charles S. Thomas, architect, Herbert Street, Pontardawe, or Wind Street, Swansea.

WALES.—Sept. 24.—For the following works, for the Pontypridd Urban District Council:—(Contract No. 1) for supply and erection of car-sheds (iron buildings) at Trehafod, near Pontypridd; (2) for masonry, paving and other works in connection with the erection of car-sheds. Deposit 1/1s. Mr. P. R. A. Willoughby, engineer and surveyor to the Council, Municipal Buildings, Pontypridd.

WATER GROVE.—Sept. 22.—For work required in foundation-walls, concrete bed and concrete under floors, roads and fences, &c., in connection with proposed small-pox hospital at Water Grove, near Foolow, Derbyshire. Mr. W. R. Bryden, architect, 3 George Street, Buxton.

WESTON-SUPER-MARE.—Sept. 18.—For building a party wall at 77 High Street. Messrs. Hans Price & W. Jane, architects, Weston-super-Mare.

WEYMOUTH.—Sept. 15.—For alteration and reroofing of stabling, &c., at Fleet Farm, near Weymouth. Mr. H. Maynard, surveyor, 5 Hammet Street, Taunton.

YORK.—Sept. 19.—For erection of club-house near York, for the committee of the York Golf Club. Mr. J. Edmund Jones, solicitor, 1 Market Street, York.

MR. PICKERING, chief inspector of mines in India, in his annual report mentions that a theory has been advanced that there is a connection between the earth-tremors which frequently occur in most countries, and the extraordinary fluctuations in the number of accidents from falls of roof in coal mines. Seismologists appear to be agreed that earthquake waves are very shallow surface ripples even when they wreck buildings, but the fact that the passing wave was felt 500 feet underground at Mayo seems to point to the conclusion that a reflex of the surface wave may be produced in certain conditions in extensively worked mines. This would certainly have the effect of unlocking the faults, joints and partings of the strata, and predisposing the roof to fall.

## TENDERS.

### ARUNDEL.

For kerbing, channelling and making-up about 400 square yards of Wood View Road and Ford Road, Arundel. Mr. E. F. FARRINGTON, borough surveyor.

|                                   |      |    |   |
|-----------------------------------|------|----|---|
| Botter Bros.                      | £245 | 0  | 0 |
| Webb                              | 240  | 16 | 0 |
| Jackson                           | 240  | 5  | 9 |
| King                              | 239  | 6  | 6 |
| Haggett                           | 216  | 3  | 7 |
| Thacker & Co.                     | 196  | 7  | 5 |
| HOLLAND, Littlehampton (accepted) | 189  | 8  | 7 |
| Borough surveyor's estimate       | 218  | 19 | 9 |

### BARNOLDSWICK.

For paving, surface-water sewerage, levelling, pitching, flagging, kerbing, channelling, &c. Mr. W. BENNETT, surveyor.

York, Wellington and Commercial Streets.

|                           |        |    |   |
|---------------------------|--------|----|---|
| McDonald                  | £1,127 | 8  | 8 |
| Baker                     | 1,054  | 5  | 9 |
| GREEN, Burnley (accepted) | 1,029  | 14 | 7 |

Back Co-operative Street, back Rainhall Road, back Chapel Street, back Beech Street, back Chapel and part back Cobden Streets.

|                  |     |    |   |
|------------------|-----|----|---|
| McDonald         | 519 | 16 | 3 |
| BAKER (accepted) | 490 | 8  | 6 |
| Green            | 496 | 7  | 9 |

For all streets.

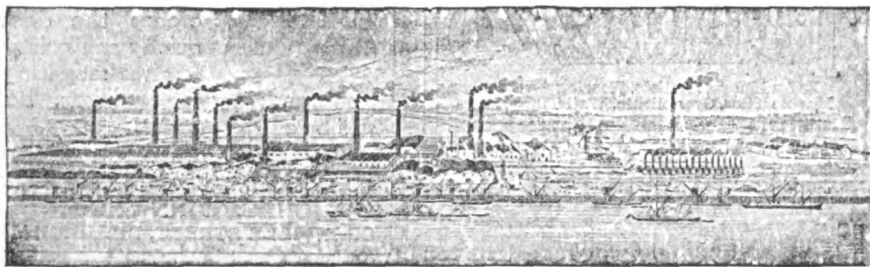
|         |       |    |    |
|---------|-------|----|----|
| Starkey | 2,114 | 8  | 0  |
| Sugden  | 1,726 | 11 | 11 |
| Miles   | 1,660 | 11 | 6  |

### BRANDON.

For fixing poles, cables, lamps, &c., at Waterhouses and Littleburn, for electric lighting. FLETCHER, Newcastle (accepted) £384 10 0

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**BANGOR.**

For the erection of a free library at Bangor, North Wales.  
Messrs. DIXON & POTTER, architects, 66 King Street, Manchester.

|                                                           |        |    |   |
|-----------------------------------------------------------|--------|----|---|
| Jones . . . . .                                           | £3,898 | 0  | 0 |
| Jones & Son . . . . .                                     | 3,850  | 0  | 0 |
| R. & J. Williams . . . . .                                | 3,843  | 0  | 0 |
| Jones & Williams . . . . .                                | 3,575  | 0  | 0 |
| Hughes . . . . .                                          | 3,414  | 0  | 0 |
| Evans & Son . . . . .                                     | 3,333  | 0  | 0 |
| Parry . . . . .                                           | 3,314  | 16 | 0 |
| Thorp & Son . . . . .                                     | 3,310  | 0  | 0 |
| O. & J. Williams . . . . .                                | 3,230  | 0  | 0 |
| Neill & Son . . . . .                                     | 3,166  | 0  | 0 |
| HUGHES & STIRLING, Bootle, Liverpool (accepted) . . . . . | 2,860  | 0  | 0 |

**BECCLES.**

For hotel, with stabling, coach-house and cart-shed, Ingate Road. Mr. ARTHUR PELLIS, architect, Beccles.

|                                     |        |   |   |
|-------------------------------------|--------|---|---|
| Ebbs & Barton . . . . .             | £2,694 | 0 | 0 |
| Jones & Sons . . . . .              | 2,536  | 0 | 0 |
| Yelf . . . . .                      | 2,385  | 0 | 0 |
| Downing & Son . . . . .             | 2,307  | 0 | 0 |
| Hipperson Bros. . . . .             | 2,270  | 0 | 0 |
| Grimwood & Sons . . . . .           | 2,253  | 0 | 0 |
| King . . . . .                      | 2,215  | 0 | 0 |
| Brett . . . . .                     | 2,205  | 0 | 0 |
| Gill . . . . .                      | 2,195  | 0 | 0 |
| Young & Son . . . . .               | 2,185  | 0 | 0 |
| Boddy & Son . . . . .               | 2,165  | 0 | 0 |
| Hipperson . . . . .                 | 2,137  | 0 | 0 |
| Parkington & Son . . . . .          | 2,100  | 0 | 0 |
| HAWES, Norwich (accepted) . . . . . | 1,890  | 0 | 0 |
| Hindes & Co. . . . .                | 1,881  | 0 | 0 |

**CANNOCK.**

For painting the outside wood, stone and ironwork of the workhouse buildings and fences. Mr. H. M. WHITEHEAD, surveyor, Penkridge.

|                                         |      |    |   |
|-----------------------------------------|------|----|---|
| Wynn & Son . . . . .                    | £320 | 10 | 0 |
| Law & Jeggo . . . . .                   | 276  | 18 | 0 |
| White & Son . . . . .                   | 275  | 0  | 0 |
| Parker & Co. . . . .                    | 245  | 0  | 0 |
| Dukes & Son . . . . .                   | 205  | 0  | 0 |
| Pritchard . . . . .                     | 187  | 19 | 6 |
| Sprenger . . . . .                      | 187  | 0  | 0 |
| Crutchley & Sons . . . . .              | 185  | 0  | 0 |
| BENTON, Hednesford (accepted) . . . . . | 179  | 0  | 0 |
| Bunting & Co. . . . .                   | 163  | 10 | 0 |

**CANTERBURY.**

For alterations at the municipal offices in Guildhall Street. Mr. ARTHUR C. TURLEY, city surveyor.

|                                             |      |    |   |
|---------------------------------------------|------|----|---|
| Denne & Son . . . . .                       | £895 | 0  | 0 |
| Brewster . . . . .                          | 861  | 0  | 0 |
| Harris Bros. . . . .                        | 830  | 0  | 0 |
| Mount . . . . .                             | 819  | 19 | 7 |
| Browning . . . . .                          | 759  | 0  | 0 |
| Wiltshire . . . . .                         | 740  | 0  | 0 |
| SMITH & SON, Maidstone (accepted) . . . . . | 699  | 0  | 0 |

**CAVERSHAM.**

For manager's cottage at the new sewage works, for the Caversham Urban District Council. Mr. A. J. SMITH, surveyor.

|                                            |      |    |   |
|--------------------------------------------|------|----|---|
| Hawkins . . . . .                          | £499 | 0  | 0 |
| Stokes & Sons . . . . .                    | 498  | 15 | 0 |
| Trinder & Sons . . . . .                   | 495  | 10 | 0 |
| Wyeth . . . . .                            | 455  | 0  | 0 |
| Romain & Sons . . . . .                    | 405  | 12 | 0 |
| Godwin . . . . .                           | 377  | 0  | 0 |
| Bell & Sons . . . . .                      | 340  | 0  | 0 |
| Stockwell & Sons . . . . .                 | 335  | 0  | 0 |
| Fisher Bros. . . . .                       | 335  | 0  | 0 |
| BATTEN BROS., Reading (accepted) . . . . . | 325  | 0  | 0 |
| Surveyor's estimate . . . . .              | 300  | 0  | 0 |

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|                                               |         |    |    |
|-----------------------------------------------|---------|----|----|
| Osenton                                       | £13,551 | 16 | 6  |
| Hardy, Bate & Co.                             | 12,548  | 14 | 6  |
| Hewett & Sons                                 | 12,073  | 4  | 11 |
| Jeffrey                                       | 11,381  | 14 | 8  |
| Moss & Sons                                   | 10,947  | 13 | 3  |
| Vale & Sons                                   | 10,693  | 11 | 2  |
| Hill                                          | 10,259  | 6  | 7  |
| Moran & Son                                   | 10,170  | 11 | 3  |
| Cooke & Co.                                   | 10,053  | 0  | 0  |
| Bower Bros.                                   | 9,928   | 13 | 0  |
| Chick & Carden                                | 9,783   | 17 | 2  |
| Fitt ( <i>no schedule</i> )                   | 9,727   | 0  | 0  |
| Faulks                                        | 9,665   | 12 | 9  |
| Godwin                                        | 9,437   | 1  | 6  |
| Lewis & Bro.                                  | 9,297   | 0  | 0  |
| Streeter & Co.                                | 9,208   | 3  | 9  |
| COLLIER & CATLEY, Reading ( <i>accepted</i> ) | 8,483   | 1  | 2  |
| Harris & Son                                  | 8,425   | 17 | 0  |
| Rayner ( <i>incomplete</i> )                  | 8,320   | 14 | 7  |
| Neal, Ltd.                                    | 8,090   | 8  | 11 |
| Macdonald                                     | 8,086   | 0  | 0  |
| Surveyor's estimate                           | 8,771   | 17 | 6  |

**CONWAY.**

For laying drainage pipes at Llys Faen.

HUGHES & ROWLANDS, Colwyn Bay (*accepted*) £531 0 0

**GLAMORGAN.**

For widening the Caerphilly and Nantgarw Road, for the county roads committee.

HARDING, Caerphilly (*accepted*) £669 4 8

**HARTLEPOOL.**

For altering and enlarging culverts under the Cleveland Road.

|                                            |      |   |   |
|--------------------------------------------|------|---|---|
| Marshall                                   | £283 | 0 | 0 |
| Hardy & Atkinson                           | 280  | 0 | 0 |
| SHORT, West Hartlepool ( <i>accepted</i> ) | 272  | 0 | 0 |

**KIDDERMINSTER.**

For additions to the Grammar school.

GUEST & SONS, Stourbridge (*accepted*) £2,245 0 0

**LONDON.**

For paving with artificial stone the footways of Buckthorne Road (part of), Algiers Road (part of), Eddystone Road and Holdenby Road (part of), for the Lewisham Borough Council.

*Buckthorne Road (part of).*

|                                     |      |    |   |
|-------------------------------------|------|----|---|
| Mowlem & Co.                        | £179 | 0  | 0 |
| Patent Victoria Stone Co.           | 173  | 10 | 6 |
| Adams                               | 169  | 0  | 0 |
| Lascelles & Co.                     | 164  | 0  | 0 |
| Excelsior Patent Stone Co.          | 163  | 10 | 6 |
| Imperial Stone Co.                  | 151  | 0  | 0 |
| Apthorpe & Co.                      | 142  | 17 | 4 |
| Atlas Stone Co.                     | 138  | 3  | 4 |
| Pearce                              | 137  | 0  | 0 |
| Harvey Bros. ( <i>recommended</i> ) | 132  | 19 | 1 |

*Algiers Road (part of).*

|                                     |     |    |   |
|-------------------------------------|-----|----|---|
| Patent Victoria Stone Co.           | 119 | 6  | 0 |
| Mowlem & Co.                        | 118 | 0  | 0 |
| Adams                               | 115 | 0  | 0 |
| Excelsior Patent Stone Co.          | 113 | 0  | 0 |
| Lascelles & Co.                     | 106 | 0  | 0 |
| Imperial Stone Co.                  | 101 | 0  | 0 |
| Atlas Stone Co.                     | 99  | 13 | 9 |
| Pearce                              | 96  | 0  | 0 |
| Apthorpe & Co.                      | 94  | 8  | 6 |
| Harvey Bros. ( <i>recommended</i> ) | 91  | 15 | 8 |

*Eddystone Road.*

|                                     |     |    |   |
|-------------------------------------|-----|----|---|
| Mowlem & Co.                        | 127 | 0  | 0 |
| Patent Victoria Stone Co.           | 124 | 18 | 6 |
| Adams                               | 119 | 0  | 0 |
| Lascelles & Co.                     | 119 | 0  | 0 |
| Excelsior Patent Stone Co.          | 117 | 0  | 0 |
| Imperial Stone Co.                  | 104 | 0  | 0 |
| Apthorpe & Co.                      | 102 | 3  | 4 |
| Atlas Stone Co.                     | 98  | 17 | 1 |
| Pearce                              | 98  | 0  | 0 |
| Harvey Bros. ( <i>recommended</i> ) | 96  | 1  | 1 |

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**LONDON—continued.**

*Holdenby Road (part of).*

|                                    |     |    |   |
|------------------------------------|-----|----|---|
| Adams . . . . .                    | £44 | 0  | 0 |
| Mowlem & Co. . . . .               | 43  | 0  | 0 |
| Patent Victoria Stone Co. . . . .  | 41  | 18 | 0 |
| Imperial Stone Co. . . . .         | 40  | 0  | 0 |
| Excelsior Patent Stone Co. . . . . | 39  | 10 | 0 |
| Lascelles & Co. . . . .            | 39  | 0  | 0 |
| Apthorpe & Co. . . . .             | 35  | 1  | 4 |
| Atlas Stone Co. . . . .            | 34  | 17 | 8 |
| Harvey Bros. . . . .               | 33  | 19 | 4 |
| Pearce (recommended) . . . . .     | 33  | 0  | 0 |

For kerbing, channelling and making-up the roadways of Buckthorne Road (part of), Algiers Road (part of), Eddystone Road and Holdenby Road (part of), for the Lewisham Borough Council.

*Buckthorne Road (part of).*

|                                |      |   |   |
|--------------------------------|------|---|---|
| Adams . . . . .                | £635 | 0 | 0 |
| Mowlem & Co. . . . .           | 631  | 0 | 0 |
| Martin . . . . .               | 620  | 0 | 0 |
| Fry Bros. . . . .              | 600  | 0 | 0 |
| Woodham & Sons . . . . .       | 589  | 0 | 0 |
| Pearce (recommended) . . . . . | 543  | 0 | 0 |

*Algiers Road (part of).*

|                                   |     |   |   |
|-----------------------------------|-----|---|---|
| Adams . . . . .                   | 403 | 0 | 0 |
| Mowlem & Co. . . . .              | 379 | 0 | 0 |
| Woodham & Sons . . . . .          | 377 | 0 | 0 |
| Pearce . . . . .                  | 370 | 0 | 0 |
| Martin . . . . .                  | 365 | 0 | 0 |
| Fry Bros. (recommended) . . . . . | 330 | 0 | 0 |

*Eddystone Road.*

|                                |     |   |   |
|--------------------------------|-----|---|---|
| Adams . . . . .                | 665 | 0 | 0 |
| Mowlem & Co. . . . .           | 649 | 0 | 0 |
| Woodham & Sons . . . . .       | 607 | 0 | 0 |
| Martin . . . . .               | 600 | 0 | 0 |
| Fry Bros. . . . .              | 576 | 0 | 0 |
| Pearce (recommended) . . . . . | 570 | 0 | 0 |

**LONDON—continued.**

*Holdenby Road (part of).*

|                                |      |   |   |
|--------------------------------|------|---|---|
| Woodham & Sons . . . . .       | £127 | 0 | 0 |
| Adams . . . . .                | 125  | 0 | 0 |
| Martin . . . . .               | 125  | 0 | 0 |
| Fry Bros. . . . .              | 120  | 0 | 0 |
| Mowlem & Co. . . . .           | 115  | 0 | 0 |
| Pearce (recommended) . . . . . | 103  | 0 | 0 |

**LIVERPOOL.**

For the erection of laundry buildings at Highfield infirmary, Knotty Ash. Messrs. EDMUND KIRBY & W. E. WILLINK, architects, 5 Cook Street, Liverpool.  
Ballen Bros. & Sons . . . . . £5,908 0 0

**LUTON.**

For paving and other works of private improvement in Ash Road and William Street. Mr. S. F. L. Fox, borough surveyor.

*Ash Road.*

|                                                    |      |    |   |
|----------------------------------------------------|------|----|---|
| Free & Sons . . . . .                              | £412 | 0  | 0 |
| Thacker & Co. . . . .                              | 382  | 4  | 0 |
| Patent Victoria Stone Co. . . . .                  | 373  | 1  | 8 |
| Worthington . . . . .                              | 360  | 5  | 0 |
| Jacobs & Burton . . . . .                          | 353  | 18 | 4 |
| Wheeler . . . . .                                  | 337  | 0  | 8 |
| POWDRILL, Hitchin Road, Luton (accepted) . . . . . | 335  | 0  | 0 |

*William Street.*

|                                   |     |    |   |
|-----------------------------------|-----|----|---|
| Thacker & Co. . . . .             | 274 | 2  | 3 |
| Worthington . . . . .             | 262 | 18 | 6 |
| Jacobs & Burton . . . . .         | 235 | 4  | 3 |
| Free & Sons . . . . .             | 232 | 7  | 0 |
| Wheeler . . . . .                 | 216 | 9  | 0 |
| Patent Victoria Stone Co. . . . . | 209 | 6  | 0 |
| POWDRILL (accepted) . . . . .     | 190 | 0  | 0 |

**MAIDSTONE.**

For the erection of borough police station, Mill Street.

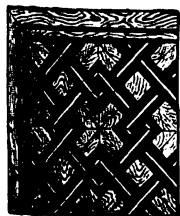
|                                   |        |   |   |
|-----------------------------------|--------|---|---|
| Barden & Head . . . . .           | £9,100 | 0 | 0 |
| Elmore & Son . . . . .            | 8,918  | 0 | 0 |
| Smith & Son . . . . .             | 8,475  | 0 | 0 |
| Cox Bros. . . . .                 | 8,303  | 0 | 0 |
| Avard . . . . .                   | 8,289  | 0 | 0 |
| Corben & Son . . . . .            | 7,980  | 0 | 0 |
| WALLIS & SON (accepted) . . . . . | 7,788  | 0 | 0 |

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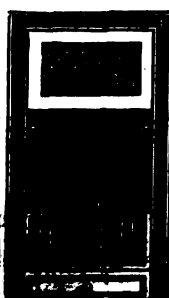
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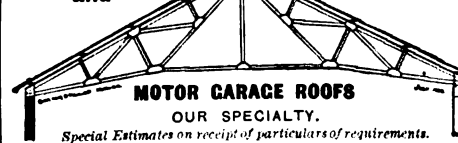
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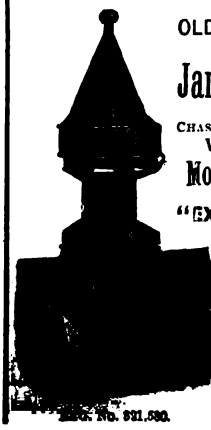
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**NEW BRANCEPETH.**

For the supply and erection of poles, cables, lamps, &c., in connection with New Brancepeth Colliery and Littleburn sections, Durham. Mr. G. G. DONKIN, surveyor, Langley Moor, near Durham.

|                                                  |      |    |    |
|--------------------------------------------------|------|----|----|
| Warren & Beattie . . . . .                       | £594 | 0  | 10 |
| North-Eastern Electric Co. . . . .               | 325  | 2  | 0  |
| Armstrong & Co. . . . .                          | 486  | 0  | 0  |
| Reid, Ferens & Co. . . . .                       | 357  | 0  | 0  |
| FLETCHER, Newcastle-on-Tyne (accepted) . . . . . | 284  | 10 | 0  |

**OLDBURY.**

For erecting a school at Castle Road, Warley.

|                              |        |   |   |
|------------------------------|--------|---|---|
| JACKSON (accepted) . . . . . | £3,405 | 0 | 0 |
|------------------------------|--------|---|---|

**RISHTON (LANCS).**

For the plant, labour, &c., in taking up old setts, removing same, and paving about 2,300 superficial yards in High Street, Rishton, for the Rishton Urban District Council. Mr. J. CORNALL, surveyor.

J. C. HINDLE, Blackburn (accepted).

**ROTHWELL HAIGH.**

For the erection of engine-house and pump-room at work-house. Mr. W. E. RICHARDSON, architect, Rothwell, near Leeds.

|                                                 |      |    |   |
|-------------------------------------------------|------|----|---|
| Airey & Son . . . . .                           | £220 | 0  | 0 |
| Binks Bros. . . . .                             | 213  | 18 | 0 |
| Farrell . . . . .                               | 195  | 0  | 0 |
| J. CHAPMAN & SON, Rothwell (accepted) . . . . . | 191  | 5  | 0 |

**SOUTH SHIELDS.**

For permanent-way and track construction of tramways—Hudson Street and Boldon Lane extension. Mr. S. E. BURGESS, M.I.C.E., borough engineer and surveyor.

|                                                   |        |    |    |
|---------------------------------------------------|--------|----|----|
| Miller . . . . .                                  | £5,543 | 8  | 6  |
| Stark & Sons . . . . .                            | 5,259  | 15 | 11 |
| Griffiths & Co. . . . .                           | 4,703  | 4  | 5  |
| UNDERWOOD & BRO., Dukinfield (accepted) . . . . . | 4,330  | 3  | 6  |
| Freeman & Sons . . . . .                          | 4,071  | 9  | 3  |
| Starkey . . . . .                                 | 4,041  | 0  | 7  |

**SEAFORD.**

For construction of sewer in Dane Road.

|                                        |      |    |   |
|----------------------------------------|------|----|---|
| Young . . . . .                        | £226 | 10 | 0 |
| Green . . . . .                        | 167  | 10 | 0 |
| CHAMBERS, Seaford (accepted) . . . . . | 155  | 0  | 6 |

**STOURPORT.**

For the erection of new baths.

|                               |      |    |   |
|-------------------------------|------|----|---|
| STRINGER (accepted) . . . . . | £311 | 16 | 0 |
|-------------------------------|------|----|---|

**SWANSEA.**

For a power-house at Swansea, for the English Crown Spelter Co. Mr. J. M. V. MONEY-KENT, C.E., engineer, 25 Old Queen Street, Westminster, S.W.

|                                      |        |   |   |
|--------------------------------------|--------|---|---|
| Michael & Co. . . . .                | £1,581 | 0 | 0 |
| Bennett Bros. . . . .                | 1,538  | 0 | 0 |
| Lloyd Bros. . . . .                  | 1,519  | 0 | 0 |
| J. & D. Jones . . . . .              | 1,400  | 0 | 0 |
| Williams . . . . .                   | 1,300  | 0 | 0 |
| WALTERS & JOHNS (accepted) . . . . . | 1,260  | 0 | 0 |

**SWINDON.**

For the erection of schoolroom, for Primitive Methodist Trustees, Upper Stratton.

|                                             |      |    |   |
|---------------------------------------------|------|----|---|
| Tarrant . . . . .                           | £625 | 0  | 0 |
| Kilminster . . . . .                        | 553  | 17 | 6 |
| Harding . . . . .                           | 504  | 0  | 0 |
| Leighfield . . . . .                        | 496  | 0  | 0 |
| COLBOURNE, County Road (accepted) . . . . . | 425  | 3  | 8 |

**TRANSVAAL.**

For the erection of post-office at Zeerust.

|                                  |        |    |   |
|----------------------------------|--------|----|---|
| Schuman . . . . .                | £3,225 | 0  | 0 |
| Van Reenen Mostert & Co. . . . . | 2,808  | 0  | 0 |
| Wulfse . . . . .                 | 2,783  | 0  | 0 |
| Osborn, Thomson & Co. . . . .    | 2,399  | 0  | 0 |
| SPURR (accepted) . . . . .       | 2,300  | 0  | 0 |
| Rutherford . . . . .             | 1,996  | 10 | 0 |

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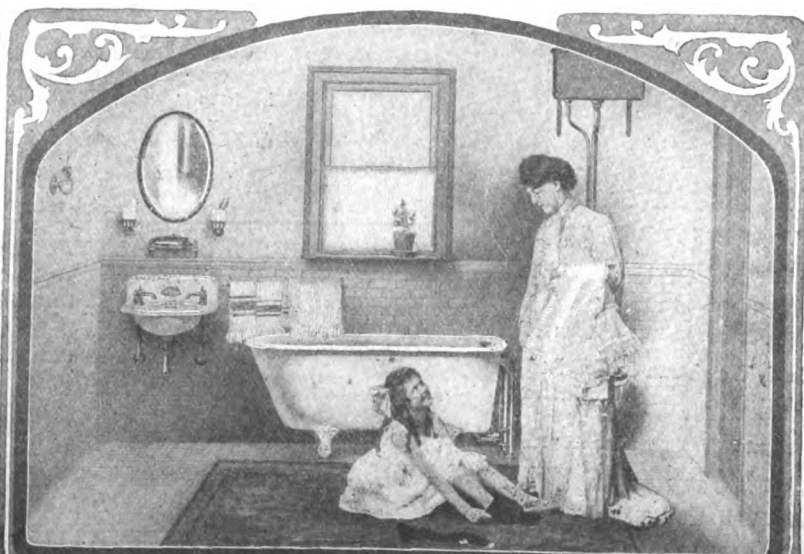


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the conditions upon which the overhead wires were sanctioned were such as practically to meet the wishes of the Council and to insure the wires being placed underground at an early date. The works committee of the Deptford Council reports that "the judgment should be of assistance to this Council in insisting upon any such wires being placed underground in this borough, especially in roads fully built upon."

DR. FRASER, medical officer for a large portion and certainly the most mountainous portion of North Wales, holds very strongly that as it would be wrong to prevent a Welsh town such as Cardiff from taking water from Wales, it would be equally wrong to prevent an English town. "In wild Wales," he states, "we are fortunate in having uninhabited mountain land which forms an excellent gathering ground for the immense amount of pure water carried there by the Atlantic breezes. This collecting area is hundreds of square miles in extent, and a small fraction of the rain falling upon it would amply provide for the crowded towns of England, including London, as well as for the people of Wales. Let us in Wales not grudge the 'cup of cold water' to our less fortunate neighbours. What is needed is not restrictions upon sanitary authorities to prevent them from obtaining the necessary supply of water for the people, but an Act of Parliament securing to the people of one country, without distinction of race or district, the first claim upon our lakes and watercourses for a supply of water for drinking and domestic use. At present this right to abstract from a lake or stream even sufficient water to fill an inch pipe for a village supply does not exist unless a special Act be obtained. This proposed right might be limited to a certain proportion of the average flow. By some such means the present monopoly in a necessity of life would be abolished and the public health would be safeguarded."

THE Blackpool Town Council have agreed to the following resolution:—"That the extraordinary inconvenience and public disorder arising from want of adequate accommodation at the post-office prompted the Council to request the Postmaster-General to proceed at the earliest possible moment with the erection of a new post-office."

### ELECTRIC NOTES.

MR. A. A. DAY, of Bolton, has been appointed electrical engineer to the Sunderland Corporation at a commencing salary of 800*l.* per annum.

THE Corporation of Harrogate have decided not to grant running powers to the Wakefield Electric Tramway Company in the borough of Harrogate.

THE profit earned by the electric tramways in the borough of East Ham, London, amounts this year to over 7,000*l.*

THE electric-light undertaking at Cheltenham has not been satisfactory from a financial point for many years, but it is gratifying to announce that for the past year a profit has been earned of over 2,500*l.*

MESSRS. BRUCE PEEBLES & Co., the contractors for the new Llandudno light railway from Deganwy to Llandudno, have now commenced the work, and it is anticipated that the entire line will be in working order within two years.

THE Kashmir Durbar has, it is understood, entered into a contract with Messrs. Abner Dobb & Co., of San Francisco, and Messrs. The General Electric Co., of New York, for the supply of hydraulic and electric plant respectively, required in connection with the scheme for generating power from the Jhelum, near Rampur.

A SCHEME involving an expenditure of 500,000*l.* is being put forward for the construction of aluminium works on an extensive scale at Kinlochleven, on the borders of Inverness-shire and Argyllshire. The place chosen has an abundant supply of cheap water-power, and at an elevation of 1,000 feet above sea-level there is an excellent site for a reservoir. The reservoir will be about 7½ miles in length, with an average width of over half a mile, and when it is completed it will probably have the largest capacity of any artificial reservoir in Europe. It has been calculated that the approximate capacity of the reservoir will be something like 20,000 millions of gallons. The whole undertaking will cost over 500,000*l.*, and the period of construction is estimated at three years.

THE Ameer of Cabul has, according to the *Pioneer*, determined to employ electric power in the factories to be set up at Jabl-us-Siraj, a town which he is practically creating,

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but the cost of fuel is so high that the driving of dynamos by steam would involve heavy expenditure. There is, however, an enormous amount of water-power running to waste in the Kohistan, and this is now to be utilised. At Jabl-us-Siraj, apparently, the Panjshehr is sufficiently strong to give all the power that is needed, and the necessary works are being undertaken to utilise this. An electrical engineer has been engaged, and machinery will be erected in due course. It is believed that the arms and ammunition factories will be eventually transferred to the new town, and it is probable that manufacturing industries may be located there as well.

THE annual report issued by the Zürich "Bank for Electrical Enterprises" gives some interesting data as to the actual state and future outlook of the Swiss electro-technical industry. Great progress has been made during the course of 1905. The solution of the problem of the application of electricity to railways has made further progress. In Germany the electrification of the State railways in and near Hamburg has been undertaken, whilst in Switzerland Messrs. Brown, Boveri & Co., Ltd., have introduced electric traction into the Simplon Tunnel at their own expense by way of experiment; the initial difficulties have, it is said, been successfully overcome, and the system is now working well. Several other proposals are made for the electrification of Swiss State and other railways, as well as for the utilisation of waterfall. The prospects for the future are considered encouraging.

THE auditor to Newcastle-on-Tyne Corporation, in referring to the tramways accounts says that the reserve account now stands at 128,173*l.*, and that in the opinion of the manager (Mr. Hatton) it should be 189,127*l.*, or 60,954*l.* more, against which there is a surplus on the revenue account for the past year of 18,704*l.* The auditor suggests that the latter sum should be carried to the reserve account. Reference has, he says, been repeatedly made in the press that it is not necessary to have a reserve and renewals fund, and the friends of municipal trading who argue on those lines—viz. that the whole of the net surplus should be devoted to the relief of the rates or the reduction of fares, &c., and that no such fund is necessary, seeing that the capital is being redeemed—are thereby placing the

undertaking in a false position, and it is only a question of years before this fact will be demonstrated. The statement that no reserve or renewals fund is necessary would be strictly correct if the life of the various parts of the undertaking coincided with the terms of borrowing; but since the life of these various parts of the undertaking is shorter than the periods the loans are granted for, and as the Corporation cannot re-borrow without first redeeming the outstanding loans, then, when these parts are worn out and require renewing, it will be necessary to levy a rate for that purpose."

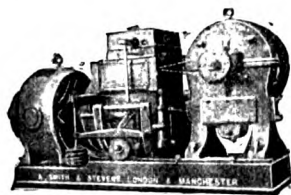
### "THE VANGUARD."

THE practical philosophy which is expressed in the homely proverb, "A stitch in time saves nine," is peculiarly applicable in dealing with outbreaks of fire. If in each case effective measures could be adopted without delay or hesitation, both life and property would be preserved. Unfortunately, the majority of people are overcome by surprise and terror. The hesitation to act enables the flames to advance, and every second makes it more difficult to subdue the enemy. The "Vanguard Hand Chemical Fire-engine," manufactured by the Yorkshire Fire Appliance Company, is well adapted for use in dangerous emergencies. It is from its form, size and colour easily seen, and from the simplicity of its construction it can be made to operate immediately by the most nervous person. There is no part to become stiff from want of use or to break off when handled by excited assistants. What is also important, it can act at a distance of 40 feet. Captains and superintendents of various fire brigades have declared the "Vanguard" to be the cheapest and best apparatus for first aid in case of fire. As one can be purchased for 25*s.*, and the contents are not affected by lying idle, it will be evident that such a guardian can be obtainable by all classes of householders, as well as by those who possess workshops, factories and warehouses. "Withstand the beginning, after remedies come too late," is advice which should be remembered whenever there is the least possibility of a fire arising, and it should urge all to invest in a "Vanguard."

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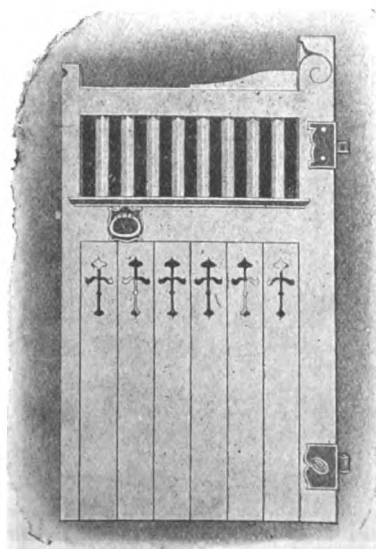
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### BACK NUMBERS.

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**SPRINKLERS AND FIRE ALARMS.\***

In ninety-nine cases out of a hundred a fire can be rapidly and easily extinguished if it be attacked within a few minutes of its starting. A large proportion of serious fires takes place during the hours in which the warehouse is closed, or the occupants of the dwelling-house are asleep, and in order to meet these cases numerous automatic devices have been brought forward to cope with fire in its early stages.

It was in 1864 that Major A. Stewart Harrison first introduced the present form of sprinklers, in which easily fusible metal-plugs or attachments are melted by the heat, any serious rise of temperature opening the flow of water-jets or sprinkling arrangements on the walls, ceiling and goods below. These sprinklers, however, have undergone many modifications since then, and many excellent forms now exist, but although adopted in a good many cases they have not achieved any very great measure of success in this country, a result partly due to the apathy of the owners of property, who are always unwilling to incur considerable initial expenditure over and above insurance for security from a chance of destruction of their property, especially as the feeling seems to exist in their minds that they might as well have their goods destroyed by fire as by water, whilst the spread of the fire to other people's premises is no business of theirs.

Sprinklers have been adopted to a far greater extent in America, where over 200 different forms are in use or suggested, whilst in England only some eight modifications of the original idea have been employed.

The importance of time in the early stages of a fire is so great that a vast amount of work and ingenuity has been devoted to devising fire alarms which on any sudden or undue rise of temperature shall draw attention to the fact. Many of the more serious fires that have occurred have started in closed warehouses, and have smouldered and burnt for hours, the smoke escaping up the chimneys so that no attention has been attracted until a tongue of flame has reached a window. Then the glass breaking air enters,

converting the smouldering mass into a raging conflagration when it is too late to do more than limit the area of the fire. It is in cases such as these that the use of good automatic alarms might save enormous loss.

The earliest forms of automatic alarms consisted of thermostats, which were practically delicate thermometers, so arranged that abnormal rise in temperature caused the expanding mercury to make contact between platinum terminals, and so started the ringing of a fire alarm. These, however, frequently failed owing to the surface of the mercury or platinum becoming acted upon and affecting the contact. In order to obviate this trouble, liquids having a cleansing action were introduced above the surface of the mercury to prevent any amalgamation or oxidation and insure contact.

One class of thermostat now in use is based on this principle, whilst a second kind consists of a closed tube containing mercury, above the surface of which in each limb a volatile liquid is confined, one limb being surrounded by an insulating sleeve. The effect of a sudden rise of temperature on this is to cause the vapour to form more rapidly in the uncoated limb, and this driving the mercury down opens a closed electric circuit, and closes a secondary circuit which transmits a signal to any desired spot. A differential thermostat is also used in connection with a second fixed temperature thermostat that remains stationary until a certain temperature is reached, and then has a long range for a small increase of temperature. After the first warning call has been given a further increase in temperature gives a fire call.

A third form of detector consists of a long copper wire stretched horizontally on a metal frame, which expands under the influence of heat to a far less degree than the wire, and causes it to sag in the centre and lower a suspended metal weight into a small mercury cup, thus completing the circuit and giving an alarm.

I do not wish to discuss the relative merits of the various systems, but must point out that in all such systems dependent upon electric currents, it is extremely difficult to insure connections, &c., from getting out of order. Should a fault take place the whole apparatus fails, and constant testing is necessary to make sure that it is in working order. That is just what the owner will not take the

\* From the Cantor Lectures by Professor Vivian B. Lewes.

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trouble to do. For this reason I think the most valuable suggestion that has been made with regard to automatic fire alarms is to connect up a good indicator with the electric bells of the establishment in such a way that as long as they can be rung the apparatus can be guaranteed in working order. The bells are constantly in use, and any failure at once becomes manifest, and as our own comfort is dependent upon getting it put right at once, it is done, and the alarm kept efficient.

### MANCHESTER SHIP CANAL.

THE engineering department of the Manchester Ship Canal Company successfully completed on Saturday evening the difficult task of laying a 240 ton syphon across the bed of the canal at Frodsham. In order to increase the depth of the water in the canal by 2 feet, as they are empowered to do by their Act of 1904, the company had two courses open to them, namely, dredging or keeping in tidal water to the desired extent. The latter course was decided upon as being the easier and less expensive, but in order that it might be carried out arrangements had to be made for dealing with the Frodsham sewage and the Hoolpool Gutter and draining the low-lying marshlands round about, which would be more subject to floods at high tides under the new conditions. Accordingly Mr. W. H. Hunter, chief engineer to the company, had a two-pipe syphon constructed for carrying this water under the canal into the river Mersey. This syphon is constructed of 6 feet iron pipes, having an inside diameter of 3 feet 6 inches. Two lengths of pipes were strongly bound together and then covered with a coating of cement 5 inches thick, held together by steel wire netting. When completed the syphon was about 180 feet long and weighed 240 tons. To remove it from the wooden frame in which it had been erected at Norton much tackle and 150 men were employed, and it was safely dropped into the waters of the canal under the personal superintendence of Mr. Hunter. This work took three days to do, and on Wednesday afternoon the syphon was towed down to Frodsham Marsh, a distance of 8 miles. The ends, which were sealed, rested upon pontoons, and another pontoon sailed over the centre

supporting it. There was a tug fore and aft. Near the Weaver sluices at Weston Point the syphon went aground, and an hour was occupied in again getting it up. On Thursday the work of placing the syphon in the bed prepared for it at the bottom of the canal was begun, and when partly across the canal the huge mass cracked in the centre. The escapement of air threw up the water of the canal to a considerable height, and the filling of the syphon with water greatly enhanced the difficulty of placing it in position. On Friday a firm of Liverpool "wreckers" were called in to assist, and by seven o'clock on Saturday night the syphon had been duly laid.

Besides doing this work, the Ship Canal Company are contributing 7,500*l.* towards a sewerage scheme for Frodsham, estimated to cost 10,000*l.*, and are also providing the electricity and plant for pumping the sewage to the syphon. The canal is expected to be 2 feet deeper in a week or two.

### THE KINDER RESERVOIR.

THE contractor for the Kinder Waterworks, Mr. A. Kellett, points out that his solicitor, so long ago as August 4, wrote to the Stockport Council stating that "Mr. Kellett personally and myself have never ceased in the demand that the contract works should proceed. It has been pointed out over and over again that Mr. Kellett was ready and willing and desired to proceed. The contract provided for the increase or decrease in the size of the works, and the Corporation engineer, having before him the opinions of Mr. Deacon and Professor Unwin, gave to the contractor, and the contractor accepted, a written order to do additional work pursuant to and covered by the contract. These additional works met the difficulty to which the reports of the engineers had drawn attention, and the contractor was carrying out such works when the waterworks committee intervened, and upon their own responsibility stopped the works and continued the stoppage from October last to the present time, causing enormous damage to the contractor. That stoppage was not because of 'grave responsibilities' imposed on the contractor, but because of 'grave responsibilities' to be faced by the Corporation, and because the Corporation would admittedly have to pay the contractor for such in-

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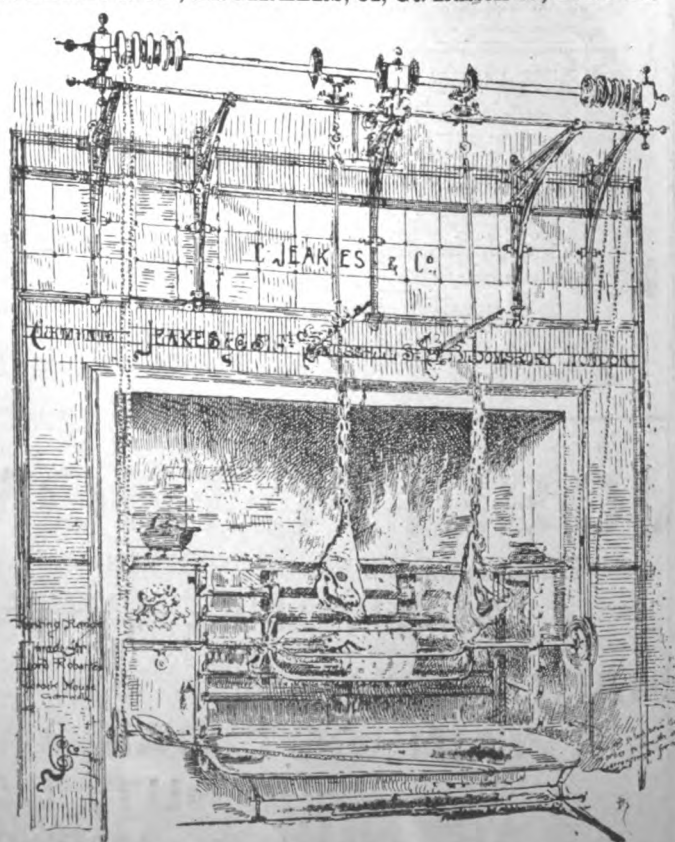
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creased and additional works, estimated, I believe, at as much as 200,000*l*. The contractor has never in any manner or form required anything but to carry out his contract, and until he read the statements in the notice of the 2nd inst. he had never heard of or had mentioned to him any suggestion to the contrary—he had not, for the very simple reason that it never existed, it being well known that the one thing the contractor desired was to utilise his plant and materials. By stopping the works all this time and by now breaking the contract and deciding to abandon it, your clients have consulted their own policy and interests, and they must do so at their own risk and expense."

### CITY BRIDGES.

It is shown by the annual accounts of the Bridge House Estates that the receipts from the property administered by the Bridge House Estates committee for the year ending December 31, 1905, amounted to 151,937*l*., and included a sum of 141,569*l*. for rents and quit rents. The expenditure was 128,048*l*., leaving a balance in hand over receipts of 23,889*l*.

The amounts expended on lighting, cleansing and repairing the City's bridges were as follows:—

|                        | Lighting. | Cleansing. | Repairing. |
|------------------------|-----------|------------|------------|
| London Bridge . . .    | 232       | 750        | 76         |
| Blackfriars Bridge . . | 363       | 750        | 1,210      |
| Southwark Bridge . . . | 159       | 815        | 1,044      |
| Tower Bridge . . . . . | 1,287     | 1,400      | 410        |

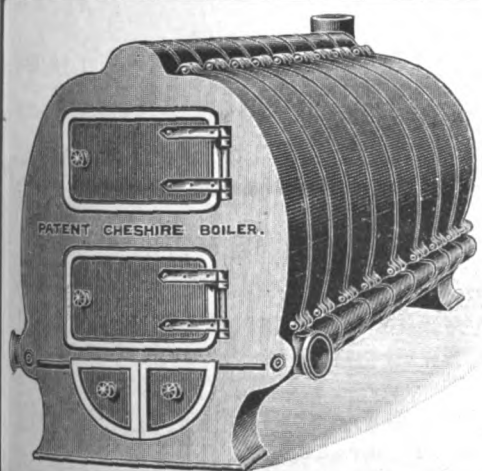
The following were the total charges in respect of the maintenance of the bridges, the figures including the amounts given above:—London Bridge, 1,325*l*.; Blackfriars Bridge, 2,328*l*.; Southwark Bridge, 2,035*l*.; and Tower Bridge, 14,460*l*. In addition a sum of 2,000*l*. was spent on police services for watching the bridges and 105*l*. in an expert's fee for surveying the bed of the river at all the four bridges for two years. The great difference in the cost of the maintenance of the Tower Bridge over that of the others is accounted for by the fact that the Tower Bridge bascules necessitate the working of expensive machinery, and the consequent

engagement of a large staff of engineers, &c. The resident superintending engineer receives a salary of 315*l*., and the wages of his staff amount to 4,732*l*. A salary of 300*l*. was paid to the bridgmaster, while 1,664*l*. was spent in wages to his staff. In addition, 330*l*. was spent in casual labour. The hire of a steam tug for forty-four weeks to assist vessels past the bridge was responsible for 1,440*l*., coal and coke cost 893*l*., oil and stores 312*l*., supply of hydraulic pressure 60*l*., rent of private telegraph wire and maintenance of telephones 51*l*. and fire and boiler insurance 156*l*.

The City's four bridges, which are lighted by incandescent gas under pressure, are admitted to be the best illuminated bridges in the world, and the Corporation of London is justly proud of the fact that its bridges have been built and maintained since their erection—their maintenance alone amounting last year to 20,150*l*.—entirely out of funds belonging to the Bridge House Estates.

### CHEAP HOUSES.

At the Congress of the Incorporated Sanitary Association which was held in Leith, Mr. R. C. Munro-Ferguson, M.P., Leith Burghs, opened a discussion on rural housing. He said on this subject there was no finality; what satisfied to-day was inadequate for to-morrow, and what was remunerative half or quarter of a century ago was a dead loss now. Our forefathers attained the picturesque in their buildings. We had in many cases attained ugliness by dint of considerable expenditure. We admitted, on the other hand, a welcome degree of light and air. We had a good deal to learn yet in the matter of drainage. The rise of wages especially affected the cost of buildings, and hence the necessity of using cheap material—light and rough—which could be clodded with one kind of protection or another. Far greater discrimination was being exercised in the use of material. If they glanced at the main outlines of the problem, they found that as regarded agricultural housing the existing provision was ample, because land had been unfortunately denuded of population. On the other hand, in the suburbs of populous centres, in villages, in the seaside resorts and in the Highlands, where houses were good



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but costly, there was, he thought, a great opening for a cheap house with four or five rooms and up-to-date sanitation. Small holdings would not arise solely under the wand of a landlord; much else was required to make them a success. This, however, he would say, so far as the question of equipment and sanitation was concerned, land could be as cheaply equipped for small holdings as it had been equipped for many of the existing and stately steadings. He thought some permanent sphere for practical experiment was required, and he would like the Government, together with architects, inspectors and others acting in combination, to maintain an experimental establishment where all the new schemes for building and sanitation might be set up, and where prizes might be given for annual distribution. He would commend the suggestion to the notice of members of the Congress, as well as to that of the Local Government Board and the Government. In spending on agricultural land the outlay was often rather in the nature of a rich spiritual experience than of a remunerative return. At any rate, it had yielded no direct return to him, while rents had fallen to about one-third. On the other hand, buildingwork might be done now for about one-half of what it was done for by him twenty or thirty years ago.

Wood, as a material for construction, was singularly neglected in this country. By having double walls lined with sawdust, or with an air space, or with lath and plaster, as warm a house could be provided as one of stone. A house of this kind, with a bath and scullery, 24 feet by 17 feet, cost about 55*l.*; a three-roomed house with outbuildings, 36 feet by 15 feet inside, cost about 100*l.*; a four-roomed house, 125*l.*; a five-roomed house, with bath and scullery, and larder and coal-room, under one roof, 170*l.* The last named was a house he had lately experimented in, and which he let at a rent of 16*l.*, and it was suited to the suburbs, villages, seaside resorts, or small holdings. These economies in material would not admit of provision for sanitation. What was needed for the supervision of such things was a reconstituted Government Board for Scotland, with a practical representative element upon it. Lawyers and experts were saving the country in many ways, but it was rather as advisers than administrators. They must have a practical man as an adminis-

trator, and it was the administrator who was lacking under the whole bureaucratic system of government.

Mr. Robert Lindsay, sanitary inspector, said he was not quite sure any of the local authorities had laid it down as a condition that byres had to be floored with concrete—at least, not so far as Midlothian was concerned—but from personal experience he could say that concrete was the best material that could be used for the creation of a good, healthy, clean atmosphere. A house of two apartments and scullery could be built in Midlothian at 5½*d.* to 6*d.* per 1,000 cubic feet of air space. This was within the earnings of a man with 1*l.* or 25*s.* a week.

Mr. Munro-Ferguson, in answer to a question, said he did not think there was any fear as to the durability of the houses. The roof, he imagined, would be likely to go first. The wood, he explained, was either injected with creosote for people who did not object to the smell, or it was dressed with carbolineum.

### MISTAKES IN WATERPROOFING.\*

WATERPROOF engineering is wholly a modern profession. Its field is the designing of structures to properly receive waterproofing. In the broader sense its mission is the safety and preservation of structures and the conservation of public health. Waterproofing is, itself, practically a modern art. Only in recent years has there been an earnest effort to place it on a scientific basis and deduce any system of practice. Old-school methods are as unfitted for present-day construction as the bridges of twenty years ago are unfitted for the modern locomotive.

The majority of engineers and architects still follow old-school methods, believe that concrete is waterproof—especially if it be reinforced—and give no special attention to the importance of design. A faulty design will invalidate the best methods and materials. This is particularly so in bridgework; if the bridge is not properly designed to receive waterproofing it is almost impossible to make the deck or floor watertight.

\* Abstract of a paper read before the American Society for Testing Materials by Edward W. D. Knight, published in the *Engineering Record*.

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It is a mistake to use a set design or specification for general work. Each condition has its characteristics, and should be carefully considered, especially with reference to the nature of the climate, water, soil, rock, water-pressure, use of the structure and other conditions.

The mistake is always in asking, not how much, but how little waterproofing can be used. Contemplate using but four layers of the usual waterproofing materials in work so important, when no fewer than six or eight should be used. Nothing in construction work pays better than good waterproofing. Insufficient, weak, defective waterproofing is a thousand times worse than no waterproofing. The vital work of rapid transit subway or tunnel waterproofing is as a rule done half-way, with insufficient headroom or other provision for properly installing the waterproofing. The usual cause is that tunnel-owners, through false economy, fail to make the necessary appropriation. At the end of ten years they will regret not having doubly provided for and reinforced the entire waterproofing, bottom, sides and top.

The writer firmly believes that no material should be used for waterproofing which is not elastic. He also as firmly believes that no material should be used for waterproofing which becomes hard or vitreous. These two facts seem so self-evident that they will in time, no doubt, be taken as accepted principles.

There is in all nature no waterproofing which is hard. The writer thinks it a serious mistake, therefore, to attempt to waterproof concrete by hardening the surface or by using thereon a cement-plaster. We know that this method of attempting to waterproof possesses attractive features which appeal to many engineers and architects, but notwithstanding this fact, our personal opinion is that these features are misleading. The writer is a representative of the school of elastic waterproofing as opposed to the school of hard, vitreous or rigid waterproofing. The writer, in expressing, based on tests and general experience, his own opinions—for which, of course, the Society is in no sense responsible—is very sincere in opposing the principle of rigidity in waterproofing, which he thinks is dangerous and will, in its practice, eventually end disastrously. It is not opposition to material but to method.

The fact that the method may have in certain cases

served well for several years misleads one into using it for permanent work. By the very nature of a hard surface, that surface must serve for a while, but also by that very hardness will the waterproof value of the surface be destroyed. Waterproofing is not what it is to-day, but what it is many years hence.

We are told that the hardening process, or the cement-plaster method, must be applied to the inside surface of the wall, where it can be easily reached and the cracks patched. Patching is not perfection. Waterproofing must not crack; if elastic it will not crack. Anyone recommending the application of waterproofing on the interior surface of a foundation wall certainly knows little of the right theory of waterproofing. It is against common sense and the logic of things to place the waterproofing in front (where in time it can be pushed off) of the line of resistance (the wall) instead of behind it. One of the chief uses of waterproofing is to keep water entirely from the wall, instead of allowing it to come to and through it, and by capillarity work up and saturate the entire wall, resulting in the course of years in the hardened cement, or even paint coating on the other side, being pressed off.

Another thing, water should not be fought; it must be led. Waterproofing is part of the general scheme of drainage. Its purpose is to check water, to lead it and direct its flow naturally to some point where it can be disposed of through properly arranged drains. Water will always find the weakest spot in the strongest cement, though it may travel a long way and take a long time to do it. The cement-plaster theory seems to have no bearing whatever on drainage. It means the fighting of water, and from the wrong side of the wall. The hardness of the plaster may keep back water for several years, but it must in time come h rough and the cement come off.

Even though the coating of the cement be placed on the outside of the wall, where it then cannot be readily reached to patch cracks, it will in the majority of cases eventually crack because, being set hard and rigid, it cannot accommodate itself to contraction and expansion. It could not possibly be used on a bridge floor as the vibration would destroy it, nor can it be used on a roof.

It may be possible to make a cement briquette impervious to water, but it is impossible to extend this briquette

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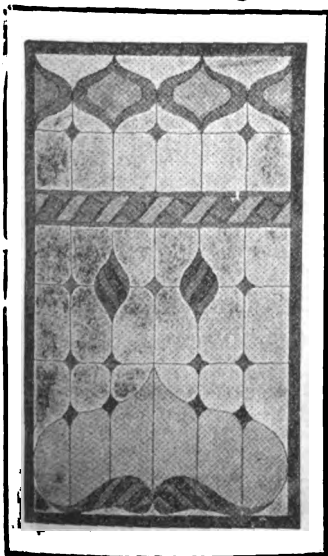
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into monolithic form and obtain permanently watertight results. A laboratory test of briquettes in this respect, or the test of a specially treated cement box filled with water and remaining watertight, while showing that cement in itself can be made impervious to water, is not, the writer believes, of any real value for practical work, since the conditions are altogether different. Masses of cement are subject to certain climatic changes, shocks, jars, vibrations, settling, expansion and contraction, which will negative any test of the waterproofness of simply the specially treated cement itself in small briquette form. We condemn not a material, but a method, and judge it not by laboratory experiments or exceptional cases where it has served, but from the viewpoint of existing conditions and general work.

We believe that the principle of rigidity in waterproofing goes backward instead of forward. Mastics (composed of asphalt or coal-tar pitch mixed with sand, &c.), are, for example, more yielding for waterproofing than cement coatings. Yet experience shows that almost invariably even mastics will in cold weather crack clear through with any settling or expansion and contraction.

Burlap is frequently incorporated to prevent this very cracking; but experience also plentifully shows that this method—not the material, please note—is not dependable, because cracks will still occur, and the burlap not being waterproof, of course permits the water to pass through. In many cases tar paper is used instead of burlap.

There being in all nature no waterproofing which is hard or rigid, the elastic method of waterproofing seems to be as near a natural waterproofing as it is possible to devise. The elastic waterproofing is not confined to one, but may be composed of many suitable materials. It may be described as follows:—It should resemble a membrane or skin; be, in itself, that is, in one sheet, absolutely impervious to water; be flexible, tough and elastic; be made of materials specially made to withstand the injurious action of water and all underground conditions. As many sheets or layers of this impervious membrane or skin should be cemented or veneered together as the conditions require. This stratum of waterproofing when in place must be independent of, a thing apart from, the surface or structure waterproofed, which may vibrate or settle, twist

or crack, expand and contract, without in the least affecting it, exactly as the hide of a horse or the skin of one's hand is free and independent of the surrounding tissue so that it may readily and naturally yield to every move of the body or the hand. This principle of elasticity, coupled with independence of movement, in waterproofing was termed by the writer some time ago the "Improved Membrane Method," to distinguish it from the old-school process of sticking the waterproofing fast to everything to be waterproofed.

It is a question of method, and, as can be readily observed, is diametrically the opposite of the principle of rigidity in waterproofing, no matter what may be the materials.

A common and serious mistake in the application of waterproofing materials is in attempting to do the work with incompetent and inexperienced men. The average contractor will try to do the work with his own men, usually ordinary labourers, or will sublet it to a roofer, but roofing is not waterproofing. The average roofer thinks he knows how to waterproof, but unless he has many times had the actual experience, he knows really little of good waterproofing. It takes more time and patience than roofing, the method of applying the materials is quite different, and if rightly done should receive much higher pay than roofing, which is ordinarily a very simple and easy operation. Waterproofing, however, especially water-pressure work, requires not alone skilled labour, but frequently considerable engineering skill.

In applying waterproofing, success depends on the perfection of every detail. The best materials imperfectly applied are worthless. The smallest hole caused by a dropped axe, crowbar or other tool, unseen and covered, may, after the pumps are stopped, ruin the entire work.

It is a mistake not to place in charge of the waterproofing an inspector who thoroughly understands such work. It is also a mistake to leave the work to the contractor. The preparation of the surface to be waterproofed so that it be perfectly smooth is important, as is also the careful protection of the waterproofing until it is completed and until the permanent protection is placed upon it. A very serious mistake is in not properly sloping a flat surface to drains since water must be kept moving.

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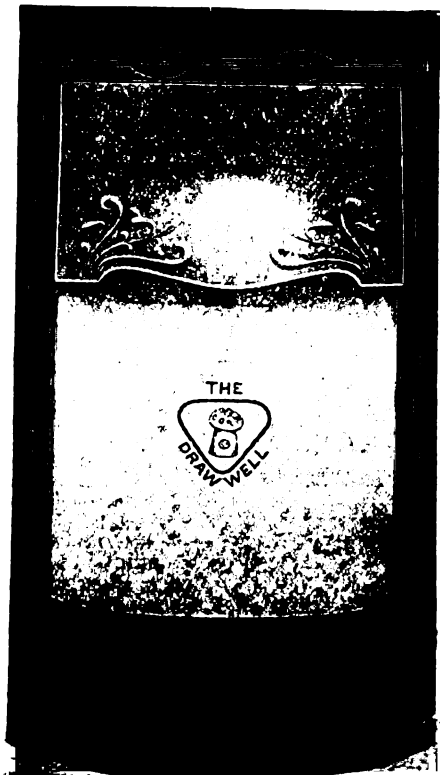
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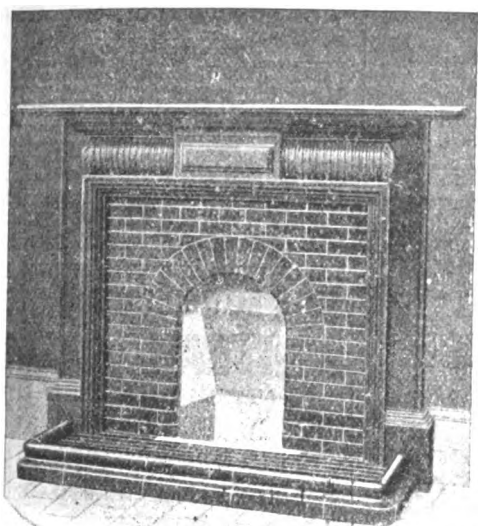
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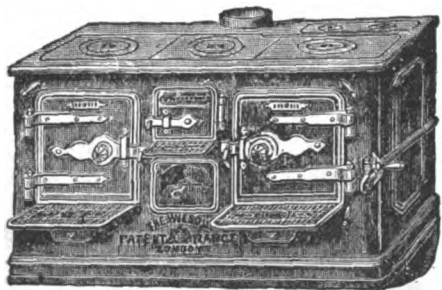
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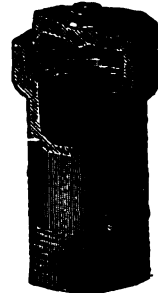
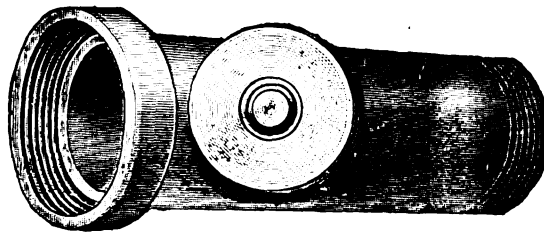
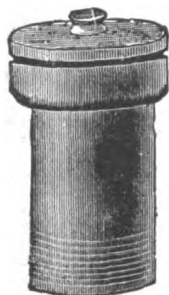
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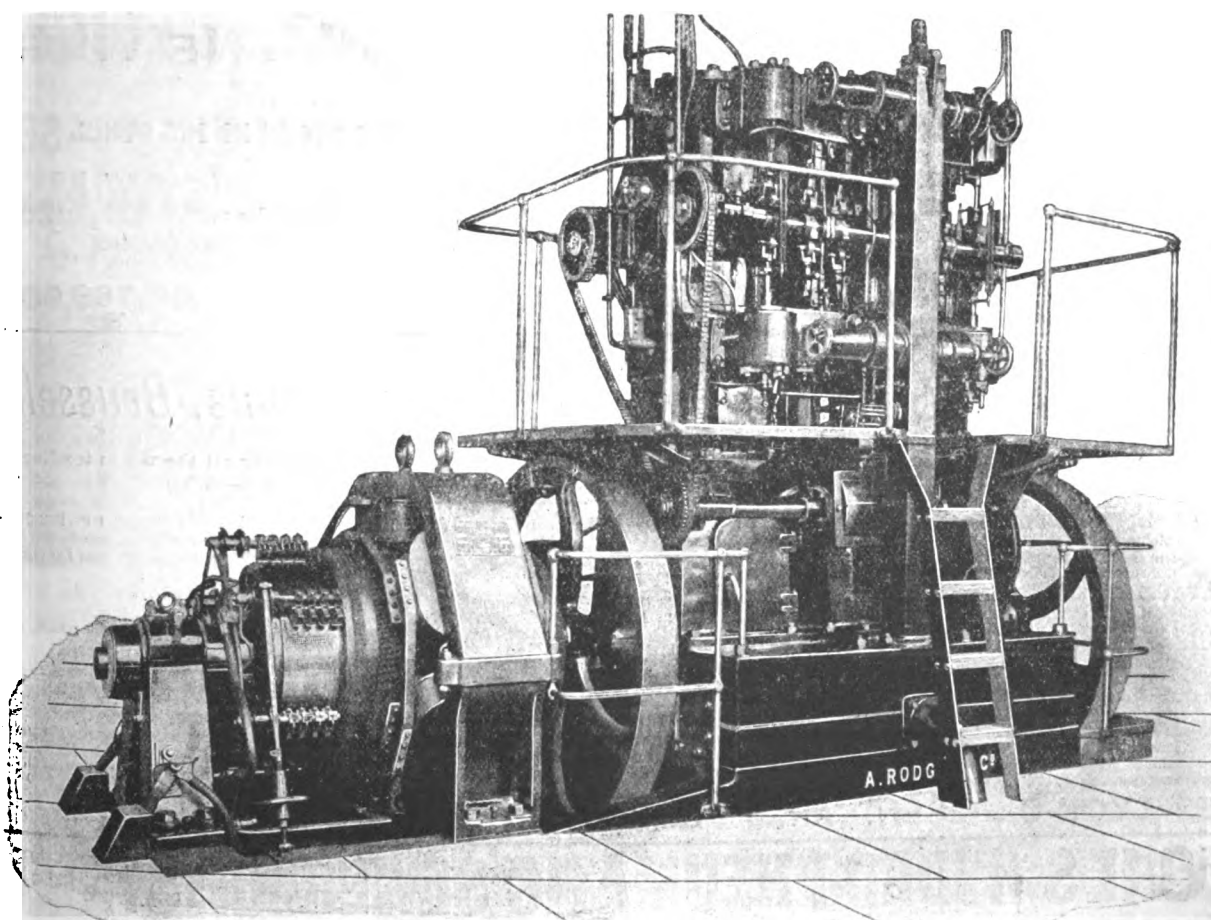
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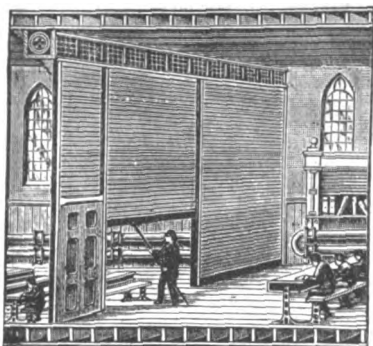
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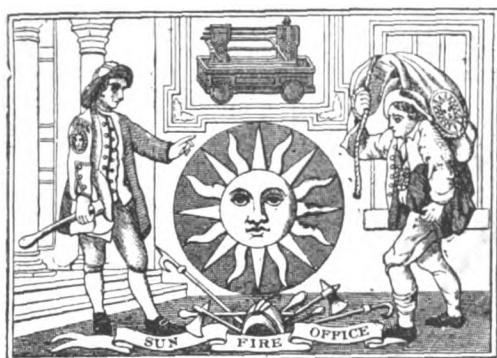
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### TRADE NOTES.

MESSRS. OETZMANN & Co., of Hampstead Road, London, have supplied all the furniture for the new play "Toddles" produced at the Duke of York's Theatre.

MESSRS. MELLOWES & Co., LTD., of Sheffield, have secured the contracts for the glazing of the roofs of the following:—Extensions of the works of Messrs. Cammell, Laird & Co., Sheffield; Messrs. Ruston, Proctor & Co., Lincoln; and Messrs. Markham & Co., Chesterfield; also for the swimming-baths in Gibson Street, Sheffield.

### NEW CATALOGUE.

THE catalogue of Messrs. Hartley & Sugden, Ltd., is so well arranged and definite, there is no surprise in the demand for copies. The latest issue preserves the character which gained success for its predecessors. The limitations of the subject are recognised, but within them there is a surprising variety of invention. The notes and articles on heating by low-pressure hot-water and low-pressure steam contain excellent information. Although we have had an almost unprecedented term of hot weather, it would be fallacious to imagine winter will henceforth be deprived of its severity. Prudent people will therefore be acting consistently by considering the pages prepared by Messrs. Hartley & Sugden, Ltd.

THE Gorton District Council are seeking sanction from the Local Government Board for the borrowing of 11,866*l.*, including 8,541*l.* for private street works improvements, and 2,308*l.*, the excess of expenditure in the erection of a new refuse destructor. For the latter 8,861*l.* was originally sanctioned, and the extra expense is in erecting a weigh-house, &c. A scheme of sewage extensions and alterations is also being considered, and sanction to borrow at least 40,000*l.* will be made later, including 10,000*l.* for the purchase of land to effect this scheme. The engineer's scheme for this work has been approved.

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## VARIETIES

AN international industrial exhibition is to be held in Amsterdam during the summer of 1908.

THE work of restoration of St. Tudno's Church, Llandudno, is to be shortly commenced.

THE Corporation of Portsmouth have decided to acquire the South Parade Pier. They have also decided to rebuild it at an estimated cost of 60,000*l*.

FOR the purpose of winter entertainments at Torquay it is probable that a handsome pavilion will be erected in the Princess Gardens during the autumn.

AT the General Hospital, Bristol, extensive alterations are to be shortly carried out. The estimated cost is 10,000*l*.

THE thirty-second annual Congress of the Sanitary Association of Scotland was held in Leith. The next congress is to take place in Aberdeen.

A COAL bore has been sunk near Cameronbridge, N.B., to a depth of 4,000 feet. At that distance from the surface the Dunfermline splint coal, a seam of splendid mineral, 8 feet in thickness, has been probed.

A NEW church is about to be erected at Mount Hermon, near Woking, to accommodate 500 people, at the expense of the former vicar, the Rev. W. F. T. Hamilton, vicar of Cromer, in memory of his late wife.

THE Sheffield Board of Guardians have approved a plan for extending the nurses' home on the west side of the hospital, to provide twenty-three additional beds, at an estimated cost of 3,500*l*.

THE Salford Council have resolved that a special committee be appointed to inquire and report on the desirability of establishing a works department to carry out building and other works for the Corporation without the intervention of contractors.

LAND in the county of Buckingham has very considerably increased in value owing to the improved railway facilities offered by the Great Central Railway Company, and all through that district building operations are likely to be very extensive in the coming year.

AN exhibition opens on Saturday next at Newcastle-on-Tyne, and will remain open until October 6. From the list of exhibitors it would seem to be chiefly of a local character. The firms exhibiting are principally connected with the building and engineering trades.

THE public works and buildings committee of the Oldbury District Council report that many of the new houses in the Lightwoods district are being erected with very small living rooms, and they regret that the Council have no statutory powers to prevent the erection of such houses.

THE Bury Town Council have adopted a resolution to the effect that from and after January 1 next proceedings would be taken against any manufacturer allowing the emission of black smoke for more than seven minutes during the hour. At present the period allowed is ten minutes in the hour.

AT Liverpool an inquest was held on September 11 to inquire into the cause of death of Mr. Richard Philip Davies, a paint manufacturer. It seems that during the late hot months an explosion took place at his works, and that Mr. Davies sacrificed his life in an endeavour to save the life of one of his workmen.

THE South Wales steelmakers have decided to form an association, to be known as the South Wales Siemens Steel Association, having for its object the protection of makers' interests and the regulation of trade. Arrangements were made whereby funds will be deposited to place the new association on a proper basis.

PROCEEDINGS have been commenced by Messrs. Shipstone, a large firm of local brewers, seeking for an injunction restraining the Nottingham Corporation from contaminating the plaintiffs' wells by pouring polluted matter into them from Basford Gasworks, and claiming damages. A committee has been appointed by the Corporation to take steps to defend the proceedings.

MESSRS. W. HARLAND & SON, of Merton, have brought out a "Souvenir of the Voyage to India of H.R.H. the Prince and Princess of Wales." It recalls the circumstance that their "Snowwhite" enamel was exclusively used in the decoration of the *Renown* and the *Terrible*, and withstood the action of the hot sun as well as the sea water, besides imparting a festive aspect to the vessels.

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MR. R. H. BICKNELL, an inspector of the Local Government Board, held an inquiry at the municipal offices into an application by the Liverpool City Council for power to borrow 51,500*l.* for the acquisition of the Allerton Hall estate as a burial-ground for the townships of Toxteth Park, Wavertree and Garston. The scheme was strongly opposed by the Widnes Corporation on the ground of its risk of polluting their water supply.

The Bolton Corporation's Hacken sewage works extension was formally opened on the 6th inst. The new works had become necessary very largely as the result of the extension of the borough. The estimated cost of the works was 71,672*l.*, and it is anticipated that the estimate will not be exceeded. The total capital expenditure on the sewage scheme at Hacken and Rhodes Farm amounts to 217,000*l.*, or 1*l.* 4*s.* 5*d.* per head of the population.

The Glasgow Corporation will at their next meeting consider the following motion:—"That it be remitted to a special committee to consider and report on the expediency of instituting in the public interest a works department of the Corporation, which committee shall be charged with the duty of carrying out, where practicable with its own workmen, the work that at present is executed for the Corporation by private contractors."

An official advertisement has appeared intimating that pursuant to the 48th section of the London Building Act, 1904, notice is given that the London County Council did on August 27, 1906, consent to the erection of a building to be known as the Piccadilly hotel, to abut upon Piccadilly, Piccadilly Place, Vine Street and Air Street to a greater

height than that prescribed by the above-mentioned Act. Mr. W. Woodward and Mr. E. A. Gruning are joint architects.

It is proposed to hold an exhibition at the Horticultural Hall, Westminster, from May 24 (Empire Day) to June 8 next year, to bring together the various facilities and commodities connected with and appertaining to travelling and exhibiting the greatly enhanced comforts which are now provided for the traveller, whether on business or pleasure bent. The exhibition will be known as the Travel Exhibition, and a list of patrons and an advisory committee are in course of preparation. The offices of the promoters are at 140 Wardour Street, London, W.

The new water supply for Scunthorpe was inaugurated on the 7th inst. At the pumping station two sets of engines were put down, each capable of pumping 25,000 gallons per hour into the reservoir, with a capacity of 750,000 gallons, which is two miles away on Sawcliffe Hill. The power station, for generating electricity for pumping, is at the gas-house, Scunthorpe, and it is conveyed to the pumps, five miles away, by means of armoured cables. The service reservoir is a covered one, and is 100 feet above the town. The cost of the scheme was 17,013*l.*, and the work has been carried out under the superintendence of Mr. A. M. Cobban, the Council's engineer, whose scheme it is.

The Right Hon. L. V. Harcourt, First Commissioner of Works, visited the Court of Session, Edinburgh, on the 7th inst., and inspected the building with the view of considering the proposals which have been made for improving the accommodation of the Law Courts. The scheme has been prepared by Mr. W. T. Oldrieve, of the Office of Works, and includes, it is understood, the setting back of the building to the south on the open space next the Cowgate, the enlargement of the five outer house courts, the provision of waiting and retiring-rooms for witnesses, rooms for officials and improved restaurant accommodation.

The Birmingham lodge of Operative Stone Masons recently announced the intention of withdrawing from the Birmingham Trades Council in consequence of internal disagreements. The secretary has consequently been instructed to write to the Stonemasons Society expressing regret at their withdrawal from the Trades Council, and

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requesting them to reconsider their decision, believing that it would be better both for the stonemasons and the Trades Council that they should work jointly for the furtherance of trades unionism in Birmingham. A deputation is also to be appointed.

THE Liverpool City Council have sold for 70,000*l.* the fee simple in the northern portion of the George's Dock site, situate on the north-west side of Water Street continuation and south side of St. Nicholas Place, containing about 6,807 square yards, to the Royal Liver Friendly Society. The total area of the land in question is 6,807 square yards, but the net amount available for building upon is not more than 5,880 yards. The price over all for the net building land works out at 11*l.* 18*s.* 1*d.* against 11*l.* 8*s.* 6*d.* paid by the Council when they purchased the site for street improvement purposes. The building to be erected by the Society is expected to cost 300,000*l.*

SURVEYS and borings are in progress for the location of a great bridge across the St. Lawrence river at Montreal, Canada, which is to be built by the Montreal Bridge and Terminal Co., and with the terminal building to be erected in connection with it involves an estimated expenditure of 12,000,000 dols. The structure will provide for several railroad and trolley tracks, highways and sidewalks, and will have a 1,500-foot cantilever span at a clear height of 150 feet over the channel, besides shorter spans and about 1½ miles of steel approaches. The river at the point where the bridge is to be located is 30 feet deep, with a very swift current, and is yearly obstructed by enormous fields of ice. The substructure will involve at least two piers that will have to be built in some type of pneumatic caissons. Mr. F. Stuart Williamson, of New York, and Mr. F. W. Fox, of London, are the associated engineers for the company that is forwarding the project.

THE United States Department of Commerce in a report make a comparison between the imports and exports of steel and iron from the three leading iron countries—Great Britain, the United States and Germany—for the first four or five months of this year. The figures relate to pig-iron, semi-finished steel and finished material, but do not include ore and machinery. From Great Britain in the first five months of 1906 the total exports, amounting to 1,732,513

gross tons, show an increase of 307,900 tons over the corresponding period of 1905, while imports, which totalled 633,677 tons, show an increase of 82,928 tons. Germany, in the first four months of the year, exported 1,214,109 metric tons, which gives an increase of 251,183, and her imports of 146,117 tons show an increase of 43,959 tons. In the same period the United States exported 474,031 gross tons, or an increase of 154,419 tons, and imported 165,429 tons, an increase of 67,314 tons.

A HOUSING scheme for Ryhope and Tunstall, two mining villages near Sunderland, has been passed by the local District Council, the cost of which is estimated at 20,000*l.* The new houses will cover an area of two acres in each village, and the scheme will be self-supporting. In all, there will be 96 dwellings, which will be separated into 12 blocks of eight each, to accommodate 528 persons. Each block will provide for 10 families, and will comprise respectively four self-contained houses with one living-room, three bedrooms, scullery and bath, &c., each letting at a rent, including rates, of 5*s.* 9*d.* a week; two self-contained houses with one living-room, two bedrooms, scullery, bath, &c., each letting, inclusive of rates, for 4*s.* 9*d.* a week; two flats containing one living-room, two bedrooms, scullery, bath, &c., at a rent, also including rates, of 4*s.* 3*d.* a week; two flats of one living-room, one bedroom, scullery, bath, &c., letting, including rates, for 3*s.* 9*d.* a week. Each house will be provided with water carriage and garden space.

An arbitration case between the Woolwich Borough Council and the Postmaster-General with regard to the construction of overhead telegraph wires was recently decided. The Woolwich Council contended for underground instead of overhead wires in certain roads in the borough, a claim which the Postmaster-General rejected. The judgment provides:—"That upon twenty-four responsible persons becoming bona-fide subscribers entitled to the use of the telegraphs aforesaid the Postmaster-General shall cause all the telegraph wires and poles aforesaid to be removed and the telegraphs to be placed and maintained underground throughout the streets and roads aforesaid." In a letter to the other councils announcing the decision the town clerk of Woolwich says that, although his Council was not successful in obtaining underground wires along the roads referred to in the case submitted for arbitration,

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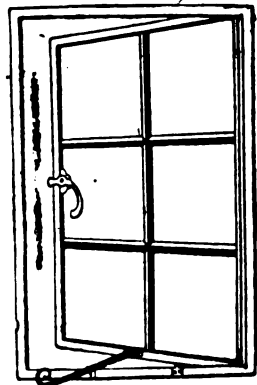
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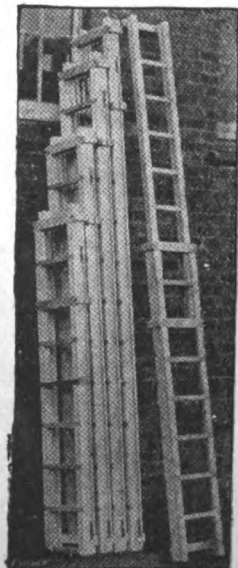
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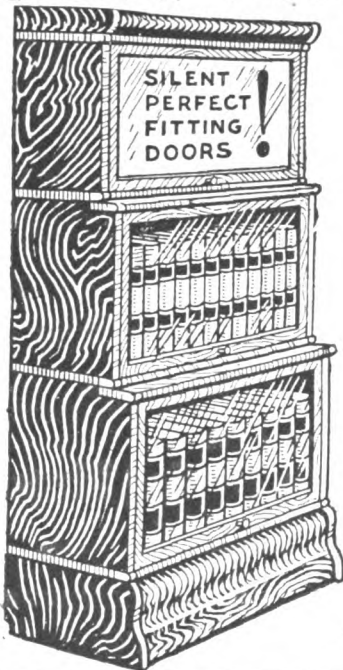
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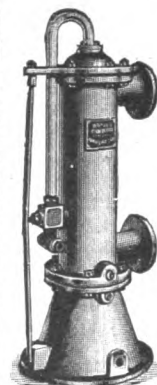
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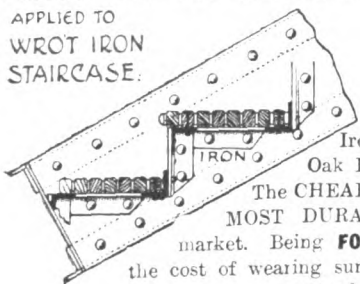
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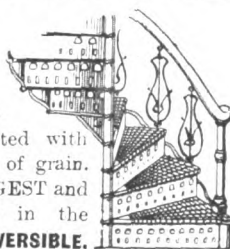
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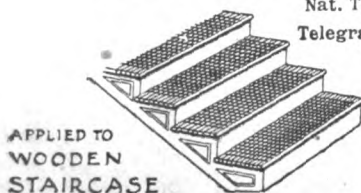
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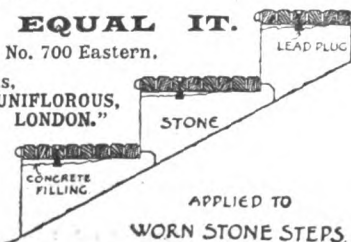
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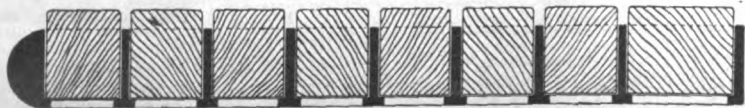
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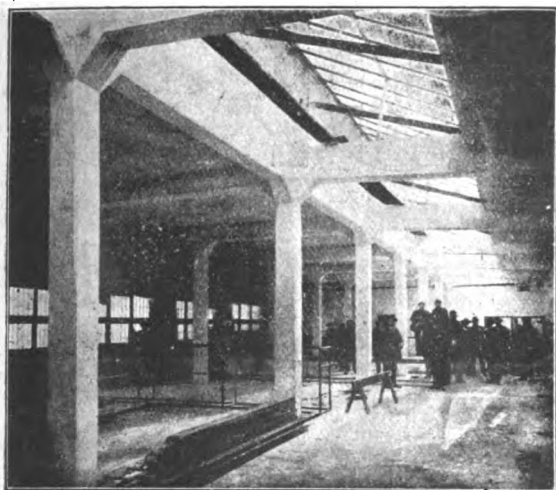


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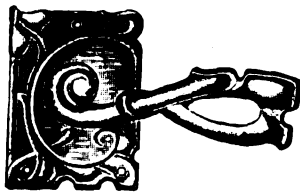
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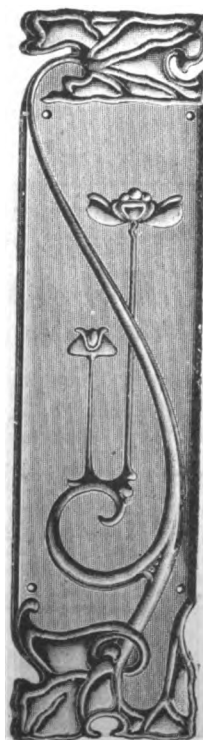
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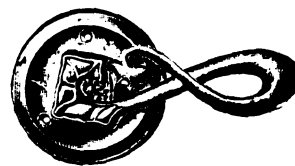


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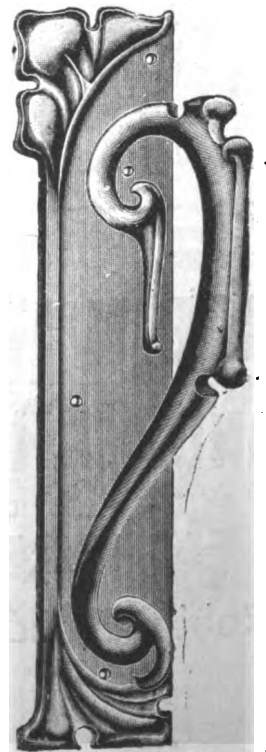


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FRIDAY, SEPTEMBER 21, 1906.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

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## Important Notice to the Architects and Civil Engineers of Westminster.

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### NOTICE TO ADVERTISERS.

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### EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further

answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

### TENDERS, ETC.

\*\* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

### COMPETITIONS OPEN.

GAYWOOD.—Oct. 22.—The Norfolk education committee invite plans, specifications, elevations and estimates for a new school. The plan (if any) selected will be accepted subject to the approval of the Board of Education. Particulars can be obtained on application to the Secretary, at the County Education Office, 57 London Street, Norwich.

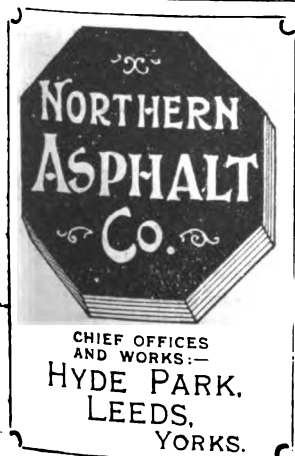
MONTEVIDEO.—Dec. 14.—La Comision Nacional de Caridad require competitive plans for new founding hospital with approximate cost. Plans and report, under mottoes, and, in sealed envelope, name and address of competitor. The four selected plans will receive 212/ each, and will be asked to further compete. Further particulars from the Consulate-General for Uruguay, 5 and 6 Clement's Inn, Strand, W.C.

### CONTRACTS OPEN.

ASHFORD.—Sept. 27.—For building of laundry at the Council schools at Ashford, Middlesex. Deposit 5/. Mr. F. G. Beeching, clerk to the managers, West London District Schools, Ashford, Middlesex.

BEVERLEY.—Oct. 1.—For the erection of extensions to the East Riding of Yorkshire County Council offices. Deposit 17. 1s. Mr. B. S. Jacobs, architect, Bowlalley Lane, Hull.

CHADWELL HEATH.—Sept. 22.—For the following works, for the Essex education authority (Romford district committee):—(1) Enlargement of infants' school, Chadwell Heath, and (2) erection and completion of a mixed school at Chadwell Heath to accommodate 300 children. Deposit 21. 2s. Mr. James Kennedy, architect, 25 Bedford Row, London, W.C.



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**COSTON AND RUNHALL.**—For the construction of a foot-bridge over the river, between the parishes of Coston and Runhall, Norfolk, for the Forehoe Rural District Council. Mr. Herbert Wade, district surveyor, Crownthorpe, Wymondham.

**COUNDON.**—Sept. 29.—For additions to Hare and Hounds inn. Mr. T. H. Murray, architect, Consett.

**DEVIZES.**—Oct. 3.—For the erection of shedding and the whole of the other necessary works in connection with the showyard for the meeting to be held at Devizes in 1907, for the Wiltshire Agricultural Association. Deposit 1*l.* 1*s.* Mr. James Welch, secretary, Market Lavington, Devizes.

**DEWSBURY.**—Sept. 27.—For the erection of extensions to the infirmary at the workhouse. Messrs. Holtom & Fox, architects, Corporation Street, Dewsbury.

**HALIFAX.**—Oct. 6.—For mason, carpenter, joiner, plasterer, slater and painter's work in erection of five dwelling-houses at Holywell Green. Messrs. Chas. F. L. Horsfall & Son, architects, Lord Street Chambers, Halifax.

**HAVERFORDWEST.**—Oct. 20.—For the construction of the meat market, including new steel roof with elliptical lattice-braced principals, &c., for the Corporation. Deposit 2*l.* 2*s.* Mr. J. Preece James, architect, Tenby.

**HEMEL HEMPSTEAD.**—Sept. 28.—For the rebuilding of a county bridge and works of widening the main road, embracing alterations to buildings at Two Waters, Hemel Hempstead. Deposit 2*l.* 2*s.* The County Surveyor's Office, Hatfield.

**IRELAND.**—Sept. 26.—For the erection of artisans' dwellings on Banbrook Hill, in the city of Armagh, the clearing and laying-out of the site, the construction of roads, paths, sewers, manholes and other works, for the Armagh Urban District Council. Deposit 1*l.* Mr. F. Bergin, B.E., 36 Westmoreland Street, Dublin.

**IRELAND.**—Oct. 5.—For building a technical school at Strand Road, Londonderry. Deposit 2*l.* 2*s.* Mr. Edward J. Toye, architect, 20 Great James Street, Londonderry.

**JACOBSTOWE.**—Sept. 22.—For rebuilding the county bridge at Broomford, in the parish of Jacobstowe, Devon. Mr. Samuel Hooper, surveyor, Hatherleigh.

**KEIGHLEY.**—Sept. 26.—For alterations to conveniences, Parkwood Council School. Mr. Walter Fowlds, A.M.I.C.E., borough engineer.

**KINGSTON-ON-THAMES.**—Sept. 25.—For proposed addition to the Gladstone Liberal Club. Mr. B. A. Keene, secretary, Elm Road, Kingston-on-Thames.

**LEVENSHULME.**—Oct. 4.—For the erection and completion of technical school at the rear of the Chapel Street Council school, Chapel Street. Deposit 3*l.* 3*s.* Mr. Henry Littler, architect, 16 Ribblesdale Place, Preston.

**LONDON.**—Sept. 27.—For additions and alterations in the building at the electricity works, Osborn Street, Whitechapel, E., for the Stepney Borough Council. Deposit 5*l.* Mr. M. W. Jameson, A.M.I.C.E., borough engineer, 15 Great Alie Street, Whitechapel E.

**MANCHESTER.**—Sept. 25.—For the erection of a steel parapet, &c., at Oxford Street bridge, over the Rochdale Canal. Deposit 1*l.* 1*s.* The City Surveyor's Office, Town Hall, Manchester.

**MIDDLESBROUGH.**—Sept. 24.—For the whole or the various works required in the erection of Wesleyan church, Woodlands Road. Messrs. Danby & Simpson, architects, 73 Albion Street, Leeds.

**NETHER ALDERLEY.**—Oct. 3.—For alterations at Nether Alderley Council school, Cheshire. Mr. H. Beswick, county architect, Chester.

**NEWTON ABBOT.**—Sept. 26.—For construction of a concrete bridge over the stream by Cricket Field Terrace and other works in connection therewith. Deposit 1*l.* 1*s.* Mr. Lewis Stevens, surveyor, Town Hall, Courtenay Street, Newton Abbot, Devon.

**PENZANCE.**—Sept. 29.—For the erection of a seaman's institute at Green Street, The Quay. Mr. Oliver Caldwell, architect and surveyor, Penzance.

**RASKELF.**—Sept. 24.—For the erection of a farmhouse at Cold Harbour, Raskelf, near Easingwold, for the Ecclesiastical Commissioners. Mr. Thomas Stokes, architect, Thirsk.

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REDRUTH.—Sept. 25.—For erecting a secondary school. Mr. Morley Collins, architect, Clinton Road, Redruth, Cornwall.

ROCHDALE.—Sept. 25.—For alterations at the Smith Street baths:—Contract 266A, new hot-water system with calorifier (limited to specialists); 266B, screens, tiling and concrete galleries; 266C, plumbers' work. Deposit 10s. 6d. for each set of quantities. Mr. S. S. Platt, borough surveyor, Town Hall, Rochdale.

ROSE GROVE.—Sept. 26.—For widening of bridge over the Leeds and Liverpool canal at Padiham Junction, Rose Grove, near Burnley, for the Lancashire and Yorkshire Railway Co. The Engineer's Office, Hunt's Bank, Manchester.

ST. BLAZEY.—Oct. 1.—For proposed cloak-room, w.c.s, &c., to the St. Blazeys Boys' Council school, Cornwall. Mr. B. C. Andrew, architect to the committee, Biddick's Court, St. Austell.

SALFORD.—Oct. 4.—For additions and alterations to the town hall building, Duke Street, Broughton. The Borough Engineer's Office, Town Hall, Salford.

SCOTLAND.—Oct. 3.—For (1) brick and concretework, (2) joiners' work and (3) plumbers' work required in construction of a public convenience in Grey Place, Greenock. The Master of Works' Office, Municipal Buildings, Greenock.

SHERBURN HILL.—Sept. 26.—For the erection of premises. Mr. J. Walton Taylor, architect, St. John's Street, Newcastle-upon-Tyne.

SOUTH SHIELDS.—Sept. 28.—The South Shields education authority invite preliminary schemes and estimates for the warming and ventilation on the Plenum system of a block of four school departments, accommodating a total of 1,950 scholars, to be erected on the site of the Mowbray Council school, South Shields. Mr. Henry Grieves, architect, Albany Chambers, King Street, South Shields.

STOCKTON-ON-TEES.—Sept. 25.—For the erection of a urinal in Bowesfield Lane. The Borough Engineer's Office, Town Hall, Stockton-on-Tees.

TEWKESBURY.—Sept. 26.—For the erection of an engine shed in the Council's yard in Chance Street. Mr. Shorland, surveyor, Gloucester Road, Tewkesbury.

TREVERBYN.—Oct. 1.—For extension of girls' cloak-room, &c., to the Treverbyn Council School, Cornwall. Mr. B. C. Andrew, architect to the committee, Biddick's Court, St. Austell.

WALES.—Sept. 24.—For the erection of an hotel adjoining the station approach at Pengam (Rhymney Railway) station, Glam. Deposit 1/ 1s. Messrs. Lansdowne & Griggs, architects, Metropolitan Bank Chambers, Newport, Mon.

WALES.—Sept. 24.—For the erection of two shops at Altwen. Mr. Charles S. Thomas, architect, Herbert Street, Pontardawe, or Wind Street, Swansea.

WALES.—Sept. 24.—For the following works, for the Pontypridd Urban District Council:—(Contract No. 1) for supply and erection of car-sheds (iron buildings) at Trehafod, near Pontypridd; (2) for masonry, paving and other works in connection with the erection of car-sheds. Deposit 1/ 1s. Mr. P. R. A. Willoughby, engineer and surveyor to the Council, Municipal Buildings, Pontypridd.

WALES.—Sept. 25.—For alterations and additions to the town hall, Abergavenny. Deposit 2/ 2s. Mr. E. A. Johnson, architect, Abergavenny.

WALES.—Sept. 26.—For widening the masonry bridge carrying Park Place over the docks feeder, for the Cardiff Corporation. Mr. W. Harpur, city engineer.

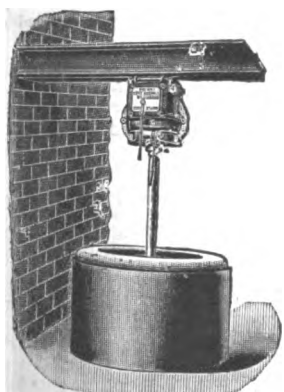
WANSTEAD.—Oct. 5.—For the erection of a two-storey school, manual training centre, cookery centre, caretaker's cottage, &c., on the Aldersbrook school site, Ingatestone Road. Deposit 2/ Mr. C. H. Bressey, architect, 70 and 71 Bishopsgate Street Within, E.C.

WARLEGGAN.—Oct. 1.—For the construction of a cloak-room, &c., at the Warleggan Council school, Cornwall. Mr. B. C. Andrew, architect to the committee, Biddick's Court, St. Austell.

WARMINSTER.—Sept. 24.—For the erection of a bungalow at Deverill Road. Messrs. Long & Glass, architects, 53 Market Place, Warminster.

WARMINSTER.—Sept. 29.—For the construction of a reservoir (about 50,000 gallons) and other work in connection therewith at the pumping station, Crockerton. The Surveyor.

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WITHERNSEA.—Sept. 27.—For the erection of an infants' school and for additions and alterations to the Council school, WitherNSEA, Yorks. Deposit 17. 1s. The Building Surveyor, County Hall, Beverley.

WEST BROMWICH.—Sept. 28.—For the erection of smithy, &c., at the district schools. Mr. J. W. Allen, architect, High Street, West Bromwich.

WEYMOUTH.—Oct. 3.—For constructing and maintaining retaining wall about 510 feet in length, of ferro-concrete work (Hennebique's system), on the north side of the pile pier within the borough, filling-in and levelling-up between the existing pier and the intended wall, new fences, Portland stone coping and other works appertaining thereto. Mr. W. Barlow Morgan, borough engineer, Municipal Offices, Weymouth.

## TENDERS.

### BLYTH.

For flagging bottom and slopes of settling pond at Chopping-ton Colliery. Mr. ROBERT GRIEVES, surveyor, Blyth.

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### BRACKLEY.

For rebuilding constable's house at police station. Mr. C. S. MORRIS, county surveyor, Northampton.

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| Marriott                         | 385  | 0 | 0 |
| Sturgess & Sons                  | 368  | 0 | 0 |
| Berrill & Green                  | 360  | 0 | 0 |
| Goodman & Murkett                | 360  | 0 | 0 |
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| Wilmott            | 4,812  | 0  | 0  |
| Hickman            | 4,665  | 5  | 0  |
| Siddons & Freeman  | 4,515  | 0  | 0  |
| Johnson & Langley  | 4,504  | 6  | 0  |
| Bentley & Loch     | 4,487  | 3  | 0  |
| Cosford.           | 4,453  | 9  | 0  |
| Nunn               | 4,418  | 19 | 10 |
| Henson             | 4,272  | 0  | 0  |
| Tabor              | 4,259  | 16 | 5  |
| Davies, Ball & Co. | 4,241  | 18 | 1  |
| Moffatt            | 4,234  | 7  | 11 |
| Westwood           | 4,206  | 7  | 3  |
| Jewell             | 4,191  | 16 | 0  |
| Langley            | 4,137  | 8  | 0  |
| Crawford           | 4,068  | 3  | 6  |
| Shardlow           | 4,059  | 0  | 8  |
| Riley              | 4,055  | 19 | 6  |
| Orton              | 4,027  | 8  | 0  |
| Ashley             | 4,022  | 16 | 0  |
| Dean, Ltd.         | 3,941  | 10 | 0  |
| Wright & Co.       | 3,917  | 8  | 10 |
| Drever             | 3,792  | 17 | 6  |
| Smart              | 3,762  | 4  | 3  |
| Wood               | 3,761  | 0  | 0  |
| Meredith Bros.     | 3,727  | 12 | 7  |
| Macdonald          | 3,726  | 0  | 0  |
| Mitchell & Son     | 3,723  | 15 | 5  |
| Egan & Sons        | 3,616  | 11 | 0  |
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|                                     |     |   |   |
|-------------------------------------|-----|---|---|
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| Powdrill . . . . .                                        | 1,195  | 18 | 0  |
| Williams . . . . .                                        | 1,150  | 2  | 11 |
| KILLINGBACK, Camden Town (accepted) . . . . .             | 1,091  | 9  | 3  |

**MOVE.**

|                                     |      |   |   |
|-------------------------------------|------|---|---|
| For street works in Linton Road.    |      |   |   |
| KING, Worthing (accepted) . . . . . | £334 | 9 | 3 |

**IRTHLINGBOROUGH.**

|                                                        |        |   |   |
|--------------------------------------------------------|--------|---|---|
| For widening the approaches of Iorthlingborough bridge |        |   |   |
| Mr. C. S. MORRIS, county surveyor, Northampton.        |        |   |   |
| Smith & Son . . . . .                                  | £1,875 | 0 | 0 |
| Fisher . . . . .                                       | 1,740  | 0 | 0 |
| Marriott . . . . .                                     | 1,740  | 0 | 0 |
| Henson & Son . . . . .                                 | 1,600  | 0 | 0 |
| Berrill & Green . . . . .                              | 1,578  | 0 | 0 |
| Hacksley Bros. . . . .                                 | 1,557  | 0 | 0 |
| Henson . . . . .                                       | 1,555  | 0 | 0 |
| Sturgess & Sons . . . . .                              | 1,541  | 0 | 0 |
| Brown & Son . . . . .                                  | 1,463  | 0 | 0 |
| GOODMAN & MURKETT, Wellingborough (accepted) . . . . . | 1,259  | 0 | 0 |

**LIDGATE.**

|                                                                       |      |    |   |
|-----------------------------------------------------------------------|------|----|---|
| For rebuilding bridge. Messrs. HOLLAND & SONS, architects, Newmarket. |      |    |   |
| Kelty . . . . .                                                       | £280 | 0  | 0 |
| Mason & Son . . . . .                                                 | 248  | 0  | 0 |
| ROLFE, Cheveley, Newmarket (accepted) . . . . .                       | 225  | 0  | 0 |
| Whitmore . . . . .                                                    | 220  | 0  | 0 |
| Simpson . . . . .                                                     | 198  | 10 | 0 |

**KINGSWOOD.**

|                                                                                                             |      |    |   |
|-------------------------------------------------------------------------------------------------------------|------|----|---|
| For installation of gas service and fittings at the Cosham Hospital. Mr. F. BLIGH BOND, architect, Bristol. |      |    |   |
| F. & W. Bracher . . . . .                                                                                   | £499 | 10 | 0 |
| Willis . . . . .                                                                                            | 499  | 3  | 3 |
| Slade & Bridgman . . . . .                                                                                  | 494  | 5  | 6 |
| Jenkins . . . . .                                                                                           | 435  | 0  | 0 |
| Beavan & Son . . . . .                                                                                      | 419  | 0  | 0 |
| Tabor . . . . .                                                                                             | 403  | 16 | 1 |
| Fraser Bros. . . . .                                                                                        | 400  | 0  | 0 |
| Tuckey . . . . .                                                                                            | 370  | 0  | 0 |
| Slaughter . . . . .                                                                                         | 369  | 0  | 0 |
| Povey . . . . .                                                                                             | 350  | 0  | 0 |
| SCULL, Bristol (accepted) . . . . .                                                                         | 350  | 0  | 0 |
| Wilkins & Son . . . . .                                                                                     | 345  | 0  | 0 |
| Harris & Sons . . . . .                                                                                     | 299  | 19 | 0 |
| Bubb . . . . .                                                                                              | 249  | 0  | 0 |
| A. & J. Tutchner . . . . .                                                                                  | 249  | 0  | 0 |

**LLANON.**

|                                                                                                  |      |    |   |
|--------------------------------------------------------------------------------------------------|------|----|---|
| For erecting new offices at Council school. Mr. G. DICKENS-LEWIS, county architect, Aberystwyth. |      |    |   |
| Jones . . . . .                                                                                  | £295 | 0  | 0 |
| James . . . . .                                                                                  | 249  | 0  | 0 |
| Edwards . . . . .                                                                                | 215  | 10 | 0 |
| Davies . . . . .                                                                                 | 208  | 10 | 0 |
| JONES, Llangwryfon (accepted) . . . . .                                                          | 198  | 10 | 0 |

**LONDON.**

|                                                                                                                                                   |        |   |   |
|---------------------------------------------------------------------------------------------------------------------------------------------------|--------|---|---|
| For the erection of premises in Middlesex Street. Mr. C. B. HOLLIST, architect, 35 Jewry Street, E.C.                                             |        |   |   |
| Lissner . . . . .                                                                                                                                 | £7,200 | 0 | 0 |
| Scott . . . . .                                                                                                                                   | 5,950  | 0 | 0 |
| SIMS (accepted) . . . . .                                                                                                                         | 5,350  | 0 | 0 |
| For connecting bridges between A and E blocks at the Berinondsey workhouse, Ladywell. Messrs. NEWMAN & NEWMAN, architects, 31 Tooley Street, S.E. |        |   |   |
| Jones & Co. . . . .                                                                                                                               | £660   | 0 | 0 |
| Spencer, Santo & Co. . . . .                                                                                                                      | 650    | 0 | 0 |
| Hayward Bros. & Eckstein . . . . .                                                                                                                | 635    | 0 | 0 |
| General Ironfoundry Co. . . . .                                                                                                                   | 601    | 0 | 0 |
| Renwick . . . . .                                                                                                                                 | 566    | 0 | 0 |
| Reason . . . . .                                                                                                                                  | 539    | 0 | 0 |

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AND  
FITTINGS**





LONDON—continued.

For exterior painting and repairs to laundry roof at the Strand Union workhouse. Mr. A. A. KEKWICK, architect, Outer Temple, Strand.

Painting.

|                               |      |   |   |
|-------------------------------|------|---|---|
| Monk . . . . .                | £945 | 0 | 0 |
| Sharpington . . . . .         | 908  | 0 | 0 |
| Love & Co. . . . .            | 875  | 0 | 0 |
| Ridgway . . . . .             | 650  | 0 | 0 |
| Stewart . . . . .             | 556  | 0 | 0 |
| Barrett & Power . . . . .     | 538  | 0 | 0 |
| Richards . . . . .            | 524  | 0 | 0 |
| Porter . . . . .              | 493  | 0 | 0 |
| Harris . . . . .              | 439  | 0 | 0 |
| Willmot . . . . .             | 429  | 0 | 0 |
| Johnson . . . . .             | 410  | 0 | 0 |
| Moore & Son . . . . .         | 399  | 0 | 0 |
| Limmer & Galloway . . . . .   | 302  | 0 | 0 |
| McCARTHY (accepted) . . . . . | 297  | 0 | 0 |

Repairs to Roof.

|                                 |     |   |   |
|---------------------------------|-----|---|---|
| Harris . . . . .                | 340 | 0 | 0 |
| Barrett & Power . . . . .       | 313 | 0 | 0 |
| Monk . . . . .                  | 265 | 0 | 0 |
| Sharpington . . . . .           | 242 | 0 | 0 |
| Love & Co. (accepted) . . . . . | 205 | 0 | 0 |
| Stewart . . . . .               | 198 | 0 | 0 |

MABLETHORPE.

For additions to the Council schools. Messrs. SCORER & GAMBLE, architects, Lincoln.

|                                           |        |    |   |
|-------------------------------------------|--------|----|---|
| Sprakes & Sons . . . . .                  | £1,650 | 0  | 0 |
| Crawshaw . . . . .                        | 1,625  | 12 | 4 |
| Moore . . . . .                           | 1,485  | 10 | 0 |
| Guttridge . . . . .                       | 1,390  | 0  | 0 |
| Hinson & Co. . . . .                      | 1,344  | 0  | 0 |
| Thompson & Sons . . . . .                 | 1,323  | 0  | 0 |
| Halkes Bros. . . . .                      | 1,299  | 0  | 0 |
| Elmes . . . . .                           | 1,278  | 2  | 0 |
| Mawer Bros. . . . .                       | 1,245  | 0  | 0 |
| SCARBOROUGH, Lincoln (accepted) . . . . . | 1,112  | 16 | 0 |

MAYLAND.

For laying water mains, &c. Messrs. PRICE & BELSHAM, engineers, 52 Queen Victoria Street, E.C.

|                                                |        |    |    |
|------------------------------------------------|--------|----|----|
| Rawkins & Jackson . . . . .                    | £1,166 | 6  | 6  |
| Griffiths & Co. . . . .                        | 1,146  | 12 | 6  |
| J. & F. May . . . . .                          | 1,145  | 13 | 6  |
| Lewellen . . . . .                             | 1,007  | 2  | 0  |
| Iles . . . . .                                 | 985    | 0  | 0  |
| Trussell . . . . .                             | 975    | 10 | 0  |
| Jenkins & Sons . . . . .                       | 962    | 3  | 3  |
| Thurman . . . . .                              | 941    | 2  | 0  |
| Hall & Co. . . . .                             | 937    | 9  | 8  |
| Jones . . . . .                                | 920    | 1  | 3  |
| Westwood . . . . .                             | 898    | 13 | 6  |
| Wilson, Border & Co. . . . .                   | 890    | 7  | 6  |
| Hughes . . . . .                               | 880    | 1  | 6  |
| Tabor . . . . .                                | 875    | 17 | 6  |
| Double . . . . .                               | 867    | 15 | 3  |
| Ell . . . . .                                  | 867    | 0  | 10 |
| Young . . . . .                                | 860    | 11 | 0  |
| King & Camping . . . . .                       | 855    | 1  | 0  |
| Davies, Ball & Co. . . . .                     | 829    | 13 | 0  |
| Wooldridge . . . . .                           | 811    | 7  | 6  |
| Buxton & Jenner . . . . .                      | 809    | 12 | 0  |
| Collingwood . . . . .                          | 802    | 0  | 0  |
| Crouch Valley Brick and Tile Co. . . . .       | 800    | 0  | 0  |
| Johnson . . . . .                              | 795    | 4  | 10 |
| Dean, Ltd. . . . .                             | 785    | 10 | 0  |
| READE & SONS, Westminster (accepted) . . . . . | 764    | 14 | 0  |

NEWCASTLE-ON-TYNE.

For the erection of parochial buildings in connection with St. Jude's. Mr. A. B. PLUMMER, diocesan architect. Lowry, Newcastle . . . . . £2,699 0 0

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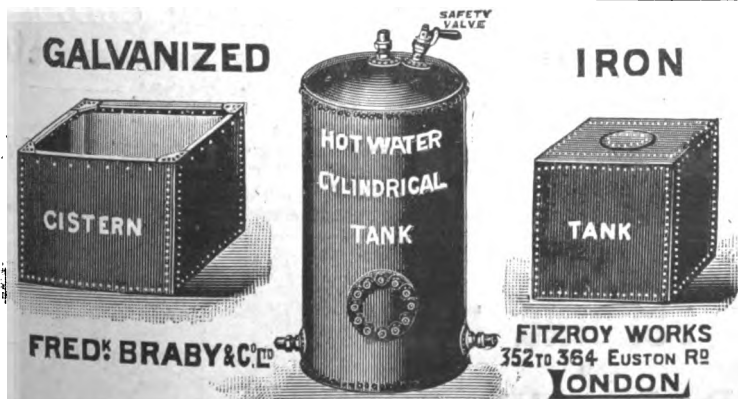


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|-----------------------------|-----------------|------------------------|
| 10" x 3" x 3" . . . . .     | 6s. 0d. per 100 |                        |
| 9" x 3" x 3" . . . . .      | 4s. 9d.         | Prices on application. |
| 12" x 3" x 1 1/2" . . . . . | 4s. 6d.         |                        |
| 9" x 3" x 1 1/2" . . . . .  | 3s. 6d.         |                        |



Flooring with special joint to conceal nails as above at the following low prices:—

|                                         | Wainscot. | P. Pine.               |
|-----------------------------------------|-----------|------------------------|
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| plain . . . . .                         | 37s. 6d.  | Prices on application. |
| 1 1/2" x 4" quarterd. 44s. 0d.          |           |                        |
| plain . . . . .                         | 30s. 0d.  |                        |

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|                     |        |    |    |
|---------------------|--------|----|----|
| Mitchell & Son      | £2,064 | 0  | 0  |
| Freeman & Sons      | 1,907  | 10 | 3  |
| Hooper, Neary & Co. | 1,698  | 5  | 0  |
| Braithwaite & Co.   | 1,696  | 1  | 4  |
| Brigg               | 1,606  | 0  | 0  |
| Ward & Tetley       | 1,588  | 13 | 0  |
| Totty               | 1,574  | 16 | 11 |
| Graham Bros.        | 1,470  | 0  | 0  |
| Morley & Sons       | 1,464  | 1  | 0  |
| Broadhead           | 1,342  | 9  | 9  |
| Bentley             | 1,247  | 15 | 0  |
| Rodger & Son        | 1,210  | 15 | 6  |

**PENRITH.**

For constructing river walls and steel girder bridge across the river Eamont. Messrs. BRIERLEY, HOLT & Co., engineers, Blackburn.

|                                   |        |    |    |
|-----------------------------------|--------|----|----|
| Grisenthwaite                     | £2,005 | 8  | 0  |
| Firth                             | 1,702  | 16 | 10 |
| JACKSON & SON, Penrith (accepted) | 1,618  | 18 | 1  |
| Mackay & Sons                     | 1,597  | 18 | 0  |

**RADSTOCK.**

For alterations and renovations to the Wells Way inn. Mr. W. F. BIRD, architect, Midsomer Norton.

|                                    |      |   |   |
|------------------------------------|------|---|---|
| Forse & Sons                       | £920 | 0 | 6 |
| Foster                             | 916  | 0 | 0 |
| Bindon                             | 880  | 0 | 0 |
| W. & G. Bennett                    | 850  | 0 | 0 |
| Hatherley                          | 757  | 0 | 0 |
| Denby & Co.                        | 675  | 0 | 0 |
| Bird                               | 628  | 9 | 8 |
| W. & A. Edgell                     | 599  | 0 | 0 |
| Heal                               | 597  | 7 | 6 |
| CATLEY, Midsomer Norton (accepted) | 552  | 0 | 0 |
| Bishop                             | 470  | 0 | 0 |

**RADSTOCK—continued.**

For alterations and additions to riverside premises. Mr. W. F. BIRD, architect, Midsomer Norton, Somerset.

|                             |        |    |   |
|-----------------------------|--------|----|---|
| Webb                        | £1,845 | 0  | 0 |
| Forse & Sons                | 1,840  | 0  | 0 |
| W. & J. Bennett             | 1,620  | 0  | 0 |
| Denby & Co.                 | 1,599  | 0  | 0 |
| Heal                        | 1,598  | 0  | 0 |
| Waterhouse                  | 1,583  | 17 | 0 |
| Harvey                      | 1,459  | 19 | 0 |
| Tovey                       | 1,410  | 0  | 0 |
| Bird                        | 1,400  | 0  | 0 |
| FOSTER, Radstock (accepted) | 1,382  | 0  | 0 |

**SANDOWN.**

For alterations and additions to the town hall. Mr. L. G. DASHPER, surveyor.

|                           |      |    |   |
|---------------------------|------|----|---|
| White                     | £350 | 0  | 0 |
| Ball & Sons               | 319  | 0  | 0 |
| Hull                      | 295  | 10 | 0 |
| PAYNE, Sandown (accepted) | 265  | 0  | 0 |

**STANSTED.**

For extension of sewers. Mr. E. T. WATTS, surveyor, Bishop's Stortford.

|                                           |        |    |   |
|-------------------------------------------|--------|----|---|
| Quarterman                                | £2,811 | 0  | 0 |
| Wall                                      | 2,748  | 0  | 0 |
| Napier & Sons                             | 2,125  | 0  | 0 |
| Bell & Sons                               | 1,485  | 0  | 0 |
| Thompson                                  | 1,437  | 16 | 7 |
| Langley & Johnson                         | 1,421  | 9  | 3 |
| Free & Sons                               | 1,321  | 0  | 0 |
| Wooldridge                                | 1,311  | 8  | 3 |
| W. & C. FRENCH, Buckhurst Hill (accepted) | 1,280  | 0  | 0 |
| Rayner                                    | 1,250  | 0  | 0 |
| Wilson, Border & Co.                      | 1,179  | 0  | 0 |
| Jackson                                   | 1,123  | 0  | 0 |
| Flack & Sons                              | 1,120  | 8  | 3 |
| Johnson                                   | 970    | 0  | 0 |

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**SUTTON-ON-SEA.**

For the erection of a boathouse for the Royal National Lifeboat Institution. Mr. W. T. DOUGLASS, architect and engineer, Westminster.

|                                 |      |    |    |
|---------------------------------|------|----|----|
| Till                            | £939 | 0  | 0  |
| Facey                           | 900  | 0  | 0  |
| Emerson                         | 861  | 10 | 10 |
| Crawshaw                        | 841  | 0  | 0  |
| Miller & Sons                   | 759  | 11 | 4  |
| Holmes & Sons                   | 750  | 0  | 0  |
| Mawer Bros.                     | 749  | 0  | 0  |
| Arundel                         | 745  | 0  | 0  |
| Thompson & Son                  | 737  | 0  | 0  |
| Williamson                      | 699  | 0  | 0  |
| Loach                           | 686  | 13 | 0  |
| MOORE, Sutton-on-Sea (accepted) | 650  | 0  | 0  |
| Richardson                      | 624  | 5  | 7  |

**WALES.**

For the erection of a public slaughterhouse and other contingent works at Taft's Well, for the Caerphilly Urban District Council. Mr. A. O. HARPUR, surveyor.

|                                 |        |    |   |
|---------------------------------|--------|----|---|
| Davies & Sons                   | £1,479 | 10 | 0 |
| Hatherley & Co.                 | 1,447  | 8  | 8 |
| Davies                          | 1,326  | 0  | 0 |
| Ingleson                        | 1,313  | 17 | 0 |
| Griffiths                       | 1,209  | 0  | 0 |
| Davies                          | 1,199  | 0  | 0 |
| Dunn                            | 1,185  | 0  | 0 |
| Evans                           | 1,175  | 0  | 0 |
| Howells                         | 1,140  | 0  | 0 |
| Mundy                           | 1,136  | 8  | 0 |
| Harry                           | 1,128  | 11 | 5 |
| Evans Bros.                     | 1,106  | 6  | 1 |
| Bristow                         | 1,091  | 19 | 3 |
| Pugh                            | 1,082  | 10 | 5 |
| Bevan                           | 1,080  | 0  | 0 |
| Smith, Jones & Sons             | 1,058  | 6  | 1 |
| Rossiter                        | 1,012  | 4  | 4 |
| Edwards                         | 1,010  | 11 | 4 |
| WILLIAMS, Abertridwr (accepted) | 887    | 13 | 4 |

**WHICKHAM.**

For laying about 550 lineal yards of 12-inch and about 2,500 lineal yards of 9-inch gravitating socketed stone-ware pipe-sewers, erection of ejector-stations, air-compressing station, &c. Mr. J. B. RENTON, surveyor.

|                              |        |    |    |
|------------------------------|--------|----|----|
| Routledge                    | £2,940 | 0  | 0  |
| Armstrong                    | 2,395  | 18 | 4  |
| Carr                         | 2,319  | 5  | 0  |
| Davison                      | 2,303  | 14 | 7  |
| Young                        | 2,250  | 17 | 10 |
| Kennedy                      | 2,195  | 0  | 0  |
| Robson, Newcastle (accepted) | 2,008  | 15 | 4  |

**WREXHAM.**

For the erection of post office, for H.M. Works and Public Buildings.

|                         |        |    |   |
|-------------------------|--------|----|---|
| Allen                   | £4,319 | 19 | 6 |
| Mayer                   | 3,898  | 0  | 0 |
| Davies Bros.            | 3,437  | 6  | 0 |
| Samuel                  | 3,395  | 0  | 0 |
| Gill & Son              | 3,298  | 8  | 3 |
| KELLY & FRO. (accepted) | 3,182  | 0  | 0 |

In the Dundee Sheriff's Court an interesting action has been raised by D. Walker, president of the Aberdeen Master Painters' Association, and the members of the organisation, against John W. Forrest, painter, Union Grove. The sum sued for is 28*l.* 12*s.* 5*d.*, which is alleged to be due under a scheme devised by the Association with the view of recouping the members for any expenses they incur in connection with the preparation of tenders. A provision was made that each member when estimating should add 5*l.* per cent, which was to be handed over to the Association, and in this connection defender was said to be owing a balance of 28*l.* 12*s.* 5*d.* The defence is that the pursuers have no title to sue, and that the action is incompetent in respect that the Association is a trade union, and that the deed of declaration founded on is an agreement which cannot be enforced.

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TRAFFORD PARK

**ELECTRIC NOTES.**

THE War Office have decided to establish an electric-power installation at the mechanical transport workshops at the depot, Aldershot, and have arranged contracts.

An engineer at the Warrington Corporation electric station, named George Platt, received a shock on Monday from one of the generators to the extent of 6,000 volts. When picked up he was found to have been badly burned.

In consequence of the development of electrical apparatus in ships the Admiralty have decided to increase the number of electricians borne, a reduction of able seamen corresponding to the additional numbers of electricians being made in each case.

THE South Shields Town Council at a special meeting adopted after much discussion the recommendation of the electrical committee to increase the salary of Mr. Cawthra, electrical engineer, from 500*l.* to 550*l.* per year, rising by annual increments till a maximum of 700*l.* was reached.

THE electricity committee of the Manchester Corporation are considering a scheme for the extension of the generating plant. If the present rate of increase in the demand for electricity is maintained the maximum limit of supply will be reached by the end of next year. There are three generating stations.

THE Brush Electrical Engineering Company, Ltd., of Loughborough, have entered into a contract to supply 190 single-deck electric trolley cars for St. Petersburg, and the construction of them is to be pushed forward with the utmost expedition. The order proceeds from an American and Continental group established expressly for the purpose of exploiting Russia in the field of engineering.

ARISING out of the tramway accident at Swindon on the occasion of the holding of the Bath and West and Southern Counties Agricultural Show, by which five passengers were killed and many seriously injured, claims for compensation to the amount of 30,000*l.* have been made against the local Corporation. Unless the claims are considerably abated the chairman of the tramways committee stated that the matter would be fought out in the law courts.

THE Krugersdorp Town Council have adopted an electric-lighting scheme which will involve an expenditure

**ILLUSTRATIONS.**

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of 15,547*l.* The scheme provides for a three-wire continuous current plant. Most of the wires will be underground, and only light wires placed overhead. A private consumer will have to pay 1*s.* per unit, and for the lighting of the town the ratepayers will pay 6*d.* per unit. As soon as the sanction of the Government is received tenders will be invited, and the matter proceeded with without delay.

THE King's Norton District Council have agreed to terms with the Birmingham Corporation for the supply of electrical energy in connection with the Moseley and King's Heath tramways. The Council are to take from them a high-extension supply of current at the price of one penny per unit, without any limitation as to the minimum consumption or the period of supply of the current. The necessary works will require an outlay of 6,000*l.*, and it was decided to borrow 40,000*l.* from the Ecclesiastical Commissioners at the rate of 3*l.* 15*s.* per cent. for the carrying out of the tramway order.

A RETURN issued on the 17th inst. shows that the length of railway line in England in equivalent of single track which was worked at the end of last year solely by electricity was 140½ miles, while that worked partly by electricity was 170½ miles. The number of miles run by electrical trains in 1905 was 9,667,429. The total quantity of electrical energy used for electrical train running and other purposes was 100,977,467 Board of Trade units. The first-class passengers showed an increase of 38,000*l.*, second-class a decrease of 211,000*l.*, third-class an increase of 247,000*l.*, and season-ticket holders an increase of 141,000*l.* Minerals showed an increase during the year of 601,000*l.*, and general merchandise of 435,000*l.* The receipts from the carriage of live stock decreased by 24,000*l.*, following on decreases of 66,000*l.* in 1904 and 5,000*l.* in 1903.

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THE sanction of the Board of Trade has now been received to the borrowing of the sum of 40,000*l.* by the King's Norton District Council for the purposes of the reconstruction of the Moseley and King's Heath tramways and the construction of the extension to Alcester Lanes End, such sum to be repaid within a period of twenty-seven years. The Worcestershire County Council have stated that they will have no objection to the tramway track being paved throughout with hard wood blocks, provided the District Council undertake, by agreement in writing, to sand the track whenever it may be necessary for the safety of the public, and to indemnify the County Council against any action, costs or liability which may arise in consequence of the laying of such wood paving.

THE tramways committee of the Manchester Town Council say, concerning the loss arising in the Tramways Parcels Department, that the accounts show that the total operating expenses amounted last year to 17,366*l.*, and the interest on the sinking fund, on outlay and interest to floating stocks to 400*l.* The income from the carriage of parcels was 11,996*l.*, leaving a deficit of 5,770*l.* The committee have had to undertake large expenditure in the provision of vans, horses, baskets, bags and the other paraphernalia connected with the business of carriers. New stock of this kind has been purchased at large expense, and parcels depôts have had to be rented. Litigation has also been costly. The work of the parcels department has been handicapped through the fact that incoming parcels for delivery have not been received in so large numbers as parcels for despatch to different parts of the city or out of Manchester.

THE new generating station in Portsmouth Dockyard, which is to supply electric current for the whole of the establishment, and eventually Whale Island and the Naval Barracks as well, was formally opened by Rear-Admiral Sir H. D. Barry on the 15th inst. The station is fitted with Belliss & Morcom's triple-expansion engines, running at 250 revolutions, directly coupled to Dick, Kerr & Co.'s multipolar generators. There are six sets in all—five of 600 kilowatts and one of 300 kilowatts. Each engine is coupled with a separate Allen's condenser and is run quite independently of the others. The condensed water is discharged

into a hot well and is pumped by Worthington's pumps, directly connected by electric motors, to the top of the boiler-house, where it is discharged into the main feed tanks after passing through various filters. The steam-raising plant consists of ten boilers by Danks & Co., fitted with Bennis's mechanical stokers. There are also two superheaters, by McPhail & Simpson, through which the steam passes after leaving the boilers. The main switchboard consists of six machine panels, twelve lightning-feeder panels and twenty power-feeder panels, besides two balancing panels and one third-wire earthing panel. All the regulation of the generating station is controlled from this main board. In addition there are six panels for supplying current to the various power and lighting circuits in the generating station. In the station is constructed a powerful overhead crane. It is electrically driven in every movement and is capable of lifting 25 tons.

### BUILDING AND BUILDERS.

At a meeting of Glasgow Dean of Guild Court on the 13th inst. new "linings" or building plans of a total value of 39,680*l.* were granted.

THE Hythe Town Council have decided that they will not provide artisans' dwellings under the Housing of the Working Classes Act, as they do not consider necessity demands them.

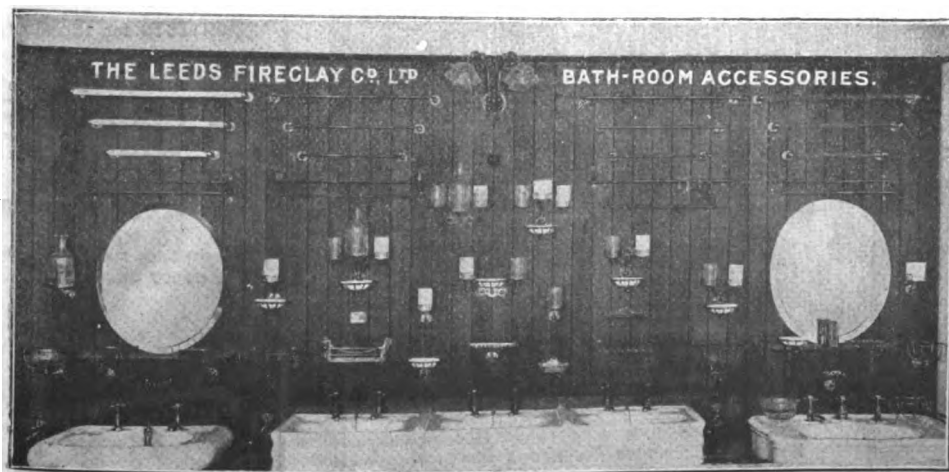
THE Manchester education committee recommend the City Council to apply to the Local Government Board for sanction to borrow 8,600*l.* to cover the cost of the Abbott Street Municipal school, and 17,800*l.* to cover the cost of erecting the Domett Street Municipal school.

THE National Association of Master House-painters and Decorators of England and Wales (Mr. John H. Turner, president) will hold their thirteenth annual convention and exhibition of decorative art and manufactures in the drill hall, Denton Street, Leeds, from October 9 to 15 inclusive. It will be opened by Lord Allerton.

THE Strand Board of Guardians recently invited tenders for repairs, painting, &c., of the workhouse at Edmonton. Fourteen tenders have been sent in, the amounts ranging

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from 945/ to 297/. The latter has been accepted. The disparity in the amounts occasioned some comment.

A SUB-COMMITTEE of the Coventry Town Council have been instructed to consider the following motion and report in six weeks:—"That the resolution respecting the insertion of the fair-wage clause in building contracts passed on October 23, 1905, be amended to read as follows:—"That in future all contracts for work entered into by the Corporation shall contain a clause providing that the contractor shall pay the standard rate of wages and observe the working rules agreed upon by the trades unions and employers in this district; that no sub-contracting be allowed; and, further, that all goods required by the Corporation shall be purchased from those firms which pay the standard rate of wages and observe the working rules agreed upon by the trades unions and employers in the district in which such firms may be situated."

### TRADE NOTES.

WE desire to call the attention of our readers to the letter in another column from the secretary of Waring & Gillow, Ltd. The question at issue between the company and a journal, or journals, is one for the courts, and we cannot comment on it. But it is allowable to say that everyone who has had business relations with the company must consider that any statement concerning the financial weakness of Waring & Gillow, Ltd., is an absurdity. We have high authority for the belief that a good name is the immediate jewel of our souls. In affairs of trade the good name has a financial basis, and to deprive any firm of such a jewel without irrefutable evidence may cause serious injury, although no gain may arise to the slanderer.

THE Marmor Company inform us that they are very busy at the present time, having received several large orders

for their marbles, including an important shipment to New Zealand.

MESSRS. E. H. SHORLAND & BROTHER, of Manchester, have just supplied their double-fronted patent Manchester stoves with descending smoke flues to the Hospital for Skin Diseases, Manchester.

A PARTICULARLY good drawing pencil has just been placed upon the market by the American Pencil Company, of 20 Farringdon Avenue, London, E.C.—in fact, the best we have yet found. It is absolutely free from grit, and another important item is that it will not easily break. Samples are sent on application.

MESSRS. T. T. GETHING & Co., of 201 and 202 Warwick Road, Kensington, W., have purchased the business, stock, plant, &c., from the executors of the late Mr. T. P. Lilly, Chilmark Stone Quarries, Wiltshire. The stone is of the hard Portland series, and has been used for many large public buildings throughout the country.

OWING to the lamented death of Mr. C. Backhoffner, the London agent for Marsden Tiles, Ltd., a new agent has had to be appointed. The firm have been fortunate enough to secure the services of Mr. H. Moorcroft, who is well known in the tile trade and was a contributor to Mr. W. J. Furnival's recent work on "Tiles and Faience." Mr. Moorcroft is a member of the Society of Arts.

DANGER of fire and the use of fire appliances and alarms are receiving the careful attention of architects, civil engineers and all engaged in building operations. The new meal warehouse just recently erected for Messrs. Spratts Patent, Ltd., at Poplar, is to be protected by the use of sprinklers. Messrs. George Mills & Co., of Radcliffe, near Manchester, have received the order for a complete set of their modified Titan sprinklers. The same firm have received an order for the supply of a new pump for boiler-feeding purposes for the Sun Mill Co., Ltd., of Oldham. The pump will be of the fly-wheel type, with outside packed rams, having 7-inch steam cylinders, 4-inch rams and 9-inch stroke.

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## VARIETIES.

At the meeting of the Edmonton District Council it was stated that there were upwards of 1,000 empty houses in the district at the present time.

A COMPANY has been formed, entitled the Wembley Park Estate Company, with the object of developing Wembley Park as a building estate.

THE will has been proved of Mr. John Fyfe, D.L., J.P., of Beechgrove, Aberdeen, granite merchant. His personal estate is returned at 235,732/. He was the owner of a large estate at Brixton producing over 9,000/. per annum.

THE Local Government Board are to be asked to sanction one Parish Council for the Hertfordshire Garden City, which, being in the parishes of Letchworth, Willian and Norton, is at present under the jurisdiction of three.

THE Minister of Public Instruction at the next meeting of the Spanish Council of Ministers will present a draft Bill for the creation of 5,000 primary schools within a period of five years.

MR. W. BEDDOE REES, architect, Cardiff, has been successful in the competition for the new English-Presbyterian church to be erected in Wrexham. This is the third competition he has recently secured for churches in the last two months.

IN its customary return on the state of the labour market, the *Board of Trade Labour Gazette* says:—As is not unusual, employment during August was not quite so good on the whole as in July; on the other hand, the building trades showed some recovery, and were better than last year.

THE Walsall Town Council on Monday adopted a recommendation of the general purposes committee that the reconstruction of the old tramway track in the borough be carried out by workmen employed by the tramways department, under the supervision of the Corporation officials. The expenditure involved is about 40,000/.

A LOCAL GOVERNMENT BOARD inquiry was held on the 14th inst. into an application by the Oldham Town Council to borrow 2,248/, which they have already spent beyond the estimate on the Lowermoor baths. It was explained that the baths were to cost 9,033/, but they had cost instead 2,248/ more than this, and the amount had been borrowed from the bank. There was considerable opposition.

A LARGELY attended meeting was held on Wednesday in the Potteries, Staffordshire, of manufacturers in the tile and china industries. Mr. Cecil Wedgwood presided. It was decided to call the attention of the Board of Trade to the excessive charges made by the railway companies for the carriage of pottery.

SCHEMES are on foot for the erection of a new concert-hall in Great Portland Street, London. Messrs. Perry Bros., of Finsbury Square, will be the builders, and the Columbian Fireproofing Company, Ltd., 37 King William Street, E.C., will construct the concrete floors. The structure is estimated to cost 60,000/.

AN estate at Rhos-on-Sea, one of the suburbs of Colwyn Bay, will be put up to auction on the 24th inst. The whole estate, with its two miles of open sea frontage, has been in the hands of a single owner, who during the past twelve years, it is said, has spent over 90,000/. in its development. Altogether there are forty-two lots, including sites of marine residences, three compact separate estates and the Rhos-on-Sea golf links of 150 acres.

FIFTY actions for damages were instituted against the Basingstoke Borough Council as a result of the late typhoid epidemic, the cause of which was traced to the town water supply, the damages claimed aggregating nearly 4,300/. A committee of the claimants recently met the committee of the Ratepayers' Association, with the result that the Council have agreed to pay 1,670/. 15s. in settlement of the fifty actions, without prejudice and with denial of liability.

THE Yarmouth Corporation is considering a scheme for extending the harbour accommodation by the provision of a basin which would have an area of nearly ten acres, and accommodate 250 fishing boats. There would be 3,000 feet of quayage, at which 134 boats could land herrings at one time. The cost of this extension would be 73,000/., and it would necessitate changes which have aroused considerable opposition.

THE coming month's issue of the *Pall Mall Magazine* contains a very interesting article by Mr. Edgcumbe Stanley on the Victoria and Albert Museum, the latest work of Sir Aston Webb, R.A. The particulars of the sculpture, and also of the sculptors engaged on the statues, of which there

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will be no less than twenty-two royal and symbolical figures, ten painters, ten craftsmen, six architects and six sculptors, will be of undoubted interest to all engaged in architecture and building.

JUDGE MOSS travelled to Bethesda on Saturday to personally investigate the work offered by the North Wales Quarries to a labourer who sued them for compensation. The work was to unsling waggons and push them. Claiming that he had practically lost the use of one arm, the man contended he was unable to perform that kind of work, especially in an exposed place. At the quarry the Judge pushed the trucks himself, first with one hand and then with both. In the afternoon at the Bangor County Court his Honour held that the work offered was unsuitable for applicant, whom he awarded 9s. a week compensation.

MR. M. K. NORTH, Local Government Board inspector, recently conducted an inquiry with reference to a request by the Colwyn Bay Urban Council for power to borrow 17,000*l.* for the extension of the gas undertaking. The works include the construction of a siding to the works from the London and North-Western Railway, a coal store with a capacity of 1,000 tons, a coal breaker, a coal elevator and a coal conveyer. It is also proposed to increase the dimensions of the governor-house, to add to the purification plant and to lay down a new weighbridge.

THE Wakefield medical officer (Dr. Gibson) has presented a report to the sanitary committee of the Corporation in respect to the condition of the river Calder. He states that the river reaches the city boundary in an excessively foul state, and that all along the river above Wakefield wholesale pollution is taking place. On the other hand, he is able to show that very little pollution of the river takes place from sources within the city. The river is black, turbid and foul, and fully deserves the appellation of an open sewer. He is of opinion that the state of the river is likely to be injurious to the public health.

THE South Bank Baptist church was opened on Wednesday, September 19. The portion of the scheme which has been erected is the church premises complete, with the exception of the upper part of the tower. Large schools are provided for in the future. The buildings are designed in

Late Gothic, buff terra-cotta being used for the dressings in connection with red brick facings. The contract, which has been carried out by Messrs. Bastiman Bros., of Middlesbrough, was 3,234*l.*, and the accommodation of the building 616 persons. The architects are Messrs. George Baines & Son, 5 Clement's Inn, Strand, London, W.C.

A BOARD OF TRADE inquiry was held at Newbiggin regarding an application by the Urban Council for an order to prohibit the removal of any shingle or ballast from the shore or banks of the sea adjacent to the Newbiggin urban district. The Commissioner explained that the Board of Trade had power to prohibit the removal of sand, not only from the foreshore under their own jurisdiction, up to high-water mark, but from the banks and above high-water mark as well. In some cases the Board issued orders of this description for some hundreds of feet, in fact, hundreds of yards, above the high-water mark, though it might be private property belonging to the lord of the manor. These orders were very stringent. They were absolute, and overrode all other Acts and powers.

At the last meeting of the Heywood Town Council a discussion took place on the proposal of the Heywood and Middleton water board to apply to Parliament for powers to borrow 125,000*l.* for the purposes of the water undertaking and for the completion of the new reservoir on Ashworth Moor. It was pointed out that the reservoir had cost much more than was estimated because of the difficulty of getting a good foundation for the embankments, &c.; but it was urged that it was absolutely necessary to complete the work now that it had gone so far. The expenditure has already been about 165,000*l.* On the other hand, it was contended that if it had been known that the reservoir would have cost so much the scheme would not have been allowed to go forward. The scheme had been enlarged from time to time until it had reached its present size. Two members of the Council were appointed members of the Board.

A CONFERENCE consisting of His Excellency the Commander-in-Chief of India and other high officials, assisted by the Electrical Adviser to the Government of India, has been held at Simla to examine the question of the supply of electric power to cantonments in Upper India. It is not

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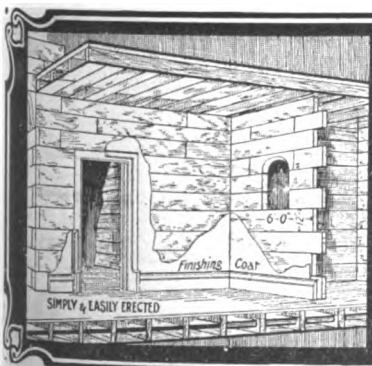
known what the views of the conference or of the Government are on the subject of the agency to be employed for this purpose, but, says *Indian Engineering*, it is to be trusted that private firms will be employed and that it is not intended that Government should provide its own installations. Government may rest assured that the supply of power from its own installations will not be cheaper than that from a private installation, no matter what estimates and forecasts prepared by its own officers may indicate. Besides, it has to be remembered that there is a great future for electrical undertakings in India and there will be no lack of private firms to come forward if Government will only encourage such undertakings by the grant of liberal terms. This policy may not be a paying one at the outset, and on that account may not find favour with Government, but we are convinced that a policy characterised with liberality will, and must, prove to be very profitable to Government in the long run.

A COMPLETE drainage scheme for the burgh of Ayr, which has been proceeding for the past ten years, has been practically finished at a cost of 90,000*l*. The entire work, including the concentration of the sewage, formerly discharged through nine outfalls on the beach, and its conveyance a considerable distance out to sea through two outfalls, was designed and has been carried out by Mr. John Eaglesham, C.E., Ayr, who was burgh surveyor when the scheme was inaugurated. There have been laid down in all thirty-two miles of main and outfall sewers, varying in size from 9 inches to 48 inches diameter, much of it being built of brick 48 inches diameter. The outfall sewer for the south side of the river is of 42 inches diameter cast-iron pipe, and it is carried on iron saddles resting on iron screw piles out to sea opposite the gasworks, 468 yards beyond the esplanade wall which rises from the beach, and 323 yards out from low-water mark of spring tides, the depth of water at the outfall being 21 feet. The main outfall for the division of the burgh on the north side of the river is 24 inches diameter, and is laid on a rocky foreshore, discharging at the Euchar Rocks at low water.

A hydro-electric generating station has recently been completed on the north fork of the San Joaquin river in the Sierra Nevada mountains, fifty miles north-east of Fresno, California, by the San Joaquin Light and Power Company.

The conduit supplying water for the operation of the equipment of the station has a total length of 4.3 miles, and comprises open canal, tunnels, flumes and a pipe line. These structures are designed for a flow of 100 cubic feet per second, and, with the total available head of 400 feet, produce a total capacity of 3,600 horse-power. The canal portions of the conduit are 5 feet wide and 3 feet deep, and are lined throughout with concrete. The intake basin of the conduit and the forebay at the power-house are built of concrete. The tunnels of the conduit are also lined with concrete. The flumes are built of one-eighth inch steel plates and are semicircular, with a width of 6 feet. The pipe line is 3,000 feet long and 52 inches in diameter, the thickness of the steel plates of which it is built varying from three-sixteenths to half an inch. The station contains two tangential-type water-wheels, each of which drives a standard Allis-Chalmers water-wheel type, 1,000-kw., 550-volt, 3-phase electric generator operating at 300 revolutions per minute. Two 62½-kw. direct-connecting exciters are provided.

A PIECE of engineering that is just now creating much attention in Paris, says the *Philadelphia Public Ledger*, is the construction of what may be described as an immense iron boat, the keel of which rests in a trench which has been hollowed out all along the Boulevard St. André. It has to do with the building of the new station Place St. Michel, on the Metropolitan Railway, and forms part of the caisson which will be slipped from the trench into the Seine, and in which the new station will eventually be installed. The boat is about 198 feet long, and when its arches are united its height will be 49 feet. In sinking the caisson more excavation will be necessary, and this will be carried out by means of compressed air until it gradually disappears under the embankment which will cover it. When complete the caisson will lie at a depth of about 69 feet below the Place St. Michel, between two ordinary tunnels, to each section of which it will be joined by a special elliptical caisson. Access to the new station premises will be by an elevator, as in the case of the London "tubes." The special elliptical caisson in front of the present erection on the Place St. Michel is to be begun immediately, and the other one on the Place St. André des Arts will be uniform with it. The section of the tunnel which is between the



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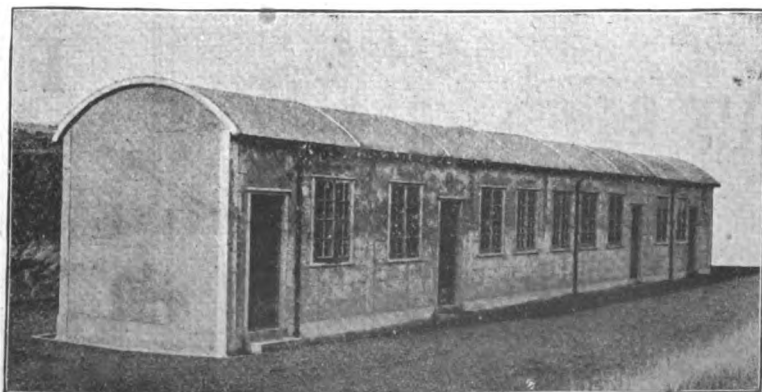


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arm of the Seine and the Place St. Michel caissons passes under the Orleans Railway, and will be constructed of masonry in the ordinary way. To protect it against infiltrations and subsidences caused by the weight of the trains suspended above, however, all soil surrounding the tunnel excavation will be stiffened by a special process. This will consist either of the circulation of a refrigerating liquid in a series of tubes or of compressed gas, the expansion of which produces a considerable reduction of the temperature.

### CARVING FINIALS.

An interesting article, "A Reminiscence and a Reverie," has been contributed by Mr. G. W. Milburn, sculptor, York, to the *Yorkshire Herald*. He says:—

It is quite impossible for anyone who has not been used to carving up at a great height from the ground to properly understand and appreciate the exquisite feelings and sensations of freedom and freshness of fancy—that even the birds of the air are more companionable, less timorous and frightened and even inquisitive, similar to the penguins in the South Polar regions, which used to come quite close to Captain Scott and his companions when they were together on the ice.

When you are carving upon a scaffold, strong and high, the danger does not appeal so strongly to you, but the feeling of caution seems to be always present. For instance, one of the carvers was singing:—

I know Thou wilt not slight my call,  
O Thou Who marks the sparrow's fall.

Whilst another carver spoke to the man oiling the Early English finial of the small octagonal spire on the west side of the south front of York Minster, "Do take care that you do not fall," and added, "Some years ago I was carving on the front of the new buildings of the London University, Vigo Street, London. I put my hand upon a piece of wood at an angle between the stone jambs of the upper windows 50 feet from the ground. The piece of wood gave way and I fell upon a stack of bricks. When they picked me up they thought I was dead. They carried me to Charing Cross Hospital. However, after being in the hospital for six weeks I came out apparently well except a tooth knocked

out of the front of my mouth, my wrist slightly twisted. When I was leaving the hospital the kind old doctor patted me gently upon my shoulder, looked steadily into my eyes, and told me to be very careful and never, if possible, get excited."

The strange part of him telling about his fall follows. A week after an excursion train was advertised from York to London, leaving York at 1 A.M. He went to the York railway station at 1 P.M. They told him the train had gone early in the morning. He came away sad and low-spirited. He said, "I am going to London to-day." I asked if he had any prospects of work when he got there. "No," he replied, "but I feel compelled to go to see my mother and my favourite throstle my mother is taking care of for me." He arrived at his mother's house that night to find that she had died, and ever after he used to take his favourite throstle about with him, and when the throstle died he gradually pined away.

The Early English finial referred to was fixed in position on top of one of the small octagonal spires which terminate the stone buttress, square on plan at the base, near the steps leading to the entrance to the south transept of York Cathedral. This particular finial is the second on the west side, south front, and about 85 feet from the ground, and next to the central gable which contains the very beautiful circular and marigold window. The venerable Dean, with his reverential feeling for the glorious old Minster and splendid results of the skilful builders of the past, must feel gratified to see the work so far accomplished—the tall and graceful pinnacles, richly carved crockets and quaint grotesques projecting at the intersection of the angles; the perforated tracery panels forming parapet of the towers, carved string-mould slightly projecting on the top member for variety; the arch of the belfry window moulded, and the graceful ogee line enriched with crockets and carved label terminations to arch and simple tracery—to the window where the bells are located. And the music? How it fills the air with melody. And the big bell Peter, tolled at mid-day, seems to tremble with fine and sensitive reverberations like one great wave of sympathy.

While the sun shines and lights up some portions and makes the higher projections sparkle like diamonds, others

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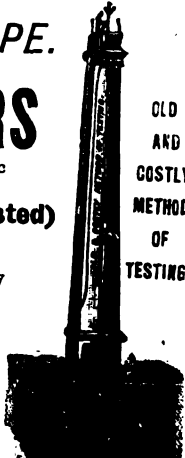
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seem to nestle in the soft and silent shadows, which emphasise the exquisite beauty of the whole building. The two towers, with their strong and delicate lines, have the effect of the holy Apostles, Peter and John, at the gate of the beautiful Temple inviting worshippers and guarding the sacred precincts of love and majesty, suggesting devout thoughts and aspirations to those who enter the Garden of the Lord, where the throbbing and tired temples of the soul seek rest and peace and consolation as they commune there in silence, like the "weary hart that panteth after the fount of many waters," retreat from care and turmoil, where the passionate longings are soothed and tinged so tenderly with joy and gladness, where impatience and desire, companions of the just, are linked together with love and hope, where grace and silence soothe those in tribulation.

How pure and beautiful is the sky with its rich and varied tints and delicious colouring, always moving and changing from grey to blue, blue to purple, purple to red and gold, which has already received the royal patent of the Creator, and in contrast to the city below, with its red-roofed houses where sorrow and death enter, making the dwellings sad and desolate—as the swallows flit across the horizon, and the white butterflies flutter in the bright sunshine like silent messengers of God.

Or perhaps a wounded carrier pigeon comes with a message attached to it from a beleaguered city and rests in security upon the head or shoulders of one of the old stone figures under a richly carved and moulded canopy; or perchance a blue-black jackdaw perches upon the time-worn and weather-beaten quaint wing of a projecting grotesque animal, the bird contemplating the varied surroundings with its don't-care audacity and cunning, with its talent for imitating the voice of man and its short, strong, straight beak, its lively and social habits and tenderness for its young. Thoughts like these serve to employ one's mind and keep in touch and harmony chisel and melody of the hammer as the stone is gradually becoming less in size, whilst the figure, or head, or grotesque, or ornament grows larger as the mind and hand make them pleasant and fair to look upon.

Most of the scaffold had been removed. When one of the workmen was obliged to use a ladder from where we

were standing carving, and letting the top of the ladder rest against the upper part of the newly-erected spire, his duty was to oil the whole of the stone after it had been fixed and quite dry. He carried an ordinary can such as used by painters. Whilst thus engaged in oiling the finial he exclaimed, "Just fancy, the birds have already perched upon the top of this finial." "Yes," was the reply, "I was out early this morning looking up at the finial to see its effect and proportion in conjunction with other parts of the spire when I saw a throstle and heard it singing "Teleclese! teleclese! teleclese!"

Years ago I used to have a throstle in an old rabbit-hutch. The bird used to perch upon the top peak in the gable of the hutch and sing quite softly and tenderly, and its plaintive notes were in unison with my own thoughts and feelings; when suddenly the bird would stand upon the floor of the hutch and sing loud, "Teleclese! teleclese! teleclese!"

When quite a little boy my father explained to me that the old stone finial which terminated the crocketed octagonal spire over the apex or gable of the south front of the transept was to represent "Nero fiddling whilst Rome was burning." The old perpendicular style of spire and finial was removed at the restoration of the south front about the year 1873; the finial, viz. the old fiddler, was placed in the crypt of the cathedral for safety, and there he remains silent. Time and weather have touched him so tenderly, practically recarved him, and left the quaint bits of fun and humour modified, refined and beautified since it left the hand of the skilful and satirical old sculptor—not like some of the old gargoyles with their mouths open wide and grinning, as the moss grows in there, and the winds whistle through as well as the rain rushes from the spouts and falls below.

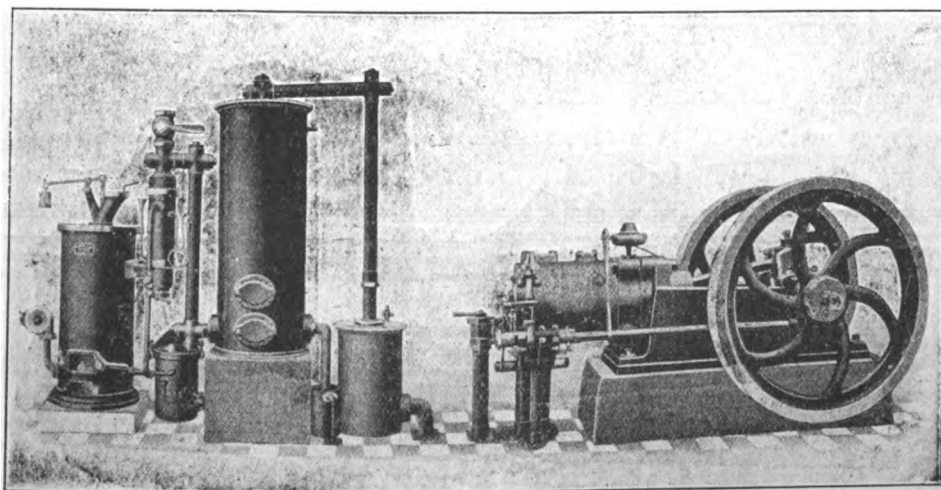
#### A CONTRACTOR'S ACTION.

THE award has been given by Mr. W. H. Patchell in the arbitration of Firth & Sons, Manchester, v. the Cardiff Corporation. It arose out of the contract for wiring the Cardiff Asylum at Whitchurch for electrical purposes.

The dispute originated owing to complaint being made

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to the Corporation by its electrical engineer that the work was proceeding too slowly, that insufficient men were being employed and that the contractors were seeking to put upon the specification an incorrect interpretation. Messrs. Firth & Sons thereupon withdrew their men from the work and informed the Corporation that the men would be withdrawn until the questions raised by the Corporation's electrical engineer had been definitely settled. The Corporation then gave notice under the terms of the contract requiring the company to proceed with the work within a period of seven days. Messrs. Firth & Sons not having complied with this notice, a second notice was given to the firm determining the contract. Messrs. Firth & Sons, alleging that the contract had not been validly determined, required that the matter should go to arbitration. The company claimed 1,602*l.* 1*s.* 6*d.*, and the Corporation claimed 5,169*l.* for alleged breach of contract. The case raised the important question whether the Corporation, which had entered into an agreement to pay the contractor certain sums on account, could terminate that agreement on the ground that the contractor had not proceeded with the work. On the other hand, the contractor alleged that the fact that the Corporation had neglected or refused to make payments on account, and that the engineer had neglected or refused to grant certificates for large amounts of work done, was of itself a sufficient ground to entitle him (the contractor) to cease work until such payments had been made.

Mr. Patchell has found that the certificate was withheld within the meaning of clause 26 of the agreement, which gave the right to the contractors to suspend the works, and deprived the Corporation of the right to terminate the contract. He has further found that the notice by the Corporation to terminate the contract was unreasonably and vexatiously given, and that the contractors did not within the meaning of clause 26 fail for fourteen days to proceed with the work. He finds in favour of the contractors for materials delivered 979*l.* 16*s.* 2*d.*; for labour done, 287*l.* 16*s.* 7*d.*, and as reasonable profit 154*l.*, making a total of 1,421*l.* 12*s.* 9*d.*, the amount claimed against the Corporation. He also orders that the costs of the contractors be paid by the Corporation as between solicitor and client, also the costs of the award, viz. 169*l.* 1*s.* The arbitrator also dismisses the counterclaim of the Corporation.

### GYPSUM IN THE DOVE VALLEY.

A MEETING of the North Staffordshire Institute of Engineers was held last week at Hanley under the presidency of Sir Lees Knowles. Among the papers read and reported in the *Staffordshire Advertiser* was one by Mr. Trafford Wynne on "Gypsum and its Occurrence in the Dove Valley." He said gypsum is found very widely distributed over the world, especially in the vicinity of the deposits of rock salt, although much more rarely under workable conditions. In England it is found in the marls overlying the salt deposits of Cheshire, Worcestershire, Durham and Staffordshire. The Chartley mine, worked on an extensive scale some years ago, is in close proximity to the present salt wells near Stafford. The workable deposits in England, extending from the Eden valley, near Carlisle, to Battle in Sussex, lie near a line drawn between these two places. The writer has seen extensive deposits in Northern Persia, near the borders of the great Salt desert. It is there known as "gatch." It is soft and extremely white, and closely resembles the gypsum found in detached bodies, locally called "self pillars," found near the edges of the main deposits near Tutbury. The writer has also seen gypsum in Mexico and other countries. After referring to the history of the use of alabaster by sculptors, he proceeded to speak of the composition of varieties of gypsum. He went on to say sulphate of lime is found in most of the geological formations. The workable beds in the Northern and Midland counties of England are found in the New Red Marl or Upper Keuper division of the Trias. In Sussex the deposit occurs in the Purbeck beds. The method of deposition of these beds is a question which does not seem to have been as yet properly elucidated. Professor Archibald Geikie says:—"The study of the precipitations which take place on the floors of modern salt lakes is important in throwing light upon the history of a number of chemically formed rocks. The salts in these waters accumulate until their point of saturation is reached, or until by chemical reactions they are thrown down. The least soluble are naturally the first to appear, the water becoming progressively more and more saline till it reaches a condition like that of the mother-liquor of a salt works. Gypsum begins to be thrown down from sea water when 37 per cent. of water has been evaporated, but 93 per cent. of water must be

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driven off before chloride of sodium can begin to be deposited. Hence the concentration and evaporation of the water of a salt lake having a composition like that of the sea would give rise first to a layer or sole of gypsum, followed by one of rock salt. This has been found to be the normal order among the various saliferous formations in the earth's crust. But gypsum may be precipitated without rock salt, either because the water was diluted before the point of saturation for rock salt was reached, or because the salt, if deposited, has been subsequently dissolved and removed. This theory would necessitate the belief that the deposits now being considered were formed by the evaporation of a salt lake, and certainly the presence of the salt-beds on the western side of the plateau, under which the deposit is found, lends some support to this idea." The principal of the workable deposits, if not all of them, are found in valleys such as the Eden valley, the Dove valley and largely in the Trent valley, below its confluence with the river Dove and afterwards with the river Derwent of Derbyshire. Both of these last-named rivers have their source in limestone regions, and it may be that the beds of gypsum have been originally carbonates and afterwards changed by the action of springs into sulphates. Again, the rivers may have had something to do with the deposition of the gypsum beds. In the case of the Dove valley it rather seems that the river had cut through the overlying strata and denuded the beds, and so exposed them on the valley side. It must be noted that the gypsum is here found only on the south side of the valley and considerably above the present river level. The section affords some idea of the position of the deposit with reference to the river Dove. After speaking of some of the uses of gypsum, the writer said, with regard to gypsum deposits of the Dove valley, it has long been recognised by those who have studied the subject that it is to the presence of these deposits under and in the hills from which the breweries derive their water supplies that the pre-eminence of the beers brewed in Burton-upon-Trent is due; and this fact, as well as the ancient history of the deposit already alluded to, gives a special interest to the study of the deposits of the Dove valley. The deposit, so far as at present proved, lies near the village of Hanbury, and just to the south of the road which leads from Tutbury Castle to Sudbury. The three mines which are now working are situated

close to this road. Two of the mines are situated at Fauld and one at Draycott-in-the-Clay. The mine operated by Messrs. J. C. Staton & Co. at Fauld has been worked by them or their predecessors for very considerably over 100 years. It was originally an open quarry, and there is still to be seen the old kiln where the gypsum was burnt, and the threshing-floor where the burnt stone was beaten with flails into powder, and in that condition it was sold as plaster. In those days, sixty to eighty years ago, the production of alabaster and plaster was so limited that it was customary, when a large building operation was entered upon, for the owner or builder to pay down a lump sum to the quarry-master, sending an agent to see that he obtained the contracted-for quantity of alabaster or plaster, and that it was not sold elsewhere. Messrs. J. C. Staton & Co. had another quarry adjoining the old one, but both are now abandoned owing to the cost of removing the overburden, and the deposit is worked as a mine by means of a tunnel running into the hill-side. The stone is dressed and sorted at the tunnel entrance and then sent over a private railway into the valley, and over the river Dove to the North Staffordshire Railway at Scropton, and thence conveyed to the mill at Tutbury. This mill, originally the cornmill for Tutbury Castle, is now worked by turbines, the motive-power being furnished by the waters of the Dove conveyed in a flume, cut in the reign of Henry VII. The other mine at Fauld, worked by Messrs. P. Ford & Sons, immediately adjoins the mine worked by Messrs. J. C. Staton & Co. The mill is erected in close proximity to the mine. The third mine working this deposit, at Draycott-in-the-Clay, was opened a few years ago by the Plaster, Brick and Stone Company, Ltd. The mill is also situated at Draycott. The gypsum is found outcropping on the hill-side and has been proved to be a continuous though irregular deposit, which runs back—how far has not yet been proved—into the hills. The gypsum is of the massive variety, crystals being very rarely met with. All classes of stone are mined, from large alabaster blocks, either pure white or veined or coloured and the best white gypsum from which the highest grades of plaster are made, through the various grades down to stone so mixed with marl as to be valueless. Anhydrite, or as it is called locally, "hard stone," is met with in varying quantities. It is difficult to

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account in any satisfactory way for the presence of this anhydrite in the gypsum. Mr. D. Burns states that in the Eden valley it is found about the middle of the seam, and apparently it is there about the same thickness throughout. In the Dove valley deposit it is found, according to the writer's experience, sometimes in one part and sometimes in another part of the seam, although never immediately in contact with the roof or floor of the mine, and it comes in and goes out without any apparent reason. There seems no dividing line and no clear cleavage between the gypsum and the anhydrite. The hard stone is often intimately mixed with the best gypsum stone; it then has much the same appearance, and at times it is only by testing with the pick that the hard stone can be detected. Near the surface anhydrite is rare, and it seems to increase with the thickness of cover. Where the seam is at its thickest—and at times it runs over 20 feet thick—a seam of anhydrite is often found above the usual height of the stone, with a further thickness of stone of the best quality above it. As the workings proceed further into the hill the quantity of anhydrite seems to increase, and it then occurs more frequently near the middle of the seam. It still does not form a continuous seam, but will extend for 15 or 20 feet at one place and will then disappear only to reappear at some distance further on. There is no apparent reason either for its coming in or going out. It does not appear to be affected by water, as it is found in some parts of the mine where considerable water is met with. The writer is unable to evolve any satisfactory theory to account for the presence of anhydrite in the gypsum deposit, and all that occurs to him appear to be inadequate, when examined in the light of experience. An interesting feature of these gypsum deposits, but one which adds considerably to the cost of working, is the presence of "wash-holes." They are circular holes, varying in size, which run up through the stone, and often through the hard roof-marl into the soft overlying marl. Some of these holes are large and circular in form, and appear to have been formed by the "swirling" action of water. The cavities of wash-holes are usually empty. Other holes are found consisting of long, narrow fissures filled with the soft earth which lies above the marl-roof. These fissures are found when approaching any surface depression, and require to be timbered. The roof of

the deposit is composed of hard marl containing still harder blue-marl "bullets." It stands very well when dry, but in wet places a layer varying from 18 inches to 3 feet in thickness soon "sags" and, where a road requires to be kept open, this must be either pulled down or timbered. Oak props and second-hand railway sleepers for bars have proved satisfactory in this mine. The floor of the mine is a hard marl similar to that forming the roof. Mr. Wynne concluded with remarks on the methods of working and the extent of the deposit.

Mr. Bennett H. Brough pointed out the importance of the paper, as the Dove valley deposits were now described for the first time. He noted in the general portion of the paper a few omissions. For example, Paris was not mentioned as a source of supply, and yet two-thirds of the world's supply of gypsum came from the Montmartre district; indeed, the world's annual production at the present time was 3,000,000 tons, of which France produced 2,000,000 tons. The Paris deposits were of the Tertiary age, unlike the Nottingham, Staffordshire and Cumberland, which were of the Triassic, and the Sussex, which were of the Purbeck age. The author too did not mention the Tuscan alabaster. The deposits at Volterra had long been worked. Scientific progress had hardly touched the technology of plaster. No more was known of its action than was known by the ancient Egyptian manufacturers, who did not concern themselves about the temperature of burning nor about the degree of fineness of the material. These considerations had induced the International Testing Congress at Brussels last week to appoint a special committee to deal with gypsum, and to ascertain whether it would not be possible to draw up a scheme for the unification of methods of testing that material.

Mr. Wynne, in replying to criticisms, said that works which a few years ago were turning out 1,000 tons of plaster were now producing 10,000 tons, and the machinery and methods of manufacture were quite up to date. It had been suggested that plaster of Paris was produced by calcining gypsum. A variety known as Italian plaster was produced by calcining and grinding gypsum; but plaster of Paris was gypsum ground and then boiled, and in the last twelve years there had been a great improvement in the method of boiling.

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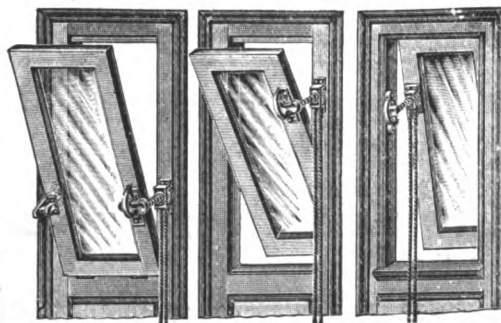
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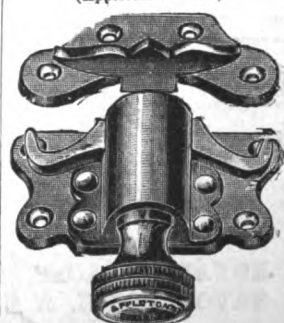
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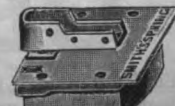
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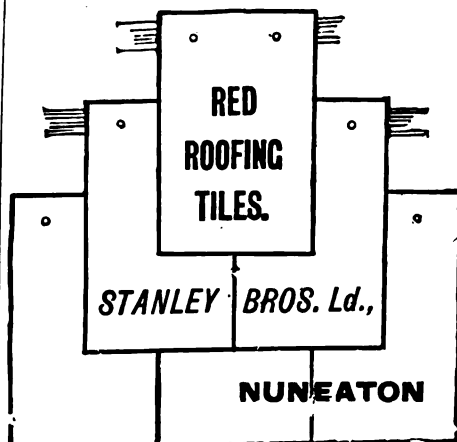
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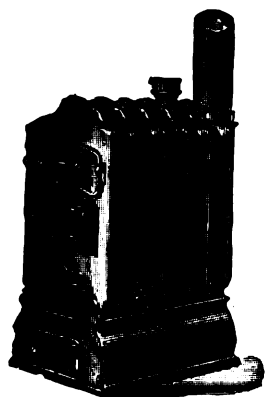


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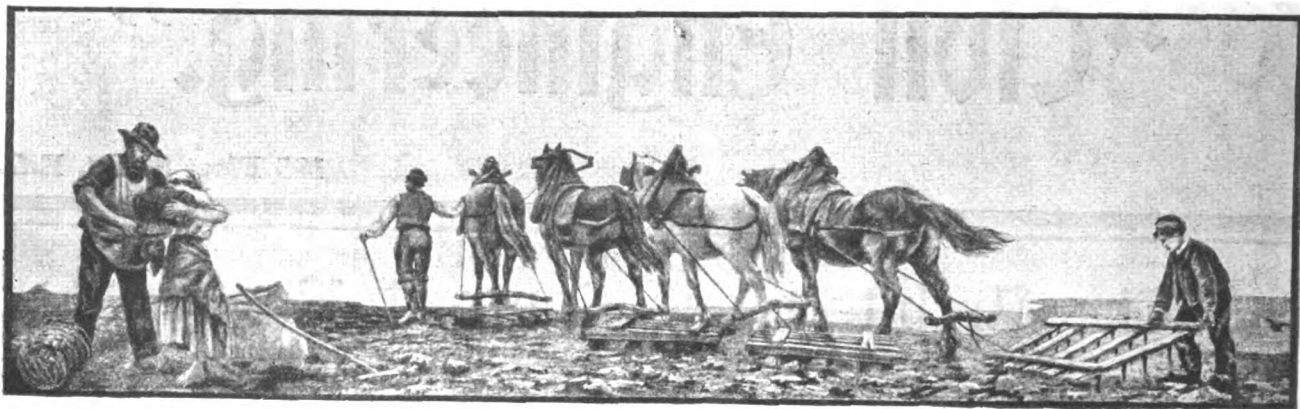
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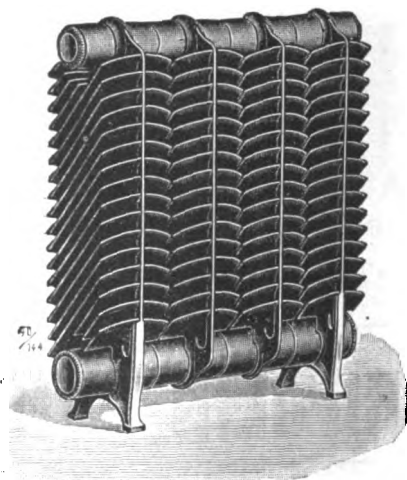
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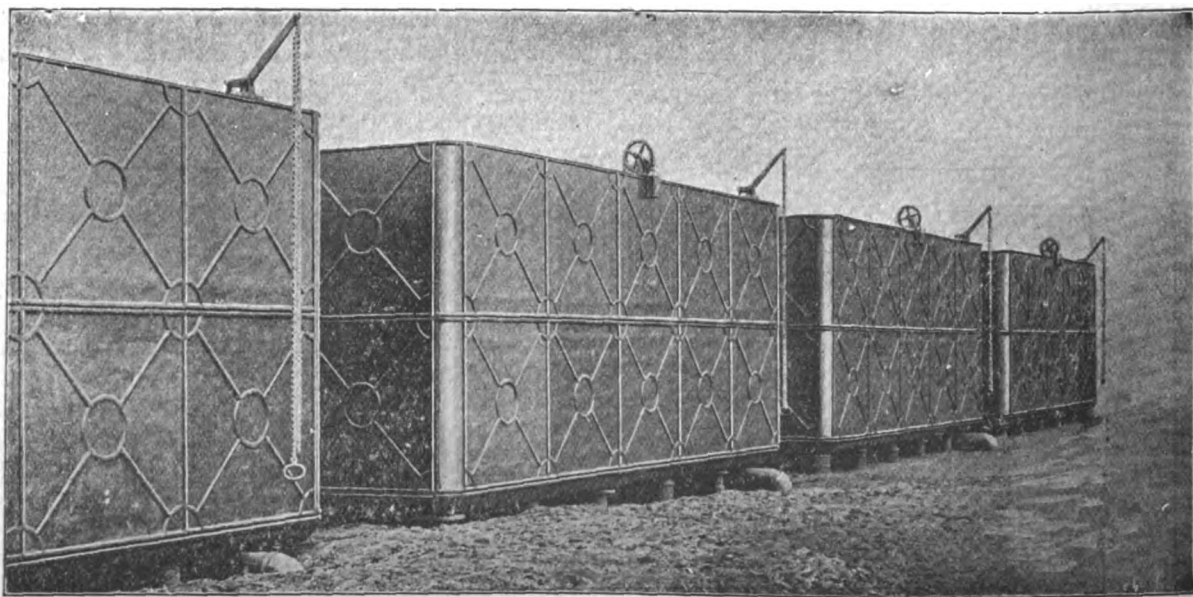
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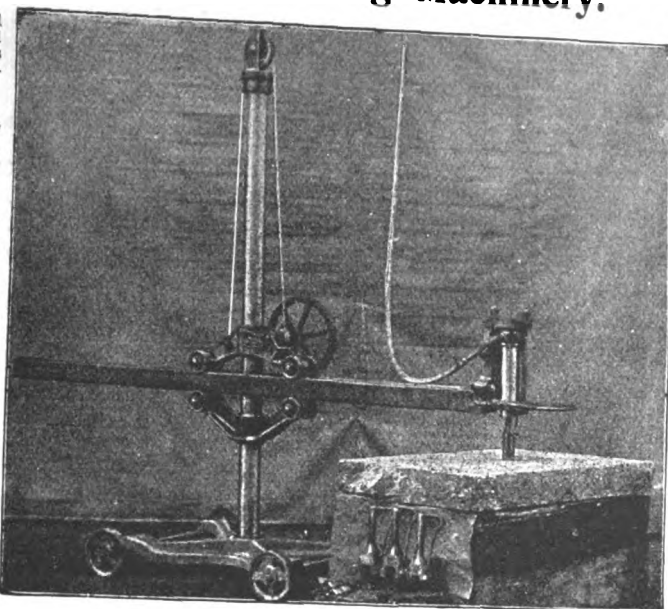
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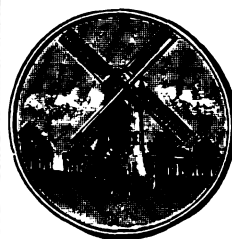
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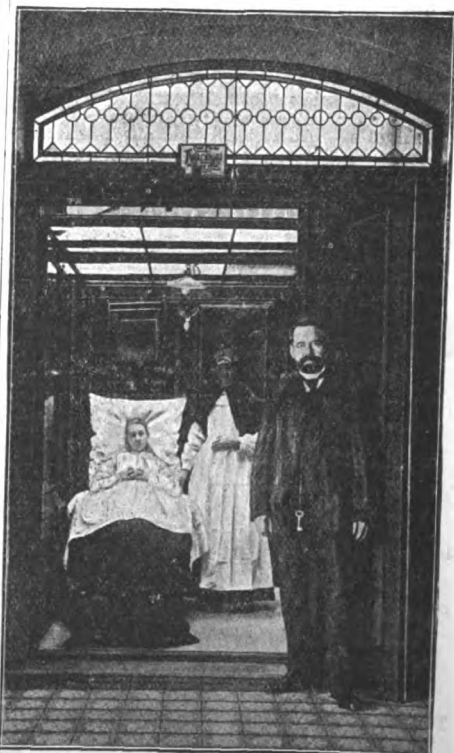
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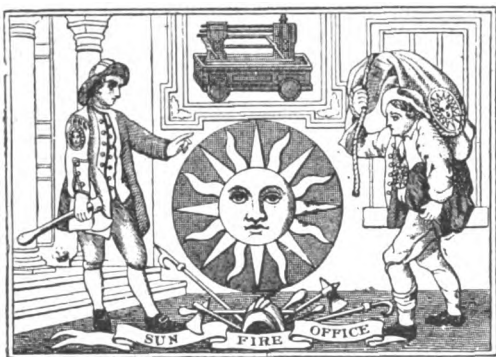
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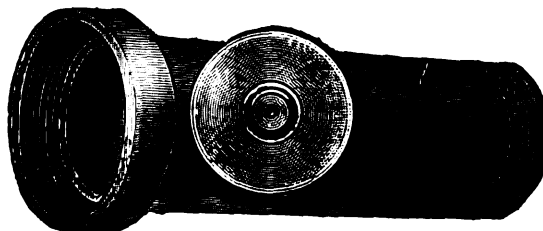
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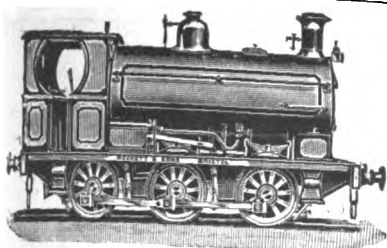
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# THE Architect and Contract Reporter.

FRIDAY, SEPTEMBER 28, 1906.

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P. A. GILBERT WOOD,

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## Important Notice to the Architects and Civil Engineers of Westminster.

As Westminster has become one of the most important centres of the professions of Architecture and Civil Engineering, arrangements have been made by Messrs. GILBERT WOOD & CO., Ltd., to establish Branch Offices in that district at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. becoming the representatives for all business purposes.

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

### EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further

answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

### TENDERS, ETC.

\* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

### COMPETITIONS OPEN.

GAYWOOD.—Oct. 22.—The Norfolk education committee invite plans, specifications, elevations and estimates for a new school. The plan (if any) selected will be accepted subject to the approval of the Board of Education. Particulars can be obtained on application to the Secretary, at the County Education Office, 57 London Street, Norwich.

MONTEVIDEO.—Dec. 14.—La Comision Nacional de Caridad require competitive plans for new founding hospital with approximate cost. Plans and report, under mottoes, and, in sealed envelope, name and address of competitor. The four selected plans will receive 212l. each, and will be asked to further compete. Further particulars from the Consulate-General for Uruguay, 5 and 6 Clement's Inn, Strand, W.C.

### CONTRACTS OPEN.

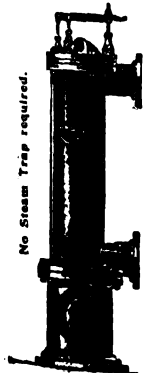
BARROW-IN-FURNESS.—Oct. 8.—For the erection of fish stalls adjoining the butter market. The Borough Engineer and Surveyor.

BEVERLEY.—Oct. 1.—For the erection of extensions to the East Riding of Yorkshire County Council offices. Deposit 17. 1s. Mr. B. S. Jacobs, architect, Bowlalley Lane, Hull.

BROWNHILLS.—Oct. 2.—For the construction of detritus tanks, bacteria filters and other incidental works in connection therewith, for the Brownhills Urban District Council, Staffs. Deposit 27. 2s. Messrs. Willcox & Raikes, engineers, 63 Temple Row, Birmingham.

BIRSTALL.—Oct. 4.—For the erection of a mortuary, wash-house, &c., at the small-pox hospital, Owler Lane, Birstall, Yorks. Mr. A. W. Whitaker, surveyor, Nab Lane, Howden Clough, Birstall.

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BRIDGEND.—Oct. 13.—For erecting a mortuary, &c., at the workhouse. Mr. P. J. Thomas, architect, Bridgend.

CARDIFF.—Oct. 2.—For the erection of a warehouse in Millicent Street. Deposit 1*l.* 1*s.* Mr. John H. Phillips, architect, Clive Chambers, Windsor Place, Cardiff.

COVENTRY.—Oct. 2.—For additions to stabling, &c., Cox Street and Brewery Street, for the Coventry Perseverance Co-operative Society. Messrs. Harrison & Hattrell, architects, 23 Hertford Street, Coventry.

COVENTRY.—Oct. 15.—For erection of buildings at Foleshill works, comprising retort-house, 220 feet by 130 feet by average height of 45 feet; coal stores, 100 feet by 70 feet by 32 feet high; coal-breaker pit, 42 feet by 17 feet by 25 feet deep; two chimneys, each 82 feet high; 350 yards of sunk dock for single line of railway stokers; mess-rooms, lavatories, &c., for the gas committee. Deposit 1*l.* 1*s.* Mr. Fletcher W. Stevenson, general manager and engineer, Gasworks, Coventry.

COUNDON.—Sept. 29.—For additions to Hare and Hounds inn. Mr. T. H. Murray, architect, Consett.

CROYDE.—Oct. 4.—For the erection of a Baptist minister's house at Croyde, Devon. Mr. J. C. Southcombe, architect, Barnstaple.

DEAL.—Oct. 6.—For the erection of a school to accommodate 240 infants, together with boundary walls and other site works. Deposit 1*l.* 1*s.* Mr. Chas. L. Crowther, architect, Queen Street, Deal.

DEVIZES.—Oct. 3.—For the erection of shedding and the whole of the other necessary works in connection with the showyard for the meeting to be held at Devizes in 1907, for the Wiltshire Agricultural Association. Deposit 1*l.* 1*s.* Mr. James Welch, secretary, Market Lavington, Devizes.

EAST MEON.—Oct. 6.—For two cottage dwelling-houses to be erected at East Meon, for the trustees of the Forbes Almshouses, East Meon, Petersfield. Messrs. Bucknall & Cowper, architects, 123 Knights' Hill Road, West Norwood, London, S.E.

EXETER.—Oct. 2.—For certain plumber and builder's work at Guardians' offices, New Buildings, Exeter. Mr. R. M. Challice, 14 Bedford Circus, Exeter.

GILLINGHAM.—Oct. 2.—For the erection of a pair of cottages at Twydale Lane. Mr. Walter C. Stunt, Loresden, Faversham, Kent.

HALIFAX.—Oct. 6.—For mason, carpenter, joiner, plasterer, slater and painter's work in erection of five dwelling-houses at Holywell Green. Messrs. Chas. F. L. Horsfall & Son, architects, Lord Street Chambers, Halifax.

HAVERFORDWEST.—Oct. 20.—For the construction of the meat market, including new steel roof with elliptical lattice-braced principals, &c., for the Corporation. Deposit 2*l.* 2*s.* Mr. J. Preece James, architect, Tenby.

IRELAND.—Oct. 5.—For the erection of twelve working-class lodging-houses in the town of Mallow. Mr. D. J. Buckley, architect, 53 South Mall, Cork.

IRELAND.—Oct. 5.—For building a technical school at Strand Road, Londonderry. Deposit 2*l.* 2*s.* Mr. Edward J. Toye, architect, 20 Great James Street, Londonderry.

IRELAND.—Oct. 8.—For the erection of a Crown post office at Carrick-on-Shannon, co. Leitrim. Deposit 1*l.* The Post Office, Carrick-on-Shannon.

LEVENSHULME.—Oct. 4.—For the erection and completion of technical school at the rear of the Chapel Street Council school, Chapel Street. Deposit 3*l.* 3*s.* Mr. Henry Littler, architect, 16 Ribblesdale Place, Preston.

LICHFIELD.—Oct. 6.—For the following works, for the sanitary committee:—(a) Excavating and forming two filter-beds, making and erecting wood carrier on brick piers, alteration of humus tanks, including brickwork, cast-iron pipes and valves, building sludge chamber, with elevator and other appurtenant work in connection therewith, at the sewage works, Curborough, Lichfield; (b) providing and fixing over the said filter-beds two complete sets of galvanised iron tubing to form fixed spray distributors; (c) erection of workmen's houses near to the works at Curborough. Mr. Emerson Brooke, city surveyor, Lichfield.

LONDON.—Oct. 9.—For the execution of certain works in connection with the widening of the Lower Richmond Road at the southern approach to Putney Bridge, in the Metropolitan Borough of Wandsworth. These comprise the demolition of the existing parapet wall and end walls o

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LONDON.—Oct. 11.—For carrying-out extensions and alterations of the Council's baths and wash-houses, Kennington Road, for the Lambeth Borough Council. Deposit 1*l*. 1*s*. Mr. H. C. J. Edwards, borough engineer, 346 Kennington Road, S.E.

LONDON.—Oct. 13.—For the pulling-down of the existing brick-arched carriageway bridge over the canal, and the construction and erection of a new brick, concrete and steel carriageway bridge (30-feet span), a new tollkeeper's office and the execution of certain works appurtenant thereto, all in and about Warwick Avenue, for the Paddington Borough Council. Contract No. 1, building constructional works, &c.; (2) steelwork, &c.; (3) Nos. 1 and 2 together. Deposit 1*l*. for each contract. Mr. E. B. B. Newton, borough surveyor, Town Hall, Paddington.

LYMINGE.—Oct. 4.—For the erection of a chimney-shaft and alterations to a boiler-house at the workhouse, Lyminge, Kent; also separate tender for taking-out two boilers and fixing two other boilers and an economiser, for the Guardians of Elham Union. Mr. R. Loneragan, clerk, 41 Cheriton Place, Folkestone.

NETHER ALDERLEY.—Oct. 3.—For alterations at Nether Alderley Council school, Cheshire. Mr. H. Beswick, county architect, Chester.

NEWCASTLE-ON-TYNE.—Sept. 29.—For alteration and reconstruction of bakery in Gallowgate. Mr. George Reavell, jun., architect, Bondgate, Alnwick.

PENZANCE.—Sept. 29.—For the erection of a seaman's institute at Green Street, The Quay. Mr. Oliver Caldwell, architect and surveyor, Penzance.

REDDISH.—Oct. 6.—For erection of public baths, fire station and free library in Gorton Road, Reddish, Stockport. Deposit 2*l*. 2*s*. Messrs. Dixon & Potter, architects, 65 King Street, Manchester.

ST. BLAZEY.—Oct. 1.—For proposed cloak-room, w.c.s, &c., to the St. Blaze Boys' Council school, Cornwall. Mr. B. C. Andrew, architect to the committee, Biddick's Court, St. Austell.

SALFORD.—Oct. 4.—For additions and alterations to the town hall building, Duke Street, Broughton. The Borough Engineer's Office, Town Hall, Salford.

SCOTLAND.—Oct. 3.—For (1) brick and concretework, (2) joiners' work and (3) plumbers' work required in construction of a public convenience in Grey Place, Greenock. The Master of Works' Office, Municipal Buildings, Greenock.

SKIPTON.—Oct. 6.—The Council invite tenders for the construction of detritus tanks, sedimentation tanks, continuous filters, the laying-out of about 20 acres of land, the construction of a storm-water bed and main and other works in connection with their sewage disposal works. Deposit 2*l*. 2*s*. Mr. John Mallinson, engineer, Town Hall, Skipton.

STAFFORD.—Oct. 20.—For the erection of a high school for girls. Deposit 2*l*. 2*s*. Mr. Graham Balfour, director of education, County Education Offices, Stafford.

SWANSEA.—Oct. 4.—For the erection of four dwelling-houses at Port Tennant, for the Swansea Harbour Trustees, Mr. A. O. Schenk, M.I.C.E., Harbour Offices, Swansea.

TREVERBYN.—Oct. 1.—For extension of girls' cloak-room, &c., to the Treverbyn Council School, Cornwall. Mr. B. C. Andrew, architect to the committee, Biddick's Court, St. Austell.

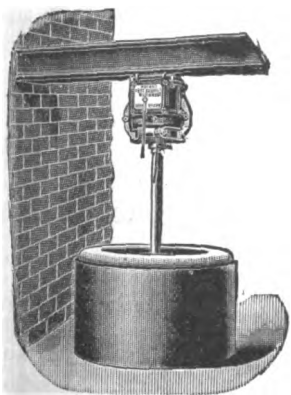
TRURO.—Sept. 29.—For the erection of a schoolroom adjoining the Truro Primitive Methodist church. Mr. J. Phillips, 32 Ferris Town, Truro.

ULLOCK MAINS.—Oct. 6.—For the erection of a stable at Ullock Mains, near Cokermonth. Mr. Herbert J. Watson, Cokermonth Castle.

WALES.—Oct. 1.—For rebuilding the Prince of Wales inn, Maesteg. Mr. W. Y. Davies, architect, 23 Talbot Street, Maesteg.

WALES.—Oct. 2.—For the erection of a dwelling-house near Ynysybwll cemetery. Mr. W. G. Thomas, surveyor, Town Hall, Mountain Ash.

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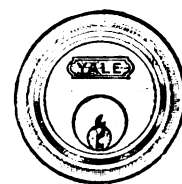


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WALES.—Oct. 2.—For carrying-out alterations and additions to co-operative shop, Treherbert. Mr. W. D. Morgan, architect, Post Office Chambers, Pentre.

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WALES.—Oct. 4.—For the erection of a lecture hall adjoining the English Congregational church, Bury Port. Mr. Thomas Davies, secretary, Cloth Mart, Bury Port.

WALES.—Oct. 6.—For the erection of a Baptist chapel at Cwm, Mon. Mr. N. Gasenius Lewis, architect and surveyor, Oak Street, Abertillery.

WALES.—Oct. 8.—For the erection of billiard and ante-rooms to workmen's hall, Abergwynfi. Deposit 2*l.* 2*s.* The Secretary.

WALES.—Oct. 8.—For the erection of Congregational chapel at Skewen, Neath. Deposit 1*l.* 1*s.* Messrs. Lloyd & Martyn, architects, Dynevor Post Office.

WALES.—Oct. 12.—For the erection of infirmary buildings, adjoining the present workhouse, Newport (Salop) Union. Deposit 1*l.* 1*s.* Messrs. Fleining & Son, architects, Bank Chambers, Wellington, Salop.

WANSTEAD.—Oct. 5.—For the erection of a two-storey school, manual training centre, cookery centre, caretaker's cottage, &c., on the Aldersbrook school site, Ingatestone Road. Deposit 2*l.* Mr. C. H. Bressey, architect, 70 and 71 Bishopsgate Street Within, E.C.

WARLEGGAN.—Oct. 1.—For the construction of a cloak-room, &c., at the Warleggan Council school, Cornwall. Mr. B. C. Andrew, architect to the committee, Biddick's Court, St. Austell.

WARMINSTER.—Sept. 29.—For the construction of a reservoir (about 50,000 gallons) and other work in connection therewith at the pumping station, Crockerton. The Surveyor.

WEYMOUTH.—Oct. 3.—For constructing and maintaining retaining wall about 510 feet in length, of ferro-concrete work (Hennebique's system), on the north side of the pile pier within the borough, filling-in and levelling-up between the existing pier and the intended wall, new fences, Portland stone coping and other works appertaining thereto. Mr.

W. Barlow Morgan, borough engineer, Municipal Offices, Weymouth.

WICKHAM MARKET.—Oct. 6.—For the erection of additions to the infirmary and laundry at the workhouse. Mr. T. Walter Read, clerk, Board-room, Wickham Market, Suffolk.

WOOLWICH.—Oct. 3.—For additions of kitchens and stores at the Union infirmary, Plumstead. Deposit 1*l.* 1*s.* Mr. J. O. Cook, architect, 1A Eleanor Road, Woolwich.

The general purposes committee of the Kingston Corporation have recommended the Town Council to issue invitations to a conference between representatives of the Corporation, the Surrey and Middlesex County Councils, the Kingston Bridge Trustees and the Charity Commissioners, with a view to arriving at an amicable solution of the difficulty of coming to an agreement as to the widening or rebuilding of Kingston Bridge.

An inquest was held at Sunderland infirmary on the 20th inst. on a mason's labourer who was fatally injured through the breakdown of some scaffolding. The coroner, in addressing the jury, said if they decided that any of the men on the job had been guilty of negligence in erecting the scaffold a verdict of manslaughter should be returned against those responsible. It seemed to him, however, that the jury could not distinguish between the men. They appeared to be all equally to blame. The jury agreed that the death was due to the breaking of a scaffold pole, and added that they were of opinion that the pole was unfit for the purpose for which it was used. They suggested that the builder should be censured for having used such poles. The coroner, addressing the master builder, observed that the jury had come to the conclusion that the man's death was due to the negligence of every man on the job. They did not pick out one more than another as being culpable, but they suggested that in the future a foreman should be employed and the scaffolding material overhauled and renewed. If, unfortunately, another death should occur through the same cause and same neglect, the master builder would be held responsible.

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### ANDOVER.

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| Bourne & Jenkinson . . . . .                        | 230  | 0  | 0 |
| Beale & Sons . . . . .                              | 223  | 10 | 0 |
| Tryhorn & Sons . . . . .                            | 212  | 15 | 0 |
| CHICK, CARDEN & Co., Highworth (accepted) . . . . . | 208  | 17 | 0 |

### BEVERLEY.

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| Curtis . . . . .                          | 754  | 1  | 0  |
| Dean & Co. . . . .                        | 750  | 17 | 2  |
| Brunton . . . . .                         | 747  | 7  | 1  |
| Constable . . . . .                       | 738  | 8  | 0  |
| Starkey . . . . .                         | 730  | 4  | 10 |
| Bradley & Co. . . . .                     | 717  | 4  | 3  |
| PAPE & SON, Beverley (accepted) . . . . . | 699  | 19 | 0  |
| Fisher & Son . . . . .                    | 667  | 17 | 2  |
| Medforth . . . . .                        | 665  | 0  | 11 |
| Dickenson . . . . .                       | 609  | 10 | 0  |
| Atkinson . . . . .                        | 601  | 0  | 0  |

### BRADFORD.

For alterations, general repairs, painting, &c., at Council school. Mr. P. MORRIS, architect, Exeter.

|                                                       |     |    |   |
|-------------------------------------------------------|-----|----|---|
| RIDGE, PRIOR & HARDING, Bideford (accepted) . . . . . | 328 | 10 | 0 |
|-------------------------------------------------------|-----|----|---|

### BRIXHAM.

For alterations and additions and tar-paving the playgrounds of the Council school. Mr. P. MORRIS, architect, Exeter.

|                                              |      |    |    |
|----------------------------------------------|------|----|----|
| Hazlewood Bros. . . . .                      | £853 | 5  | 0  |
| Silley . . . . .                             | 850  | 0  | 0  |
| Hazlewood & Son . . . . .                    | 776  | 1  | 6  |
| Stacey . . . . .                             | 740  | 0  | 0  |
| HAYMAN & WILLS, Brixham (accepted) . . . . . | 680  | 16 | 10 |

### CHESHAM.

For street works in Stanley Avenue. Mr. P. C. DORMER, surveyor.

|                                              |      |    |   |
|----------------------------------------------|------|----|---|
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| Jackson . . . . .                            | 507  | 0  | 0 |
| Fowles . . . . .                             | 485  | 0  | 0 |
| Mead & Son . . . . .                         | 450  | 0  | 0 |
| Gibbons . . . . .                            | 432  | 15 | 0 |
| Lee . . . . .                                | 419  | 0  | 0 |
| FREE & SONS, Maidenhead (accepted) . . . . . | 413  | 3  | 0 |

### COLWYN BAY.

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|--------------------------------------------|--------|---|---|
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|--------------------------------------------|--------|---|---|

### COMBE MARTIN.

For additions and alterations at Council school. Mr. P. MORRIS, architect, Exeter. Quantities by Mr. S. W. HAUGHTON, Plymouth.

|                                                  |        |    |   |
|--------------------------------------------------|--------|----|---|
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| R. Goss & Son, Combe Martin (accepted) . . . . . | 1,195  | 13 | 7 |

### DARTMOUTH.

For the demolition and rebuilding of the Globe inn. Mr. R. MONTAGUE LUKE, engineer, Plymouth.

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|-----------------------------------------|------|----|----|
| Vanstone . . . . .                      | £580 | 0  | 0  |
| Narracott . . . . .                     | 550  | 0  | 0  |
| Drew . . . . .                          | 480  | 0  | 0  |
| Back & Watts . . . . .                  | 434  | 0  | 0  |
| Yoe & Sons . . . . .                    | 414  | 0  | 0  |
| Andrews . . . . .                       | 397  | 0  | 0  |
| Bridgeman . . . . .                     | 387  | 18 | 11 |
| GULLETT, Dartmouth (accepted) . . . . . | 349  | 0  | 0  |

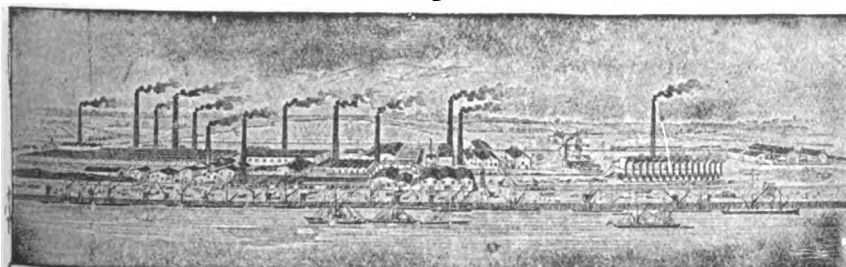
### DUNSFORD.

For alterations and additions to the Council school. Mr. P. MORRIS, architect.

|                                           |      |    |   |
|-------------------------------------------|------|----|---|
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| Manners . . . . .                    | 969    | 10 | 0  |
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| Whitfield & Co. . . . .                      | 193  | 0 | 0 |
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| Cockey & Sons . . . . .                      | 166  | 0 | 0 |
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| Williamson . . . . .                            | 3,256  | 0  | 0 |
| Thompson & Son . . . . .                        | 3,212  | 0  | 0 |
| Guttridge . . . . .                             | 3,179  | 0  | 0 |
| Close . . . . .                                 | 3,145  | 0  | 0 |
| Baron . . . . .                                 | 3,131  | 0  | 0 |
| Peake . . . . .                                 | 3,100  | 0  | 0 |
| Sprakes & Sons . . . . .                        | 3,050  | 0  | 0 |
| Dorrington . . . . .                            | 2,999  | 10 | 0 |
| Pumfrey . . . . .                               | 2,921  | 19 | 0 |
| Moss & Sons . . . . .                           | 2,848  | 2  | 0 |
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| Cock . . . . .                                        | 328  | 5  | 6 |
| Lee & Ellis . . . . .                                 | 314  | 19 | 0 |
| RIDGE, PRIOR & HARDING, Bideford (accepted) . . . . . | 307  | 16 | 6 |

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|-----------------------------------|------|---|---|
| Marchant & Hirst . . . . .        | £296 | 0 | 0 |
| Iles & Co. . . . .                | 257  | 0 | 0 |
| Parffit . . . . .                 | 227  | 0 | 0 |
| Quarterman . . . . .              | 225  | 0 | 0 |
| McManus . . . . .                 | 203  | 0 | 0 |
| Smith & Co. . . . .               | 199  | 0 | 0 |
| Wire-Wove Roofing Co. . . . .     | 189  | 0 | 0 |
| Hawkins & Co. . . . .             | 174  | 0 | 0 |
| Harrison & Co. . . . .            | 160  | 0 | 0 |
| Turpie Bros. . . . .              | 156  | 0 | 0 |
| KING, Hendon (accepted) . . . . . | 154  | 4 | 3 |
| Harbrow . . . . .                 | 153  | 0 | 0 |

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For alterations and additions to Marbury House, St. Owen Street, Hereford, for Mr. A. Thomason. Messrs. GROOME & BETTINGTON, architects and surveyors, King Street, Hereford.

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|---------------------------|------|----|---|
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| Cooke . . . . .           | 268  | 0  | 0 |
| Friend . . . . .          | 265  | 0  | 0 |
| Robery . . . . .          | 250  | 0  | 0 |
| Wilks . . . . .           | 247  | 10 | 0 |
| Hiles . . . . .           | 246  | 10 | 0 |
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| Dart & Francis                                                                           | £195 | 0 0  |
| Berry                                                                                    | 185  | 0 0  |
| Gillard & Son                                                                            | 128  | 18 6 |
| Backwell                                                                                 | 118  | 3 0  |
| COUNTER & GLANDFIELD, South Zeal (accepted)                                              | 101  | 9 0  |
| Partridge & Endacott                                                                     | 97   | 18 6 |

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| For the erection of school buildings in Selby Street West. Mr. JOSEPH H. HIRST, city architect. |         |       |
| Bowman & Son                                                                                    | £15,450 | 0 0   |
| Arnott                                                                                          | 15,408  | 18 11 |
| J. Houlton & Son                                                                                | 14,620  | 0 0   |
| Trubell, Son & Greenwood                                                                        | 14,548  | 13 6  |
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| Simpson & Sons                                                                                  | 14,498  | 0 0   |
| Hull General Builders                                                                           | 14,392  | 0 0   |
| Harper                                                                                          | 13,993  | 7 0   |
| Goates                                                                                          | 13,972  | 8 0   |
| PANTON, Anlaby Road (accepted)                                                                  | 13,580  | 0 0   |

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|                                                      |        |      |
|------------------------------------------------------|--------|------|
| For reconstruction of Oak bridge.                    |        |      |
| Gray                                                 | £1,100 | 0 0  |
| Mowlem & Co.                                         | 780    | 0 0  |
| Rawkins & Jackson                                    | 674    | 0 0  |
| Watson, jun.                                         | 620    | 0 0  |
| Hughes & Stirling                                    | 606    | 10 0 |
| Muirhead & Co.                                       | 520    | 0 0  |
| LANGLEY & JOHNSON, Slough (accepted)                 | 418    | 0 0  |
| For alterations and improvements at the public hall. |        |      |
| Emmett                                               | £1,269 | 4 11 |
| Burfoot & Son                                        | 1,100  | 0 0  |
| Chambers Bros.                                       | 1,092  | 0 0  |
| Cutler & Sons                                        | 997    | 0 0  |
| Eldridge & Son                                       | 982    | 0 0  |
| Danels & Son                                         | 980    | 0 0  |
| Gray                                                 | 950    | 0 0  |
| LACEY, Hounslow (accepted)                           | 898    | 0 0  |

### ISLEWORTH—continued.

|                                       |        |     |
|---------------------------------------|--------|-----|
| For reconstruction of Queen's bridge. |        |     |
| Gray                                  | £1,300 | 0 0 |
| Mowlem & Co.                          | 1,176  | 0 0 |
| Watson, jun.                          | 966    | 0 0 |
| Hughes & Stirling                     | 955    | 0 0 |
| Rawkins & Jackson                     | 903    | 0 0 |
| Muirhead & Co.                        | 850    | 0 0 |
| LANGLEY & JOHNSON, Slough (accepted)  | 671    | 0 0 |

### LINCOLN.

|                                                                                                                      |      |      |
|----------------------------------------------------------------------------------------------------------------------|------|------|
| For alterations and additions to the Black Goats hotel, High Street. Messrs. SHEPPARD & LOCKTON, architects, Newark. |      |      |
| Wright & Son                                                                                                         | £998 | 0 0  |
| Baines                                                                                                               | 985  | 0 0  |
| Horton                                                                                                               | 975  | 2 8  |
| McGinnis                                                                                                             | 900  | 0 11 |
| Brown & Son                                                                                                          | 863  | 5 0  |
| Grimsby Contracting Co.                                                                                              | 860  | 6 1  |
| Henderson                                                                                                            | 842  | 11 0 |
| H. T. & W. CLOSE, Lincoln (accepted)                                                                                 | 833  | 0 0  |
| Co-operative Society                                                                                                 | 800  | 0 0  |

### MANCHESTER.

|                                                                                                                                                                                                                |         |     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----|
| For the heating and hot-water supplies of the Manchester infirmary. Mr. EDWIN T. HALL, V.-P. R.I.B.A., 54 Bedford Square, London, and Mr. JOHN BROOKE, A.R.I.B.A., architects, 18 Exchange Street, Manchester. |         |     |
| Keith & Blackman                                                                                                                                                                                               | £25,700 | 0 0 |
| Berry & Son                                                                                                                                                                                                    | 24,280  | 0 0 |
| Newton, Chambers & Co.                                                                                                                                                                                         | 23,702  | 0 0 |
| Strode & Co.                                                                                                                                                                                                   | 18,593  | 0 0 |
| Haden & Sons                                                                                                                                                                                                   | 17,395  | 0 0 |
| Saunders & Taylor                                                                                                                                                                                              | 15,970  | 0 0 |
| DARGUE, GRIFFITHS & Co. (accepted)                                                                                                                                                                             | 15,536  | 0 0 |

### MEMBURY.

|                                                                                                                                    |      |      |
|------------------------------------------------------------------------------------------------------------------------------------|------|------|
| For alterations and additions to the Council school. Mr. P. MORRIS, architect, Exeter. Quantities by Mr. S. W. HAUGHTON, Plymouth. |      |      |
| Turner                                                                                                                             | £867 | 14 6 |
| Parsons Bros. & Dunster                                                                                                            | 764  | 0 0  |
| SPILLER & SON, Taunton (accepted)                                                                                                  | 711  | 0 0  |

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Painter, McLaren.

**STOCKPORT.**

For the erection of stables and coach-house, &c., at the Stepping Hill hospital, Hazel Grove. Mr. W. H. WARD, architect, Birmingham.

|                                |      |    |   |
|--------------------------------|------|----|---|
| Hoe                            | £498 | 0  | 0 |
| Eadie                          | 473  | 0  | 0 |
| Robinson & Sons                | 470  | 0  | 0 |
| Mullaney                       | 460  | 0  | 0 |
| J. & J. Parish                 | 460  | 0  | 0 |
| Boon & Fryer                   | 449  | 0  | 0 |
| Beattie                        | 440  | 10 | 0 |
| BARDSLEY, Stockport (accepted) | 420  | 0  | 0 |

**SEAFORD.**

For construction of 1,300 yards of 9-inch pipe sewer, &c. Messrs. POLLARD & TINGLE, engineers, Westminster, S.W.

|                                     |        |    |   |
|-------------------------------------|--------|----|---|
| Hawkins & Jackson                   | £1,523 | 0  | 0 |
| Hill & Co.                          | 1,443  | 0  | 0 |
| Young                               | 1,441  | 5  | 9 |
| E. & E. Iles                        | 1,396  | 0  | 0 |
| Napier & Sons                       | 1,290  | 0  | 0 |
| King                                | 1,267  | 14 | 7 |
| Porter                              | 1,249  | 0  | 0 |
| Williams                            | 1,175  | 19 | 0 |
| Lee                                 | 1,122  | 6  | 8 |
| Grounds & Newton                    | 1,111  | 0  | 0 |
| Wimpey & Co.                        | 1,098  | 0  | 0 |
| Jackson                             | 1,089  | 17 | 6 |
| Chambers                            | 1,052  | 15 | 0 |
| Streeter & Co.                      | 1,031  | 4  | 7 |
| Raynor                              | 997    | 0  | 0 |
| WALLIS & Co., Eastbourne (accepted) | 950    | 0  | 0 |

**TIPTON.**

For the erection of a free library at Toll End.

SPEKE & SON, Wolverhampton (accepted) £1,398 0 0

**WALES.**

For the erection of a mixed school with offices, boundary walls, &c., at Darranlas, Mountain Ash. Mr. W. H. WILLIAMS, architect, Town Hall, Mountain Ash.

|                                 |        |    |    |
|---------------------------------|--------|----|----|
| Thomas & Sons                   | £6,679 | 0  | 0  |
| Jones Bros.                     | 5,930  | 8  | 0  |
| Harris                          | 5,877  | 18 | 0  |
| Davies & Co.                    | 5,820  | 0  | 0  |
| Hughes & Stirling               | 5,675  | 0  | 0  |
| Jenkins & Sons                  | 5,545  | 0  | 0  |
| James                           | 5,520  | 0  | 0  |
| John                            | 5,443  | 5  | 8  |
| Knox & Wells                    | 5,423  | 0  | 0  |
| Williams Bros.                  | 5,404  | 11 | 6  |
| Leather & Sons                  | 5,374  | 0  | 0  |
| Richards                        | 5,355  | 10 | 8  |
| Jones Bros.                     | 4,992  | 17 | 5  |
| DAVIES, Mountain Ash (accepted) | 4,990  | 5  | 0  |
| Colborne                        | 4,927  | 14 | 10 |

**WALTHAMSTOW.**

For heating apparatus, Winus Avenue schools, for the Walthamstow education committee. Mr. H. PROSSER, architect.

|                           |        |    |   |
|---------------------------|--------|----|---|
| Russell & Co.             | £1,030 | 0  | 0 |
| Musgrave & Co.            | 1,021  | 0  | 0 |
| Palowkar & Sons           | 1,020  | 0  | 0 |
| Rosser & Russell          | 1,020  | 0  | 0 |
| Grundy                    | 997    | 0  | 0 |
| Price, Lea & Co.          | 996    | 0  | 0 |
| Fox                       | 971    | 0  | 0 |
| Wontner-Smith, Gray & Co. | 930    | 17 | 0 |
| Cassidy                   | 924    | 0  | 0 |
| Boyd & Sons               | 913    | 0  | 0 |

**WEST THURROCK.**

For the enlargement of the existing schools, for the Essex education committee. Mr. F. WHITMORE, architect, 73 Duke Street, Chelmsford.

BROWN, Grays, Essex (accepted) £1,903 3 4

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**EASTWOOD.**

For the erection of a new school and alterations to existing school, for the Essex education committee. Mr. F. WHITMORE, architect, 73 Duke Street, Chelmsford.  
F. & E. DAVEY, LTD. (accepted) . . . £2,789 0 0

**PURFLEET.**

For the enlargement of the Purfleet schools, for the Essex education committee. Mr. F. WHITMORE, architect, 73 Duke Street, Chelmsford.  
POTTER, Croydon (accepted) . . . £1,738 15 0

**NEW CATALOGUE.**

Gymnastic appliances are now a necessary part of the furniture not only of schools and colleges, but of independent clubs and clubs attached to various institutions. The long list of gymnasiums fitted and furnished by Mr. Gardiner shows that we in this country are competing with the Germans in physical exercises as in other modes of training. It is not always easy to strengthen muscles by special pursuits in the open air. But even in the smallest room it is possible to fit up an apparatus which will enable a man or a woman to go through beneficial exercise. The catalogue is therefore worth the attention of architects, for if ordinary workmen are employed to set up ladders, bridge ladders, various kinds of horizontal bars, &c., which bring a strain upon roofs and walls, inconvenience may be caused. Mr. Gardiner has carried out contracts for the Admiralty, the War Office and the India Office for several years, and he has recently fitted up the new barracks at Shotley with Swedish apparatus. The list of barracks is evidence of his unflinching success.

**TRADE NOTES.**

MESSRS. SAINSBURY BROS., LTD., clock works, Walthamstow, have just erected a large chiming clock at Shelley Church, Suffolk.

A LARGE illuminated bracket clock has been erected by Messrs. W. Potts & Sons, Leeds and Newcastle-on-Tyne, for Mr. W. Scott, proprietor of the *Observer* office, Rochdale. The clock is from the plans of the late Lord Grimthorpe, and celebrates the fiftieth jubilee of the newspaper, also the town jubilee of incorporation. Messrs. W. Potts & Sons have also just completed a new chime clock and bells for Urnston Church, Manchester, from Lord Grimthorpe's plans, the same being a memorial to the Reade family, of Urnston; and are now completing a new clock and chimes and new south dial for the Dean and Chapter of Ripon at the Cathedral, Ripon, from the late Lord Grimthorpe's plans. They have also just completed a new illuminated clock with bell for the Bainbridge family at Yarn Road new Wesleyan church, Stockton-on-Tees, and other important work.

THE town clerk of Dewsbury has been instructed to inform the Local Government Board that the Corporation intend to purchase the Hippodrome site and the Corn Mill estate for the purpose of extending the market; also the Old Foundry estate, with the object of constructing a new thoroughfare from Northgate to Foundry Street and widening Northgate. The remainder of the latter site will be offered for building purposes within the next ten years.

THE Grimsby Town Council have received the opinion of Mr. Balfour Browne, K.C., respecting three railway level crossings at Grimsby which occasion great inconvenience. He considered that such crossings could not be reasonably determined to be dangerous to the public, and that the railway companies could not be compelled to provide vehicular bridges or subways.

THE Dundee police committee recommend that provision should be made in the provisional order for powers to furnish house or lodging accommodation for members of the police force, in order that they might be concentrated and made available for duty on short notice on occasions of emergency, such as a great fire, public riot, &c. Further, it was decided to obtain Parliamentary sanction for the erection of police signal and fire alarm boxes, and also powers to safeguard the public against overcrowding in places of public amusement and recreation.

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## VARIETIES.

THE Bangor Normal College authorities are considering a scheme of enlargement which would cost 10,000*l.* and accommodate seventy additional students.

THE Local Government Board have sanctioned the loan for the proposed new secondary schools at Maldon, Essex, and building operations have just been commenced.

THE plans for the buildings on the new racecourse at Ayr have been before the Dean of Guild Court and have been passed. The estimated cost is 10,000*l.*

THE Cambridgeshire County Council have after some years consideration decided on the purchase of a site 4 acres in extent for a girls' school in Cambridge. The price is about 1,000*l.* per acre.

PRESIDENT ROOSEVELT has extended the eight-hour law so as to make it apply to all public work carried out under the supervision of any Government Department. The extension affects river and harbour improvements.

THE Berwick Town Council have decided by fourteen votes to seven to adopt a water scheme for the whole borough, including Berwick, Tweedmouth and Spittal, at an estimated cost of between 18,000*l.* and 20,000*l.* This scheme was defeated in the Council last January.

SIR WALTER GILBEY, Bart., has erected eight cottages at Bishop's Stortford and conveyed them to trustees, who are empowered to let them to the aged poor, married couples to pay 9*d.* and single persons 6*d.* per week rent. The tenants are to be chosen by ballot.

MR. JOHN ALEXANDER WEBSTER, head of the firm of Webster & Cannon, contractors, died on Monday. He was well known in the building trades throughout the country, his firm having carried out some large Government contracts.

THE members of the Bradford Corporation health committee on Monday visited Liverpool to inspect the labourers' dwellings provided by the City Corporation. The Bradford Corporation have up to the present not erected any workmen's dwellings.

THE Beath School Board have agreed to build two new schools, each to accommodate between 300 and 400 pupils. One of the schools will be built in Cowdenbeath and the other in Kelty. The erection of the schools has become

necessary owing to the rapid growth of population consequent upon the mineral development in that part of Fife.

THE Mansfield Town Council have approved a scheme furnished by the borough surveyor for new municipal offices. The scheme comprises a one-storey building with a flat roof, the walls being sufficiently strong to carry another storey, and providing thirteen shops and offices. The estimated cost was 2,900*l.*, the estimated rentals 350*l.*

THE Coventry City Council have resolved that Earlsdon County school be enlarged, at a cost estimated to amount to 5,735*l.*, and that application be made to the Local Government Board for sanction to a loan of that amount. A continuous growth of the population takes place in that district and extensive building operations are in progress.

It is reported that more important operations than have yet been undertaken are in immediate contemplation in connection with the new naval base at Rosyth, on the Firth of Forth. The railway is nearing completion, and everything is in readiness for making a beginning with the seaward works. With a view to obtaining more reliable information than is afforded by boring as to the strata under the sea bottom, Sir John Jackson & Co., of London, have been given the contract to sink a caisson. This will be followed by the building of a sea wall.

At the meeting of the Board of Management of the Manchester Royal Infirmary on Tuesday an account was given of the progress which is being made in the erection of the new infirmary at Stanley Grove. Some of the blocks are roofed and others are ready for roofing. Seven hundred men are working at Stanley Grove, and with the men in the quarries and other places getting material ready for use the new infirmary is finding work for probably one thousand men. Fifty thousand bricks are being delivered on the site day by day, and about 300 tons of stone every week.

SEVERAL propositions are being made for new harbour works in Algiers. At Nemours the authorities have under consideration the expenditure of 132,000*l.* on the construction of a port; the sum of 48,000*l.* has been asked for for harbour improvements at Arzew; at Algiers a project is in view for joining the island of Al-Djefua to the shore by a mole; and works are in progress at Bône which will cost



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## ILLUSTRATIONS.

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THE MITCHELL HALL.

NEW SESSIONS HOUSE, OLD BAILEY, E.C.

BEREDOS, CHURCH OF ST. PETER, HORNSEY.

325,800*l.*, the works for the new phosphate quay and the making of a new quay at the mouth of the Seybouse having been decided upon.

THE Llandudno District Council are now about to let a contract for the construction of the Mostyn Broadway, which is to connect Mostyn Street with the Craigydun suburb, and have agreed to insert a clause in the following terms:—"The contractor shall pay to all persons engaged by him in carrying out the works mentioned in the specification relating thereto such wages as are generally recognised in the district as the standard rate of wages in each trade for all competent workmen employed by him, and shall from time to time produce to the Council sufficient evidence that such wages are paid by him."

A DEPUTATION from the fair contracts committee of the Manchester and Salford Trades Council on the 21st inst. waited upon the watch committee of the Salford Corporation, for the purpose of protesting against an alleged practice of the watch committee in employing members of the fire brigade in a dual capacity. The deputation included representatives of wheelwrights and electricians, and it was said that the watch committee employed firemen who were also wheelwrights, electricians, painters, &c., and only paid them firemen's wages. The committee promised to investigate the matter, and to give a reply to the deputation in due course.

ACCORDING to an American Consular report, in the south of Portugal a serious attempt is being made with some chance of success to bring back into cultivation a large tract of land. Some energetic members of society in the district of Serpa, in combination with the municipal authorities, have set to work upon 100,000 acres, dividing it up into

allotments of 15 acres each and letting it at a nominal rent, calculated according to the estimated value of the land, free of local rates and taxes for ten years. Quite a heterogeneous mixture of settlers have already taken possession of their tenements. Carpenters, masons, doctors, chemists, barbers, seamstresses, tailors, and even beggars figure in the list.

THE Sunderland education committee were informed on Tuesday that the actual cost of labour and material in connection with the work done at the Thomas Street school by the Corporation was 131*l.*, as against 256*l.*, which was the lowest tender for it. The specifications were the same in each case. With regard to the Chester Road school the cost was 65*l.*, whereas 90*l.* was the lowest tender, and the next lowest was 130*l.* With those facts before them the committee authorised the borough engineer (Mr. Moncur) to do the outside work of the following schools:—Hendon Valley, 33*l.*, as against a tender for 65*l.*; Redby school, 42*l.*, as against a tender for 61*l.*, and James William Street school 46*l.*, as against a tender for 65*l.*

A SAN FRANCISCO correspondent, writing in the New York *Iron Age* of September 6, says:—The total amount of structural steel required in the city will be about 250,000 tons. An immense quantity of cement will be needed. The imports of both steel and cement so far have been light. The city is full of scrap-iron and steel, but not to anything like the amount that has been reported. Scrap steel brings 9 dols. per ton of 2,240 lbs. in large lots. There is enough scrap-iron and steel to supply this market for many a day. Of course, much will be sold to be shipped outside. The San Francisco market has been taking about 30,000 tons a year, which in ordinary years has brought very good prices.

THE education committee of Darlington announce the opening a few weeks hence of a day preparatory trade school for boys who intend to enter the engineering, building and allied trades. Both employers and trade union officials have given a welcome to the scheme, and many employers are prepared to engage boys direct from the school. The object is to afford a brief period of thoroughly practical training before a boy enters the works. Lessons will be given on the properties of the chief materials used

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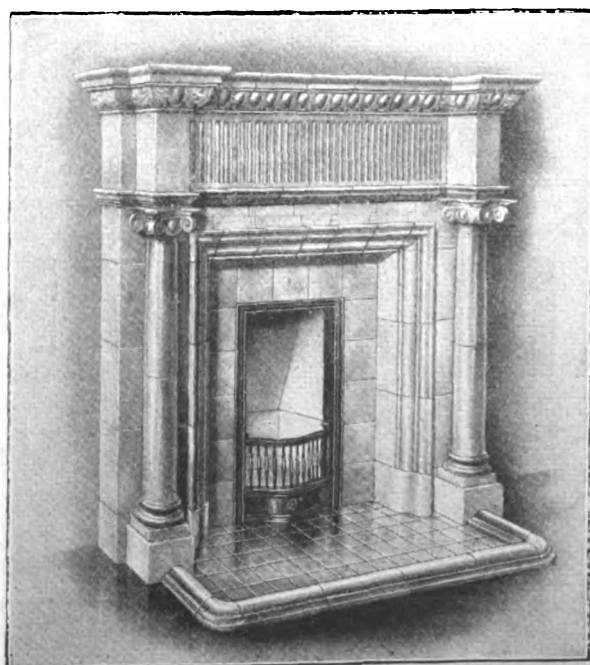
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Figure 7.

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in the engineering and building industries and practical mathematics (about five hours a week) as applied to engineering and other trades, including arithmetic, practical mensuration, short methods of calculation and workshop problems. There will also be five hours of general education.

THE St. Pancras Borough Council have passed an important part of the London County Council scheme for the electrification of the tramways from the north to the south. There was also a discussion concerning the electrification of the trains in Hampstead Road to Camden Road, from High Street, Camden Town, to Finsbury Park and from Camden Road to the Hampstead Terminus. It was suggested that the conduit system should be adopted for the first route and the overhead system for the other two. The recommendation that the London County Council be informed that the Borough Council adhere to its former resolution, that it is desirable that one system of electrification should be adopted, and requesting the London County Council to reconstruct the whole of the line in St. Pancras on the conduit system, was adopted by a large majority.

THE Barnsley Town Council on the 25th inst., on the recommendation of the sewage works committee, who had reported as to the best mode of proceeding with the proposed additional sewage works, resolved that the borough surveyor be instructed to advertise for tenders for constructing Sections 2 and 3 of the proposed additional sewage works, namely, the sewage distributors, metal pipes and special castings, the septic tanks, channels, carriers and bacterial filters. The plant would be capable of dealing with  $7\frac{1}{2}$  million gallons of sewage and storm water. The Local Government Board had sanctioned the borrowing of 33,447*l.*, of which there was still a sum of 24,464*l.* unexpended. The cost of the work included in the proposed immediate scheme would be from 18,000*l.* to 20,000*l.*, which would leave about 5,000*l.* to be dealt with later.

An experimental motor waggon has been introduced in North Staffordshire as a possible competitor to the local railway companies in the carriage of goods from the Potteries. It is complained that the railway rates are exorbitant. On Monday morning a powerful motor-waggon left Hanley with a  $5\frac{1}{2}$ -ton load of crockery goods for con-

veyance to Liverpool, a journey calculated to occupy eight hours. After being unloaded at Liverpool the motor-waggon will take up a load of grain for conveyance to mills at Hanley. It is anticipated that by this system goods will be carried more cheaply, conveniently and quickly than by rail or canal, and with less damage by breakage. The car is of 70-h.p., and while carrying six tons itself, will also have a trailer with a further load of four tons. It will make trips for several weeks, and it is then intended to place the results before the manufacturers and traders of the district, and ask them to interest themselves in a company which is to be formed.

At a meeting of the Neath Board of Guardians on the 19th inst. a letter was read from Mr. D. W. James, solicitor, of Swansea, stating that he was acting on behalf of Cammell, Laird & Co., Ltd., in various negotiations connected with their contemplated building of large iron and steel works on Crumlin Burrows. There were, he said, a great many preliminary matters to be arranged, but if these were arranged then Cammell, Laird & Co. would immediately proceed with the erection of the works. It would take at least five years, and possibly seven, before the whole of the works were completed, although they might be manufacturing pig-iron within two years. He was instructed to negotiate with the Board for an exemption from payment of rates in respect of these works for a period of seven years. A great many towns in the kingdom were granting these exemptions in favour of new industries, and Cammell, Laird & Co. had been offered exemptions already at other places. The site for which negotiations are proceeding at Swansea for the extensions Messrs. Cammell, Laird & Co. contemplate is on the foreshore of Swansea bay, and east of the harbour. It comprises some 200 acres of what are known as the Crumlin Burrows.

A DEPUTATION from the Holyhead Urban District Council on Saturday interviewed the Parliamentary Secretary of the Board of Trade on his visit of inspection. It was urged that the Government should remove sunken rocks called Platters Rocks, which lie across the harbour entrance, and are 18 acres in extent. In addition, there was an urgent necessity for a deep-water berth within the harbour, as its absence caused considerable inconvenience to vessels coming into the roadstead disabled. The Council appealed

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for a quay from Carreg Walden, on the west side of Salt Island, to the buoy on the north end of the island; its length in the northern direction would be 1,200 feet, thence east 600 to 700 feet, covering the dangerous Cybi reef and Carreg Jordan. The estimated cost of the removal of the Platters Rocks to the lowest level was 250,000*l.*, to 25 feet 200,000*l.*, to 20 feet 50,000*l.*, to 16 feet 30,000*l.*

The great reservoir and waterworks of the Loughborough Corporation at Blackbrook, which have been in course of construction during the past six years, and cost over 100,000*l.*, have been declared open. The masonry and concrete dam is 525 feet in length across the valley, 65 feet thick, and measures between 50,000 and 60,000 cubic yards. At the present time there are about 85,000,000 gallons of water stored, and 29,000,000 at the Nanpantan reservoir. The down-stream face wall is built of blue bricks, bonded throughout in such a manner that there is not a single continuous horizontal joint, and this is securely bonded into a backing of specially fine concrete. The dam is 14 feet thick at the weir level, and six arches of 25 feet span each have been built to form an overflow and to carry a roadway 9 feet wide across the dam. There is a tail pond to act as a water cushion and prevent all scouring action on the toe of the dam during the heaviest flood discharges, and a valve tower and valve house with apparatus so arranged that the water may be discharged out of the reservoir at various heights. Messrs. H. Fotherby & Sons, of Burnley, carried out the work until April 1904, when it was carried to a conclusion by the Corporation. The engineers were Messrs. G. & F. W. Hodson.

#### PRIZES FOR INDUSTRIAL DESIGN.

THE Council of the Society of Arts hold a sum of 400*l.*, the balance of the subscriptions to the Owen Jones Memorial Fund, presented to them by the memorial committee on condition of their spending the interest thereof in prizes to "students of the School of Arts who, in annual competition, produce the best designs for household furniture, carpets, wall-papers and hangings, damasks, chintzes, &c., regulated by the principles laid down by Owen Jones."

The prizes will be awarded on the results of the annual competition of the Board of Education, South Kensington. Competing designs must be marked "In competition for the Owen Jones Prize."

No candidate who has gained one of the above prizes can take part in the competition.

The next award will be made in 1907, when six prizes are offered for competition, each prize to consist of a bound copy of Owen Jones's "Principles of Design" and the Society's bronze medal.

#### THE "OXFORD" REDECORATION.

THE annals of this popular place of entertainment, which occupies the site of the old Bear and Castle, in Oxford Street, are quaint as well as interesting, and it would be difficult to realise that at one time the St. Giles's village pound stood nearly opposite the old hostelry in question, from the back windows whereof might be seen a little more than a century ago such vestiges of rural scenery as an orchard, a pond and a windmill.

On the ground mainly afforded by the old inn-yard the Oxford Music Hall, then considered to be the finest of its class in London, was built and opened in the early part of 1861. It was partially destroyed by fire in 1868, but reopened the following year after undergoing reconstruction. In 1872 a disastrous fire again occurred, which this time left little more than bare walls and charred benches. However, in the following year a new and enlarged Oxford was again thrown open to the public. This handsome and luxurious structure was designed by Messrs. Wylson & Long, and Mr. Frank Kirk was employed as contractor.

During the last three months, and under the superintendence of the same firm of architects, the "Oxford" has been undergoing a transformation, and now without having suspended the performance for a single night, the public will find it redecorated and refurnished in a style and manner which for comfort and elegance, it is claimed, vies with any similar building in London. Attention has not been confined to the auditorium alone, as is too often the case with theatre decoration, but all the approaches, staircases, passages, &c., have been completely renovated.

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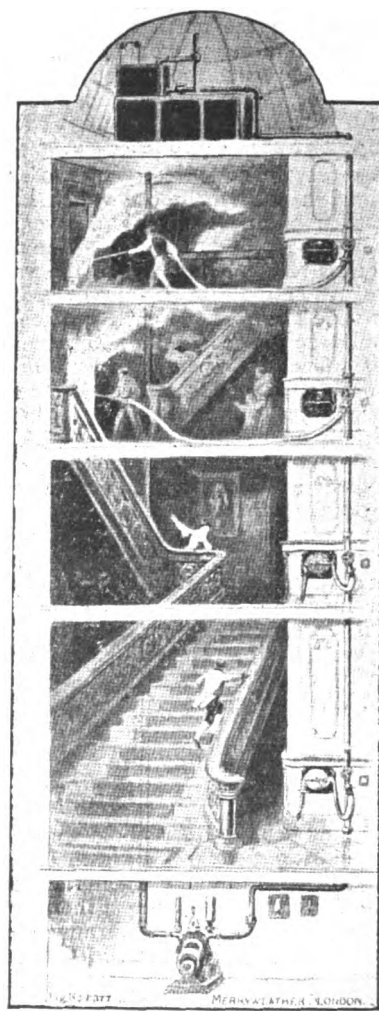
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The ground floor and first circle have been entirely re-seated with tip-up automatic chairs upholstered in rich red velvet, and some remarkable structural alterations have been carried out. The grand salon on the O.P. side of the stalls has been enlarged, thus forming a handsome adjunct. On the opposite side of the stalls the wall which formerly obstructed the view has been removed and replaced by two slender columns, encased in *repoussé* copper. Generally, it may be added, the interior of the building has been beautified in every respect, so that the comfort of the audience is much increased.

#### A NOVEL FIRE-MAIN INSTALLATION.

In the West End of London the waterworks pressure is in many houses insufficient to enable effective jets for fire extinction to be thrown on the upper floors, and several devices have been adopted to increase the pressure. At Mr. Alfred de Rothschild's residence in Seamore Place, Curzon Street, Messrs. Merryweather have just completed a system which has some new features. As shown in our illustration, the fire-main is carried up to the roof, where a large tank is connected to it. This tank is filled from waterworks' main through a ball valve and a reflux valve is fitted to the fire-main pipe, so that when the pumping apparatus increases the pressure the water cannot return to the tank, but supplies the hydrants placed on each floor. The pump, which is of the "Hatfield" treble-barrel type, driven by an electric motor, is placed in the basement and takes suction from the roof tank. The starting switches and resistances are placed near by and an ingenious float arrangement working in a small tank placed over the large one on the roof is used to operate the main switches. By this device there are no heavy cables carried through the building. When a fire occurs and the hydrant is opened the smaller tank empties into the fire-main, the float falls and the pump automatically starts work. As soon as the hydrants are closed again the tanks fill up, the float rises and the pump stops. A relief valve with the delivery into the smaller tank is provided, so that no damage will occur



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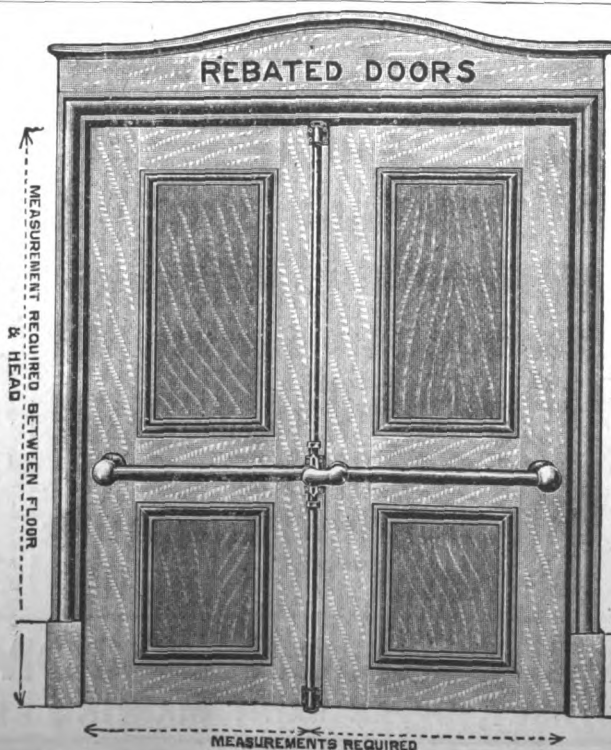
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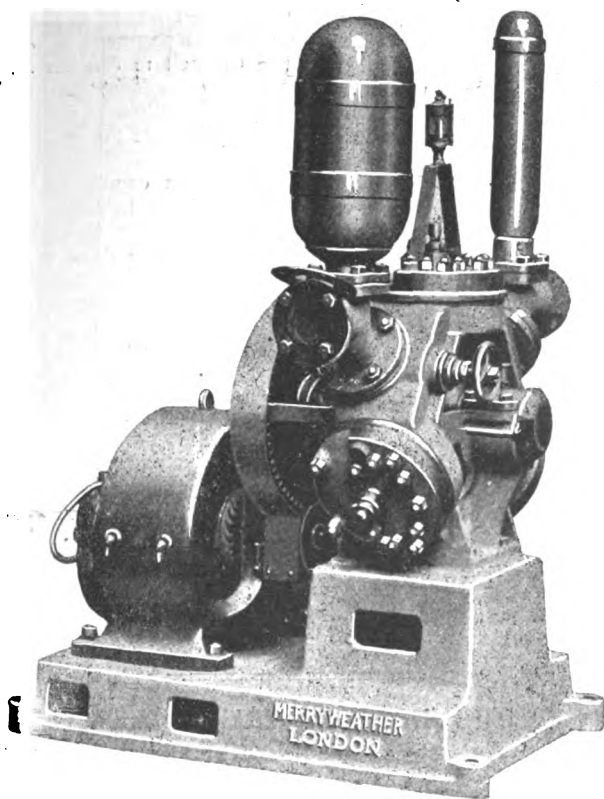
66/- per set.



to the fittings between the time the hydrants are closed and the pump ceases to run. It may also be mentioned that

### TECHNICAL INSTRUCTION.

THE name of Cassell is identified with self-education by the aid of books. The firm was among the earliest pioneers in technical instruction, and the company follow the example. In their later publications they have shown how valuable information can be obtained by almost the poorest classes. The series of "Mechanics' Manuals," edited by Mr. P. N. Hasluck, is issued at the rate of 6d. a volume. The price is the more remarkable when it is found that illustrations are numerous in each. They also issue a new edition of their "Engineer's Handbook" and "Building Construction," by Prof. Henry Adams, and their "Carpentry and Joinery" in threepenny numbers; several of the illustrations are in colour and they have the character of expensive works. The company, like Carlyle, believe in the advantage of "knowledge which will hold good in working," and bring it within the attainment of all classes.



the same firm have supplied one of their "Greenwich Gem" steam fire-engines to Halton, Mr. de Rothschild's mansion, near Tring.

THE Board of Education have approved of the plans for the erection of a new infants' school by the Essex education committee at Leigh-on-Sea, and also plans submitted for the new mixed school and enlargement of infants' school at Dagenham, and for a further new school at Wanstead.

THE Cape Colony Government are putting forward an amended scheme of railway improvement which would involve an expenditure of two millions sterling. The various lines to be built make up collectively a length of 770 miles. The longest of the new lines is that between Barkly Bridge and Alexandria, 90 miles, and the estimated cost is 3,500*l.* per mile. There is another from Cathcart of 49 miles, costing about 2,800*l.* per mile. The Ewidekuil to Vogelfontein line will be 46½ miles long, and will cost in all 272,000*l.* The Hopefield to Hoetjes Bay line is 40 miles in length and 62,640*l.* is being earmarked for it. In addition to this, the Cape Government propose to spend nearly a million on the improvement of existing lines.

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"They are exceedingly artistic, and would grace the walls of any house."—THE GENTLEWOMAN.  
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**WATER SUPPLY OF DUBLIN.**

A MEETING of the Dublin Corporation was held on Friday last to consider a report of the waterworks committee recommending the provision of an additional storage reservoir at Roundwood. The Chairman of the waterworks committee said the report had been drawn up with great care. Some people had been asking was there any necessity for a second reservoir, and to answer that question it would be necessary to refer to the genesis of the scheme. In 1893 the citizens were face to face with a water famine. That was most unexpected, for prior to that time it was thought that the Vartry water would never give out. In 1893, however, no water was to be had in many parts of the city, and the Corporation were obliged to fill their pipes with water from the canal. In South Dublin the people for many months could get nothing but canal water, which had been condemned for generations prior to that date. The canal water contained too much lime, which it was almost impossible to eliminate by any process of filtering. It became necessary, therefore, that the Corporation should undertake the proposed work if they were to be in a position to supply the citizens with an adequate supply of water. Applications had been received from all parts of the city for the supply of water for motor-power—such applications were being received almost every week. The advantage of having a second reservoir was obvious. If they had a second reservoir, then, in the event of anything going wrong with the present reservoir, they would still be able to conduct water from the second to the present filter beds, so that the citizens of Dublin would never be without a supply of water. When Sir John Gray promoted the Vartry scheme he was of opinion that it would supply half a million of people, and so it would in the then existing state of things. But the circumstances had changed. There was no house erected in Dublin now without a bath-room and better sanitary arrangements. In Sir John Gray's time the people of Dublin were content with a half-inch pipe in the yard from which they filled their kettle or basin, now they would not be satisfied with that. They had got used to baths, and in the present enlightened age if they were deprived of the improvements which they valued so much there would

probably be a revolution in Dublin. The committee recommend that authority be given to apply for a loan of 134,842*l.* 8*s.* 6*d.* to carry out the scheme. That sum Mr. Eyre, city treasurer, thought they could obtain at 3½ per cent., which would represent an annual payment of over 5,000*l.* a year. He would ask the Council to consider the scheme as a commercial transaction. At present they were making about 10,000*l.* a year by the sale of water, and that income would be increased by carrying out the proposed scheme.

Alderman Doyle said the waterworks committee had no option but to grapple with the question. In portions of the north side of the city they could not for 500*l.* get a bucket of water at certain times during the day. If the people of the south side of the city were getting an abundance of water, the people on the north side were equally entitled as ratepayers to get a full supply.

Alderman Bergin said that Sir Charles Cameron had frequently reported to the public health committee respecting the reservoir at Stillorgan. It was very undesirable that the reservoir should be continued under present conditions, as it was frequented by thousands of sea birds, and it could never be clean as long as there was such an expanse of water.

Dr. M'Walter said that there were 14,000,000 gallons of water wasted in the year. An immense number of persons outside the city applied for water, but their engineer had to refuse them. Their engineer said that 50 per cent. of the water was wasted every year.

The report was then adopted.

**THE NEWPORT TRANSPORTER.**

THE chief dimensions of the Newport transporter which was recently opened are as follows:—Span—centre to centre of towers, 645 feet; clear opening between faces of piers, 592 feet; clear headway from high water to underside of span, 177 feet; height of tower above the level of the approach roads, 242 feet. The bridge consists of open latticework, with steel towers on each side of the river. Between these towers is suspended a girder framework bridge. Suspended by steel cables, the bridge crosses the

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river at a height of 177 feet. The car is 33 feet in length by 40 feet wide, and is divided into a central roadway space and two footways, the latter being roofed in. The car, which is electrically lighted, will easily accommodate 200 persons, or four ordinary vehicles, with 100 persons on the covered footways. The maximum weight which under ordinary traffic the transporter will be called upon to bear is 15 tons, but the structure has been submitted to severe tests, ending with a total weight of 120 tons, of which 52 tons is the ordinary weight of the car, which is perfectly under control, and will cross the river in sixty seconds. It can be instantaneously stopped or reversed, so that there is no danger whatever.

The car is propelled by what is really a continuous rope of flexible steel wire, driven by an electrically-worked drum erected in the motor-house near the eastern end of the bridge. The suspension cables are sixteen in number, and under the maximum load the tension in each cable is nearly 48½ tons, but the breaking weight of the cable approaches 254 tons. Each cable weighs nearly 4 tons. The bridge has been designed to resist a wind pressure of 56 lbs. to the superficial foot. In no case does the structural steel work at a greater tensional load than 6½ tons to the square inch. The anchorages are large blocks of masonry resting on pile and concrete foundations.

The estimated total cost of the bridge is 90,000*l.*, and the contract for the foundations and steelwork was let to Mr. Alfred Thorne, of Westminster, at 59,062*l.* Mr. Haynes, the borough engineer, was associated with M. Arnodin, the designer, as joint engineer, and the steelwork was furnished by the Cleveland Bridge Company, Darlington, and the electrical equipment by Messrs. W. B. Brown & Co., of Liverpool.

#### NOTES FROM VENICE.

THE British Consul at Venice, in his last report on its trade and commerce, says:—There is great competition with Austria-Hungary and Germany in iron bars on account of the railway facilities and bounties granted by the Austro-Hungarian and German Governments to enable the iron merchants to compete successfully with those of other

nations. When Austro-Hungarian or German firms can prove they have exported a prescribed quantity of goods a premium for exportation is paid them by their respective Governments. For instance, a fine quality of iron in bars is cheaper at Vienna than at the original mines in Styria and Carinthia. The Alpine Company in Vienna sell the bars at 10 francs (8*s.*) per 100 kilos., while the price in the United Kingdom would be 15 francs (12*s.*) per 100 kilos. If freights are moderate the cost of transport by sea from the United Kingdom would be nearly equal to that by rail from Vienna, but there are the premiums, which enable the foreign rivals to compete successfully.

The Consul is of opinion that there would be a fair chance for the sale of steam-rollers in Italy. One of these engines made at Lincoln, in England, has been bought by the Rovigo Provincial Deputation, and is now in use for the roads in that province, and is giving satisfaction. British manufacturers of steam-rollers might have a circular printed in Italian and forward it to all the provincial deputations and municipalities in Italy, showing the advantages of adopting their locomotives for the proper maintenance of the principal roads in Italy. They will have, however, to bear in mind that the Germans are very active in pushing their machines and study the requirements of the authorities, and consequently British prices should be kept as low as possible and all facilities granted.

Portland cement was and is still much in demand and large quantities were imported, but, as the result of numerous factories having been started, there is a falling off in the amount imported. A limited quantity of cement is exported to Calcutta by a cement factory near Treviso. It is shipped on board the steamers of the Navigazione Veneziana, running to and from Venice and India.

There are several factories of modern reproductions of antiquities, such as pear and oak furniture, marbles, terracotta Madonnas, armour, &c., and a flourishing business is carried on in copying ancient works of art. This is stated to be a praiseworthy method of popularising and elevating the taste of the public. The shops are full of such reproductions, which I believe to be generally sold as such at moderate prices. Several of the imitations are so well carried out that they are almost as beautiful as the originals, while their cost is small.

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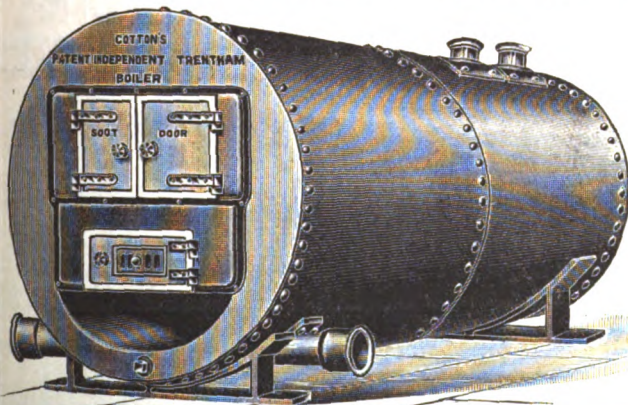
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For Index of Advertisers, see page x.



The population of Venice consisted at the end of 1905 of 155,746 inhabitants. The town is healthy, the death-rate being one of the lowest in the kingdom—21.3 per 1,000. The foreign colony is increasing yearly.

Another large hotel has been built on the beach by the company which owns the Hôtel des Bains and the Lido Hotel on the lagoon side. Both the hotels fronting the sea are provided with luxurious accommodation, such as lift, electric light, modern English sanitary arrangements, and are surrounded by flower gardens planted with pine trees. There are lawn-tennis grounds, dining-rooms (where 200 persons can comfortably sit at table), reading, billiard and conversation-rooms and splendid open terraces. I should think it is not easy to find such a place as the Lido for persons in search of pleasure or desirous of a health restorative. The sunshine is tempered by constant breezes from the Adriatic.

Nearly all the disposable land is being purchased at high prices and levelled for the purpose of erecting new hotels, villas and other buildings. Thus the Lido, which only a few years ago was an obscure village inhabited by a few fishermen and peasants, is now becoming a modern town, with important buildings springing up on all sides.

The service of the steamers is very convenient, as there are large steamers starting from the Piazzetta every twenty minutes and small steamers starting every ten minutes, embarking and landing persons at all the stations on the Riva degli Schiavoni and on the Grand Canal as far as the railway station.

Another company has been formed to construct two large hotels, one high-class hotel on the seashore and a second, at which the pension will not exceed 6 or 7 francs a day, including bathing and other expenses. The company are also contemplating the construction of a tramway running to Malamocco on the lagoon side and returning by a new road on the beach. They state in their prospectus that their chief object will be to render the Lido easy of access to persons possessing moderate means and wishing to live economically in a respectable place.

The rebuilding of St. Mark's Campanile was progressing satisfactorily, and a portion of the masonry had been completed when a question arose about the five steps at the base of the Campanile, two of which in the old one were

underground. Some artists were of opinion that only three and not five steps ought to be seen in the new tower. The work was stopped and a special commission appointed to decide on the subject.

The gates and all the stones of the "Loggetta" by Sansovino were carefully collected, and it has been restored with the utmost care. Radical repairs are being effected in the Doge's Palace, in the church of St. Mark and other important churches in the town, under the direction of the architects of the Government technical bureau for the preservation of all monuments in Venetia.

### MAIN DRAINAGE OF DUBLIN.

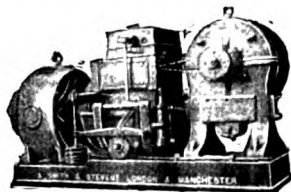
THE works which have been constructed for the main drainage of Dublin were opened on Monday. Some idea of the magnitude of the system may be gained, says the *Irish Times*, by stating that it cost, roughly, 600,000*l.*, and that nearly 8 miles of sewers have been constructed at a depth of about 24 feet below the roadways. All the sewage of the city will now empty into two large intercepting sewers, laid down mainly along the quays, and after chemical treatment at the outfall works, the sludge, thoroughly purified and reduced for the most part into practically liquid form, will be discharged into the Channel at a distance sufficiently far removed to prevent its return with the tides.

Nearly half a century ago the Corporation were asked to embark on a scheme somewhat similar. The proposal was renewed fifteen years ago, and nearly five years afterwards the scheme took practical form. A main drainage committee was constituted, with the late Alderman Meade as its first chairman, and thereafter no time was lost in pushing on the work. Mr. George Chatterton, a distinguished Irish engineer, was chosen to draw up the plans, and with the assistance of Mr. Spencer Harty, the capable and experienced city engineer, the huge scheme finally took shape on paper. Mr. Chatterton and Mr. Harty decided that two great intercepting sewers would have to be made, one on the north bank and the other on the south bank of the river, but here a difficulty confronted them. How was the north sewer to

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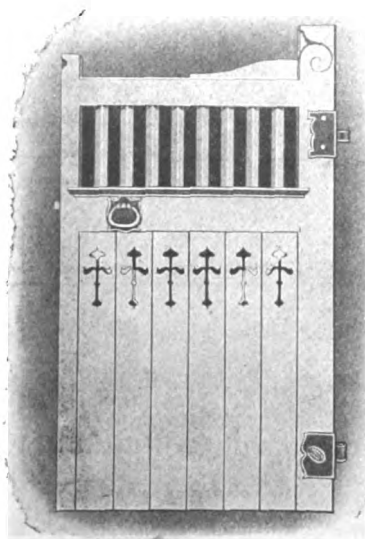
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be connected with the south sewer to enable the entire sewage to be passed on to the outfall works? The most feasible plan was the construction of a syphon under the river, and provision for carrying out this difficult operation was made accordingly. In order to provide an outfall, &c., for the sewage the Corporation had decided some years previously to purchase the Pigeon House Fort, which was then in the possession of the War Department. With the Fort, which was originally a hotel, built in 1790, and used by travellers between England and Ireland, the Corporation also acquired 60 acres of land for the purpose of constructing the pumping station, precipitation tanks, &c., necessary for the carrying out of the plans that had been drawn up.

Messrs. H. & J. Martin, Dublin and Belfast, secured the contract for the construction of the intercepting and branch sewers, the syphon across the Liffey, the low-level sewer; and Messrs. Pearson & Son, a London firm of contractors, were entrusted with the construction of the outfall works, &c., at the Pigeon House.

On the north side of the city the system takes its rise near the Infirmary Road in the shape of a pipe drain, which runs down to Parkgate Street, and thence enters on its course along the northern quays. On the south side there are several pipes emptying into the main drain near Island Bridge, one of them, 3 feet in diameter, carrying off most of the sewage of the Kilmainham district. The course of the sewer is then along the southern quays and *en route* several very large pipes empty into it, notably one running through the Patrick Street district. The upper part of the sewer at Island Bridge was constructed in the river-bed for a length of 600 or 700 feet on a concrete wall in order to avoid the property of the War Department. The extensions in the upper portion of the work involved the running of a pipe along the Camac river and a cast-iron syphon under the Grand Canal and the Midland Railway at Newcomen Bridge, on the North Strand Road. One of the tunnels was driven through the hard boulder clay at Bow Bridge, Kilmainham, and another was made through the limestone rock under the hill at Christ Church Place and Patrick Street.

When the two intercepting sewers had been brought, that on the north side to a point near Marlborough Street, from which an extension runs out in the direction of

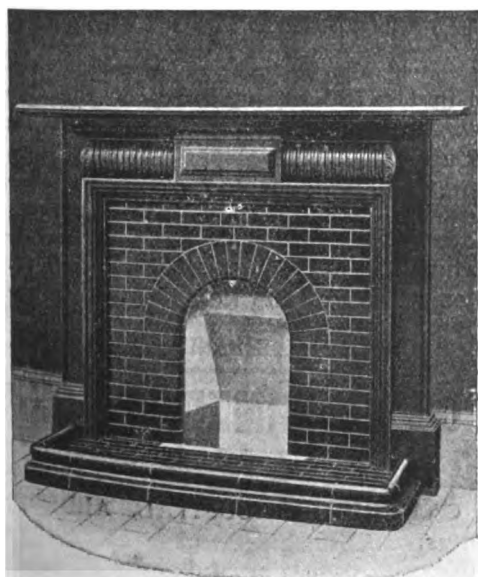
Clontarf, and that on the south side to Burgh quay, opposite Hawkins Street, they were connected by the syphon constructed underneath the river. This proved a most difficult piece of work owing to the depth of boring required, and also the yielding character of the subsoil. An enormous amount of tunnelling work had to be done, and excavations made to a depth of 50 or 60 feet. Eventually, however, the difficulties inherent in any work of the sort were successfully overcome, and it must have been with a sigh of relief that the contractors were at length able to complete the junction of the two sewers. From Hawkins Street the sewer runs *via* Great Brunswick Street in a fairly straight line to the Grand Canal Basin. Here another tunnel had to be made, and it also became necessary to bore underneath the bed of the river Dodder. Throughout this stretch of the work the subsoil proved so treacherous that the ingenious mechanical appliance known as "the Greathead Shield" had to be utilised. This necessitated the use of compressed air, which was constantly pumped into the sewer at an enormous pressure to the square inch. The results obtained were very satisfactory, although the system involved considerable trouble. The men obliged to work in the tunnel, which was filled all the time with compressed air, had to be periodically examined by doctors, whose duty it was to see that their health did not suffer by the trying circumstances under which they had to work.

A huge chimney-stack is one of the striking features in the buildings forming the pumping station at Ringsend. The sewage will be conveyed to the station along the low-level sewer from Hawkins Street, and then pumped into the high-level sewer running from Ringsend to the outfall. At the station there are four very powerful pumping machines, capable of lifting 15,000,000 gallons to a height of 23 feet, and it is arranged that one of them shall always be kept in reserve. Four boilers of the latest pattern will supply all the steam required. The pumps have a working capacity of over 46,000,000 gallons per day, equal to over 5,000 cubic feet per minute, but if the stand-by plant is also utilised, 62,214,000 gallons per day, or 6,912 cubic feet per minute, could be dealt with. The precipitation tanks are at the Pigeon House Fort, and cover an area of, roughly, 1,000 by 100 feet. They are so constructed that

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### REPORT

(See page 25 of Supplement in Issue of June 8).

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the sludge will be easily and readily swept into a central culvert running through the tanks. The sludge after chemical treatment will be pumped into the high-level receptacle at the water's edge, from which it will be delivered into a special barge named the *Shanrock* for conveyance to the deposit area at sea, a point located six miles east of the Bailey Lighthouse. This distance has been insisted on by the Dublin Port and Docks Board in order to prevent the sludge being caught by the tide coming up the Liffey. The liquid sewage will also be chemically dealt with at the precipitation tanks, and discharged through the outfall works into the Channel. It will thus be seen that the ceremony which took place on Monday inaugurates a new era in the municipal life of Dublin, and it is to be hoped that one of the first benefits conferred by the new system will be an appreciable reduction in the present normal death-rate in the city.

### SOLVING THE DUST PROBLEM.

AN interesting experiment in the preparation of dustless roads is about to be carried out on three miles of the London to Portsmouth road through Esher, by a joint committee of the Roads Improvement Association and the Automobile Mutual Protection Association. A writer in the *Pall Mall Gazette* goes into the scheme in some detail, and remarks that the great value of the experiment over all others that have been made is that it will be carried out with different materials on a continuous length of road subject to the same traffic. In the past similar experiments have been isolated, and, as they have been subject in consequence to different conditions and different traffic, it has been difficult to get reliable information regarding the results. In the present experiment the three miles of road are to be divided into twelve quarter-mile portions, each of which, for the purposes of the test, is to be treated with different materials, according to the following scheme, although not necessarily in the strict order here stated:—

1. The first length will consist simply of the existing granite road, which has been recently repaired.
2. On the next length tar will be painted by hand, and the committee expect to find that it will not only lay the

dust, but also that it will help to fix the binding material and give the road a longer life.

3. The third length will be treated with taafelt, a patented material combining some of the properties of tar and asphalt. This will be laid about half an inch thick, and will have the effect, it is claimed, of waterproofing the road and providing a non-slippery surface absolutely free from dust.

4. Over the fourth quarter of a mile there will be a coating of  $4\frac{1}{2}$  inches of granite treated with taafelt.

5. The second mile will begin with a length of limestone quarrite, a patented material of which the promenade at Blackpool is made, treated with a preparation of tar.

6. On the next section granite quarrite, a somewhat harder material, treated in the same way, will be tried.

7. There will be at least one length of slag treated with tar, either the patented material known as tarmac, or that which has been used successfully on a portion of the Thames Embankment.

8. Another form of slag, a material known as Line's bitumenised slag, will also be tried and treated in the same way.

9. On the first section of the third mile Kentish ragstone will be treated with tar.

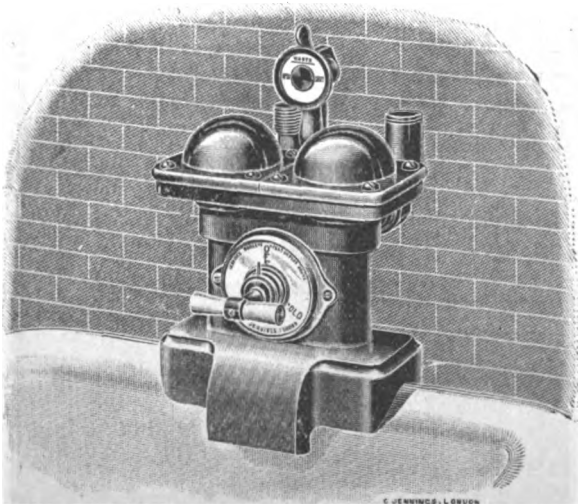
10. Then will come a material known in Germany as Kleinpflaster, which consists of small granite setts laid at random, so that the joints do not make a continuous line. This material has been found highly satisfactory in Germany, giving a road free from dust and hard enough to stand heavy traffic.

11 and 12. In addition, the committee are anxious to test two or three new materials, in which Trinidad Lake asphalt enters in various ways.

It is proposed to continue the experiment for seven years, and subscriptions are invited, it being estimated that a sum of 2,000*l.* will be required, towards which a contribution equal to the present annual cost of the road (about 200*l.* a mile) is expected to be received from the County Council. It is hoped to start the experiment in the autumn, and detailed reports as to cost and repairs required will be issued quarterly. It is contended that although the first cost is higher, dustless roads really mean ultimate economy.

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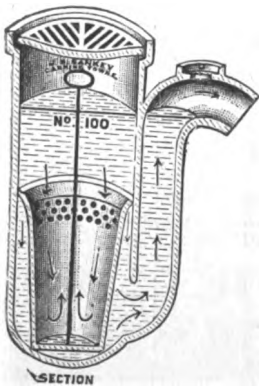
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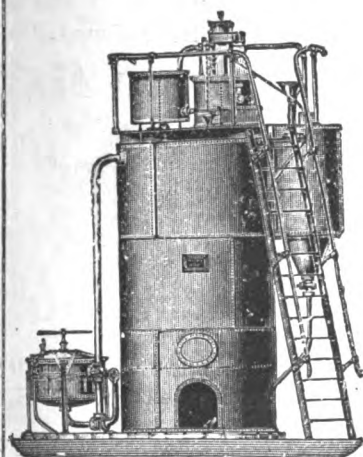
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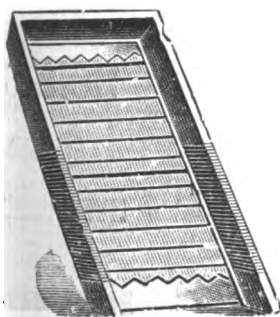


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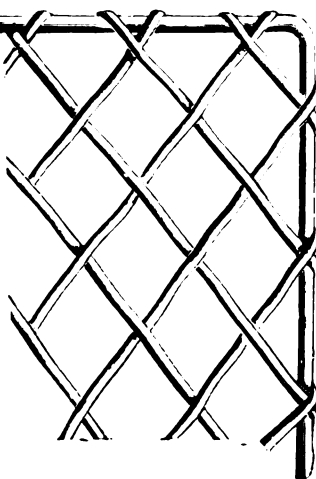


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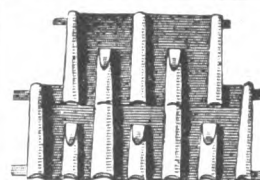
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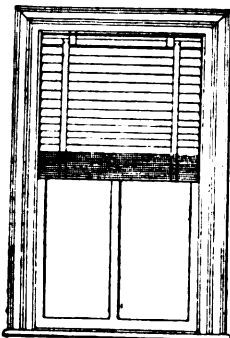
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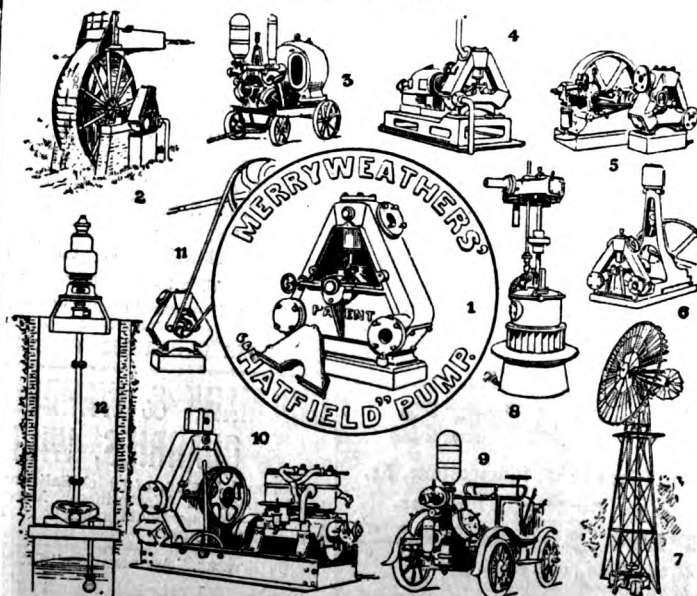
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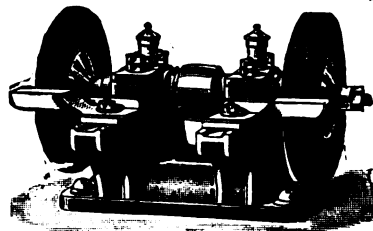
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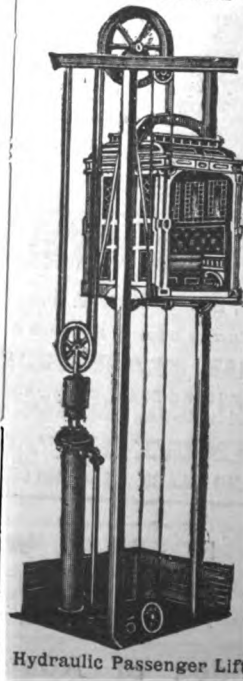
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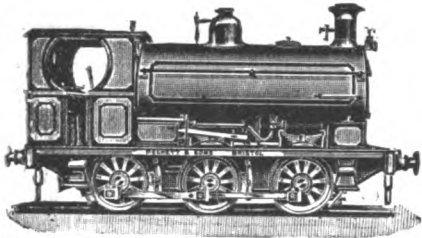
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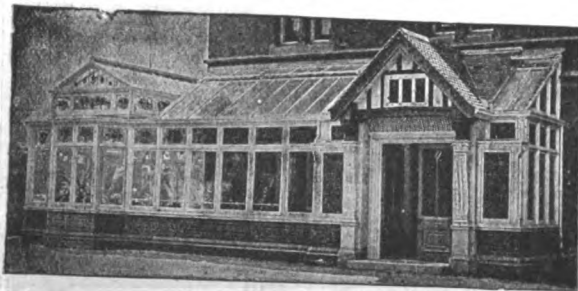
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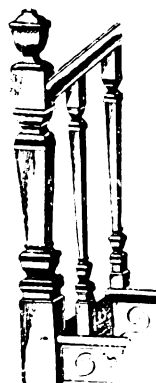
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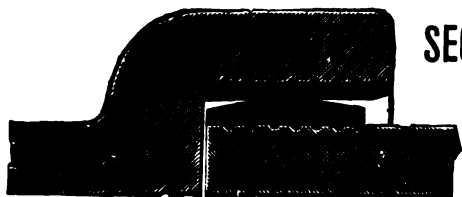
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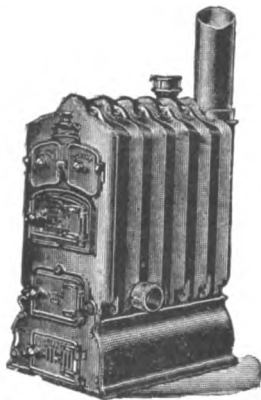
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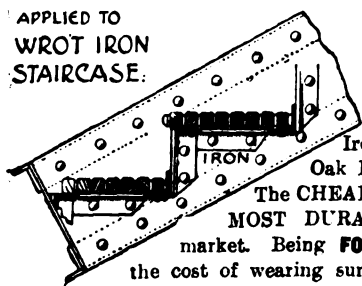
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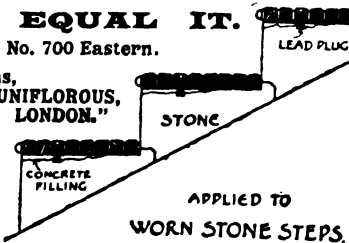
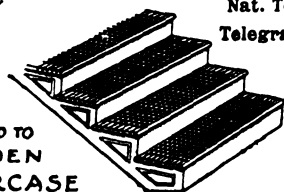


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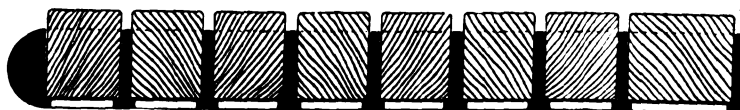
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FRIDAY, OCTOBER 5, 1906.

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

**EDITORIAL NOTICES.**

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further

answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

**TENDERS, ETC.**

\* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

**COMPETITIONS OPEN.**

GAYWOOD.—Oct. 22.—The Norfolk education committee invite plans, specifications, elevations and estimates for a new school. The plan (if any) selected will be accepted subject to the approval of the Board of Education. Particulars can be obtained on application to the Secretary, at the County Education Office, 57 London Street, Norwich.

MONTEVIDEO.—Dec. 14.—La Comision Nacional de Caridad require competitive plans for new founding hospital with approximate cost. Plans and report, under mottoes, and, in sealed envelope, name and address of competitor. The four selected plans will receive 212l. each, and will be asked to further compete. Further particulars from the Consulate-General for Uruguay, 5 and 6 Clement's Inn, Strand, W.C.

**CONTRACTS OPEN.**

ANNFIELD PLAIN.—Oct. 6.—For the erection of public library at Annfield Plain, Durham. Deposit 2l. 2s. Names to Messrs. Davidson & Cratney, 50 Grainger Street, Newcastle-on-Tyne, or Council Chambers, Willington Quay.

BARROW-IN-FURNESS.—Oct. 8.—For the erection of fish stalls adjoining the butter market. The Borough Engineer and Surveyor.

BEDALE.—Oct. 15.—For alterations, &c., at the Snape school. The Vicar, Well, Bedale.

BELFAST.—Oct. 11.—For the construction of an underground convenience in Donegall Square North. Deposit 1l. 1s. The City Surveyor's Office.

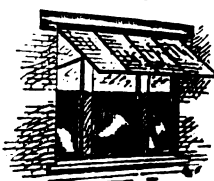
BRIDGEND.—Oct. 13.—For erecting a mortuary, &c., at the workhouse. Mr. P. J. Thomas, architect, Bridgend.

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CLEETHORPES.—Oct. 17.—For the erection of an elementary school in Elliston Street, Cleethorpes, Lincs. Deposit 2/ 2s. Messrs. Scorer & Gamble, architects, Bank Street Chambers, Lincoln.

COVENTRY.—Oct. 15.—For erection of buildings at Foleshill works, comprising retort-house, 220 feet by 130 feet by average height of 45 feet; coal stores, 100 feet by 70 feet by 32 feet high; coal-breaker pit, 42 feet by 17 feet by 25 feet deep; two chimneys, each 82 feet high; 350 yards of sunk dock for single line of railway stokers; mess-rooms, lavatories, &c., for the gas committee. Deposit 1/ 1s. Mr. Fletcher W. Stevenson, general manager and engineer, Gasworks, Coventry.

DEAL.—Oct. 6.—For the erection of a school to accommodate 240 infants, together with boundary walls and other site works. Deposit 1/ 1s. Mr. Chas. L. Crowther, architect, Queen Street, Deal.

DEWSBURY.—Oct. 10.—For all or any of the works required in the erection and completion of a branch store, house and boundary walls in Broomer Street, Ravensthorpe. Messrs. Holtom & Fox, architects, Corporation Street, Dewsbury.

EAST HAM.—Oct. 9.—For the demolition and removal of materials and clearing of site of old houses (501-519, odd inclusive), High Street North. Mr. A. H. Campbell, M.I.C.E., borough engineer, Town Hall, East Ham.

EAST MEON.—Oct. 6.—For two cottage dwelling-houses to be erected at East Meon, for the trustees of the Forbes Almshouses, East Meon, Petersfield. Messrs. Bucknall & Cowper, architects, 123 Knights' Hill Road, West Norwood, London, S.E.

HALIFAX.—Oct. 6.—For mason, carpenter, joiner, plasterer, slater and painter's work in erection of five dwelling-houses at Holywell Green. Messrs. Chas. F. L. Horsfall & Son, architects, Lord Street Chambers, Halifax.

HAVERFORDWEST.—Oct. 20.—For the construction of the meat market, including new steel roof with elliptical lattice-braced principals, &c., for the Corporation. Deposit 2/ 2s. Mr. J. Preece James, architect, Tenby.

HULL.—Oct. 10.—For the erection of horse stables and two cottages at Hedon Road, for the North-Eastern Railway Co. Mr. William Bell, the company's architect, York.

IRELAND.—Oct. 8.—For the erection of a Crown post office at Carrick-on-Shannon, co. Leitrim. Deposit 1/ The Post Office, Carrick-on-Shannon.

IRELAND.—Oct. 19.—For erecting and completing a Crown post office at Bandon, co. Cork. Deposit 1/ The Carpenter in Charge, Queen's College, Cork.

LICHFIELD.—Oct. 6.—For the following works, for the sanitary committee:—(a) Excavating and forming two filter-beds, making and erecting wood carrier on brick piers, alteration of humus tanks, including brickwork, cast-iron pipes and valves, building sludge chamber, with elevator and other appurtenant work in connection therewith, at the sewage works, Curborough, Lichfield; (b) providing and fixing over the said filter-beds two complete sets of galvanised iron tubing to form fixed spray distributors; (c) erection of workmen's houses near to the works at Curborough. Mr. Emerson Brooke, city surveyor, Lichfield.

LONDON.—Oct. 9.—For the execution of certain works in connection with the widening of the Lower Richmond Road at the southern approach to Putney Bridge, in the Metropolitan Borough of Wandsworth. These comprise the demolition of the existing parapet wall and end walls of arches on the riverside of the footway and the removal of a portion of the present roadway, &c., surfaces; the construction of a new retaining wall and parapet; the extension of the brick arches beneath the roadway, and paving and other works. Deposit 3/ Mr. Maurice Fitzmaurice, C.M.G., chief engineer, County Hall, Spring Gardens, S.W.

LONDON.—Oct. 11.—For carrying-out extensions and alterations of the Council's baths and wash-houses, Kennington Road, for the Lambeth Borough Council. Deposit 1/ 1s. Mr. H. C. J. Edwards, borough engineer, 346 Kennington Road, S.E.

LONDON.—Oct. 13.—For the pulling-down of the existing brick-arched carriageway bridge over the canal, and the construction and erection of a new brick, concrete and steel carriageway bridge (30-feet span), a new tollkeeper's office and the execution of certain works appurtenant

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thereto, all in and about Warwick Avenue, for the Paddington Borough Council. Contract No. 1, building constructional works, &c.; (2) steelwork, &c.; (3) Nos. 1 and 2 together. Deposit 1*l.* for each contract. Mr. E. B. B. Newton, borough surveyor, Town Hall, Paddington.

LONDON.—Oct. 16.—For alterations and additions to the underground conveniences in Bishopgate Street Without and Aldgate. Deposit 1*l.* The Engineer to the Corporation, Guildhall, E.C.

MANCHESTER.—Oct. 30.—For the erection of the Oswald Road Municipal school, Chorlton-cum-Hardy. Deposit 2*l.* 2*s.* The Education Offices, Deansgate, Manchester.

NEWPORT.—Oct. 12.—For the erection of infirmary buildings, adjoining the present workhouse, for the Guardians of Newport (Salop) Union. Deposit 1*l.* 1*s.* Messrs. Fleming & Son, architects, Bank Chambers, Wellington, Salop.

PLYMOUTH.—Oct. 8.—For the erection of school buildings at Prince Rock. Messrs. Thorneley & Rooke, architects, 11 The Crescent, Plymouth.

PRUDHOE.—Oct. 8.—For the erection of butcher's shop, slaughter-house, &c., at Mickley Square, for the West Wylam and Prudhoe Co-operative Society, Prudhoe, Northumberland.

REDDISH.—Oct. 6.—For erection of public baths, fire station and free library in Gorton Road, Reddish, Stockport. Deposit 2*l.* 2*s.* Messrs. Dixon & Potter, architects, 65 King Street, Manchester.

SCOTLAND.—Oct. 19.—For the erection of a fish mart and offices on Alexandra Wharf, Lerwick. Mr. James Barron, M.I.C.E., 216 Union Street, Aberdeen.

SEDFIELD.—Oct. 8.—For the erection of a nurses' home at the Durham county asylum. Mr. William Crozier, county architect, Shire Hall, Durham.

SELLY OAK.—Oct. 8.—For the erection of a movable wooden floor over the men's swimming bath at the baths, Tiverton Road, Selly Oak, near Birmingham. Mr. Edwin Docker, clerk, 10 Newhall Street, Birmingham.

SKIPTON.—Oct. 6.—The Council invite tenders for the construction of detritus tanks, sedimentation tanks, continuous filters, the laying-out of about 20 acres of land, the construction of a storm-water bed and main and other

works in connection with their sewage disposal works. Deposit 2*l.* 2*s.* Mr. John Mallinson, engineer, Town Hall, Skipton.

STAFFORD.—Oct. 20.—For the erection of a high school for girls. Deposit 2*l.* 2*s.* Mr. Graham Balfour, director of education, County Education Offices, Stafford.

TYNEMOUTH.—Oct. 9.—For the erection of laundry, disinfecter, stables and ambulance buildings at Moor Park hospital. Mr. John F. Smillie, borough surveyor.

ULLOCK MAINS.—Oct. 6.—For the erection of a stable at Ullock Mains, near Cockermouth. Mr. Herbert J. Watson, Cockermouth Castle.

VENTNOR.—Oct. 22.—For the construction of a timber groyne 170 feet in length, on the eastern shore of Ventnor. The Town Surveyor, Town Hall, Ventnor.

WALES.—Oct. 6.—For the erection of a Baptist chapel at Cwm, Mon. Mr. N. Gasenius Lewis, architect and surveyor, Oak Street, Abertillery.

WALES.—Oct. 8.—For the erection of billiard and ante-rooms to workmen's hall, Abergwynfi. Deposit 2*l.* 2*s.* The Secretary.

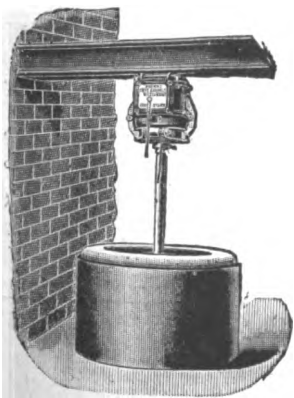
WALES.—Oct. 8.—For the erection of Congregational chapel at Skewen, Neath. Deposit 1*l.* 1*s.* Messrs. Lloyd & Martyn, architects, Dynevor Post Office.

WALES.—Oct. 9.—For building a house and stable at Freehold Land, Pontypool. Mr. D. J. Lougher, architect, Bank Chambers, Pontypool.

WALES.—Oct. 9.—For the erection of a dwelling-house near Ynysybwl cemetery, Mountain Ash. Mr. G. Thomas, surveyor, Town Hall, Mountain Ash.

WALES.—Oct. 10.—For the following works, for the Glamorgan County Council, viz.:—(1) Erection of a mixed school at Pentyrch, near Cardiff; (2) executing minor alterations and providing and fixing folding partition at the Pontyrhyl Council school, near Bridgend; (3) erection of a mixed and infants' school at Jersey Marine, Coedfranc, near Neath; (4) building brick footings and other work for temporary school building at the Goreseion Council school; (5) building brick footings and other work for temporary school building at Nantylfyllon County school, near Maesteg; (6) building brick footings and other work for temporary school building at Vernon Place Council school, Briton Ferry. The County Offices, Cardiff.

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WALES.—Oct. 12.—For the erection of public building at Llanidloes, Montgomeryshire. Deposit 1*l.* 1*s.* Messrs. Shayler & Ridge, architects, Bank Chambers, Oswestry.

WALES.—Oct. 13.—For the erection of a filter-house near the Lower Neuadd reservoir, Torpantau, to be built of old red sandstone. The Borough Engineer, Town Hall, Merthyr Tydfil.

WALES.—Oct. 13.—For the erection of a police-station at Nantymoel, Glamorgan. The County Council Offices, Cardiff.

WALES.—Oct. 13.—For erecting a mortuary, &c., at the workhouse, for the Guardians of Bridgend and Cowbridge Union. Mr. P. J. Thomas, architect, Bridgend.

WALES.—Oct. 16.—For carrying-out alterations and additions to the High Street old boys and infants' schools, Barry. Deposit 2*l.* 2*s.* Mr. G. A. Birkenhead, architect, Caledonian Chambers, St. Mary Street, Cardiff, and 21 Park Avenue, Barry.

WALES.—Oct. 22.—For the erection and carrying-out of the following works:—(a) Erection of a new school for 300 infants at Golftyn, Connah's Quay; (b) erection of a new school for 300 infants at Custom House Lane, Connah's Quay; (c) certain alterations and additions at the Abermorddu Council school, near Wrexham, for the Flintshire education committee. Deposit 2*l.* 2*s.* Mr. Samuel Evans, county surveyor, County Buildings, Mold.

WALES.—Oct. 31.—For the erection of shop premises, coach-house and stables (with conveniences) in Plymouth Road, Merthyr. Deposit 1*l.* 1*s.* Mr. T. Edmund Rees, architect, Gernant, Merthyr.

WICKHAM MARKET.—Oct. 6.—For the erection of additions to the infirmary and laundry at the workhouse. Mr. T. Walter Read, clerk, Board-room, Wickham Market, Suffolk.

WOLVISTON.—Oct. 16.—For alterations to Wolviston Council school, Durham. Mr. W. Rushworth, architect, County Education Offices, Shire Hall, Durham.

## TENDERS.

### BARRY.

For the erection of the first section of the new parish church for Barry.

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| Parkington & Son                         | 3,350  | 0  | 0 |
| Brown                                    | 3,270  | 0  | 0 |
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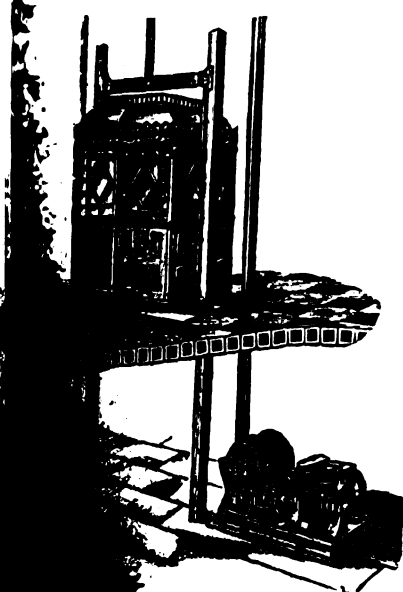
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| Jenkins                    | 2,253  | 4 | 0 |
| Williams                   | 1,996  | 5 | 0 |
| Morgan & Son               | 1,970  | 0 | 6 |
| MORGAN, Garnant (accepted) | 1,870  | 0 | 0 |
| Davies & Griffiths         | 1,851  | 0 | 0 |

**LEATHERHEAD.**

For widening, re-forming, kerbing and providing and laying stoneware storm-water drain in Kingston main road. Mr. J. E. SMALES, engineer and surveyor.

|                        |        |    |    |
|------------------------|--------|----|----|
| Faulkner               | £2,640 | 0  | 0  |
| Watson                 | 2,546  | 0  | 0  |
| Atkins                 | 2,492  | 2  | 9  |
| Zadig & Co.            | 2,296  | 0  | 0  |
| King                   | 2,264  | 1  | 9  |
| Norris                 | 2,214  | 0  | 0  |
| Langley & Co.          | 2,127  | 7  | 9  |
| Free & Son             | 2,079  | 14 | 10 |
| Raquer                 | 2,053  | 6  | 10 |
| Franks                 | 1,928  | 17 | 7  |
| Kavanagh               | 1,907  | 15 | 7  |
| E. & E. Iles           | 1,886  | 0  | 0  |
| Thacker & Co.          | 1,703  | 12 | 0  |
| Streeter               | 1,655  | 17 | 2  |
| Patterton              | 1,563  | 4  | 2  |
| MAY, Ashted (accepted) | 1,542  | 0  | 0  |

**LONDON.**

For the erection of mission church and hall, Albert Road, Peckham, S.E. Mr. G. A. LANSDOWN, architect, 9 Regent Street, S.W.

|                     |        |   |   |
|---------------------|--------|---|---|
| Gorham              | £4,091 | 0 | 0 |
| Lascelles & Co.     | 3,875  | 0 | 0 |
| Marsland & Sons     | 3,713  | 0 | 0 |
| Johnson & Co.       | 3,673  | 0 | 0 |
| Higgs & Hill        | 3,642  | 0 | 0 |
| H. & E. Lea         | 3,599  | 0 | 0 |
| Kirk & Kirk         | 3,589  | 0 | 0 |
| Parker              | 3,549  | 0 | 0 |
| Burgess & Sons      | 3,548  | 0 | 0 |
| R. & E. Evans       | 3,479  | 0 | 0 |
| Sharpington         | 3,468  | 0 | 0 |
| F. & H. F. Higgs    | 3,434  | 0 | 0 |
| Ansell              | 3,333  | 0 | 0 |
| Nash                | 3,287  | 0 | 0 |
| HOLLOWAY (accepted) | 3,180  | 0 | 0 |

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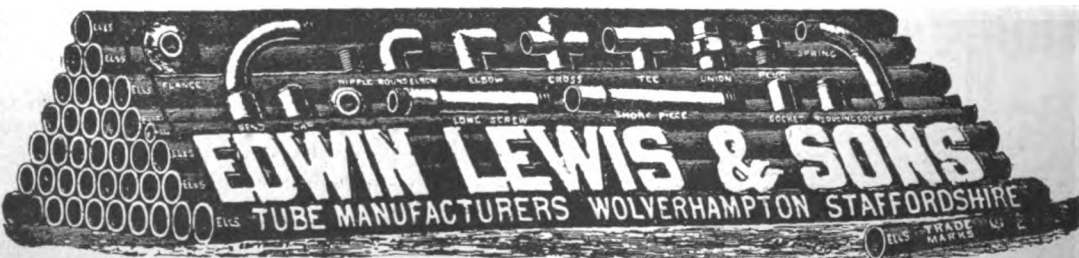
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**LONDON—continued.**

For the erection of home for German sailors, West India Dock Road, E. Mr. G. WAYMOUTH, architect, Raymond House, Theobald's Road, W.C.

|                                  |        |   |   |
|----------------------------------|--------|---|---|
| Richardson Bros.                 | £8,995 | 0 | 0 |
| Staines                          | 7,847  | 0 | 0 |
| Hunt & Sons                      | 7,815  | 0 | 0 |
| Barker                           | 7,675  | 0 | 0 |
| Trollope & Sons and Colls & Sons | 7,500  | 0 | 0 |
| Dove Bros.                       | 7,275  | 0 | 0 |

**PAIGNTON.**

For erecting a house. Mr. J. A. LUCAS, architect, Exeter.

|                                     |        |    |   |
|-------------------------------------|--------|----|---|
| White, Chatton & Co.                | £1,247 | 12 | 0 |
| Smaridge                            | 1,223  | 0  | 0 |
| Buchnell                            | 1,184  | 0  | 0 |
| Webber                              | 1,150  | 0  | 0 |
| Westlake                            | 1,150  | 0  | 0 |
| Harris                              | 1,150  | 0  | 0 |
| Goss                                | 1,150  | 0  | 0 |
| Bridgman                            | 1,075  | 0  | 0 |
| Drew                                | 1,075  | 0  | 0 |
| Marshall                            | 1,020  | 0  | 0 |
| Collings                            | 1,004  | 12 | 0 |
| Yeo & Sons                          | 992    | 0  | 0 |
| NARRACOTT, Stoke Gabriel (accepted) | 964    | 0  | 0 |

**POTTERSBURO.**

For carrying-out the Hartwell water supply.

ROWELL & SON, Chipping Norton (accepted). £1,096 17 11

**PRETORIA.**

For galvanised iron and steel water-pipes.

|                                                       | G. Iron.       | Steel.    |
|-------------------------------------------------------|----------------|-----------|
| Tech. & Co. Corporation                               | £849 12 11     | £577 8 9  |
| Stewart & Lloyds                                      | 654 16 8       | 550 12 11 |
| Poynton Bros.                                         | £1,325         | 0 0       |
| Ingleton & Co.                                        | 591 1 8        |           |
| Bannerman                                             | (Portion only) |           |
| STEWART & LLOYDS's tender of £550 12s. 11d. accepted. |                |           |

**PRETORIA—continued.**

For erection of bridge over Aapies river at Shoeman Street.

|                     |         |   |   |
|---------------------|---------|---|---|
| Davies & Spain      | £12,400 | 0 | 0 |
| Prentice & Mackie   | 8,950   | 0 | 0 |
| Mostert             | 8,225   | 0 | 0 |
| Slorach & McWilliam | 7,997   | 0 | 0 |
| Richards            | 7,950   | 0 | 0 |
| Smith               | 7,800   | 0 | 0 |
| J. & R. Niven       | 7,700   | 0 | 0 |
| De Rapper           | 7,625   | 0 | 0 |
| Brown               | 7,520   | 0 | 0 |
| Baerecke & Kleudgen | 7,390   | 0 | 0 |
| Smullins & Co.      | 7,300   | 0 | 0 |
| De Waard            | 7,270   | 0 | 0 |
| Wulfse              | 7,172   | 0 | 0 |
| BLANE (accepted)    | 6,610   | 0 | 0 |

For the erection and completion of a bridge over Walker's spruit.

|                   |        |    |   |
|-------------------|--------|----|---|
| Brand             | £4,708 | 0  | 0 |
| De Rapper         | 4,600  | 0  | 0 |
| Smullins & Co.    | 4,600  | 0  | 0 |
| J. & R. Niven     | 4,549  | 18 | 0 |
| De Waard          | 4,520  | 0  | 0 |
| Prentice & Mackie | 4,498  | 0  | 0 |
| Brown             | 4,321  | 0  | 0 |
| Richards          | 4,300  | 0  | 0 |
| Baerecke & Co.    | 4,118  | 0  | 0 |
| Wulfse            | 3,965  | 0  | 0 |

**REIGATE.**

For the erection of cartsheds and store in Brighton Road, Redhill, London Road and Blackborough Road, Reigate Mr. F. T. CLAYTON, borough surveyor.

|                                 |      |    |   |
|---------------------------------|------|----|---|
| Childs                          | £456 | 0  | 0 |
| Bristow                         | 447  | 9  | 0 |
| Harrison & Co.                  | 288  | 0  | 0 |
| Marriott & Co.                  | 260  | 14 | 0 |
| Bushby & Son                    | 256  | 0  | 0 |
| Jeffery                         | 250  | 15 | 6 |
| Nightingale & Sons              | 241  | 10 | 0 |
| Cummins & Sons                  | 240  | 0  | 0 |
| HODGE & SON, Reigate (accepted) | 225  | 0  | 0 |

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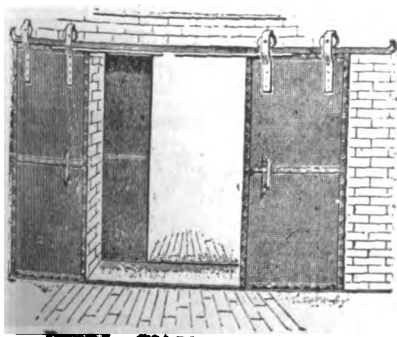
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For Index of Advertisers, see page x.

**REIGATE—continued.**For construction of sewers. Mr. F. T. CLAYTON, C.E.,  
borough surveyor.

|                                                              |        |    |    |
|--------------------------------------------------------------|--------|----|----|
| Kavanagh & Co. . . . .                                       | £1,857 | 0  | 3  |
| Watson, jun. . . . .                                         | 1,744  | 7  | 0  |
| Atkins & Co. . . . .                                         | 1,590  | 14 | 11 |
| King . . . . .                                               | 1,582  | 13 | 9  |
| Castle & Co. . . . .                                         | 1,575  | 11 | 7  |
| Ripley, Strong & Co. . . . .                                 | 1,574  | 18 | 3  |
| E. & E. Iles . . . . .                                       | 1,552  | 15 | 7  |
| Fry Bros. . . . .                                            | 1,537  | 14 | 3  |
| Free & Sons . . . . .                                        | 1,457  | 3  | 6  |
| Faulkner . . . . .                                           | 1,460  | 1  | 8  |
| Poller Bros. . . . .                                         | 1,454  | 4  | 2  |
| James & Co. . . . .                                          | 1,446  | 0  | 0  |
| Minehead & Co. . . . .                                       | 1,419  | 0  | 0  |
| Rayner . . . . .                                             | 1,415  | 6  | 6  |
| Jeffery . . . . .                                            | 1,403  | 3  | 0  |
| Young . . . . .                                              | 1,399  | 13 | 6  |
| May . . . . .                                                | 1,389  | 0  | 0  |
| REDHOUSE, Stotfold, Baldock (accepted for<br>part) . . . . . | 1,352  | 2  | 9  |
| TURNER, Blackwater (accepted for part) . . . . .             | 1,309  | 14 | 11 |

**SCOTLAND.**For carrying-out alterations and additions, M'Laren High  
school, Callander. Messrs. STEWART & PATERSON,  
architects, Glasgow.*Accepted tenders.*Collier, mason.  
Macniven & Smith, joiner.  
Russell, plumber.  
Macfarlane & Son, slater.  
M'Alpine & Son, plasterer.  
All of Callander.For additional drainage works, for the Cowdenbeath Town  
Council. Messrs. BUCHAN & BENNETT, engineers,  
Edinburgh.

ADAMSON, Cowdenbeath (accepted) . . . . . £758 12 11

**SWINTON.**For sinking a well. Mr. R. FOWLER, C.E., engineer and  
surveyor.

|                                   |      |    |    |
|-----------------------------------|------|----|----|
| Matthews . . . . .                | £365 | 0  | 0  |
| Crossland . . . . .               | 236  | 0  | 0  |
| Bowman . . . . .                  | 190  | 0  | 0  |
| Danson . . . . .                  | 162  | 10 | 0  |
| Haughey . . . . .                 | 161  | 0  | 0  |
| Holt . . . . .                    | 118  | 10 | 0  |
| BADSEY, Rhyl (accepted) . . . . . | 107  | 5  | 11 |

**TEWKESBURY.**

For the erection of an engine-shed.

|                                         |      |    |   |
|-----------------------------------------|------|----|---|
| Coutts & Howell . . . . .               | £219 | 10 | 0 |
| Collins & Godfrey . . . . .             | 219  | 0  | 0 |
| WALKER, Tewkesbury (accepted) . . . . . | 215  | 0  | 0 |

**UPLEADEN.**For the first portion of the restoration of the parish church.  
Messrs. LINGEN BARKER, SON & ELLIS, architects,  
Bristol.

|                                           |      |    |    |
|-------------------------------------------|------|----|----|
| Frith . . . . .                           | £266 | 14 | 10 |
| Jones . . . . .                           | 257  | 0  | 0  |
| King & Son . . . . .                      | 252  | 0  | 0  |
| D. Smith . . . . .                        | 237  | 13 | 3  |
| Lewis . . . . .                           | 229  | 17 | 0  |
| Drew . . . . .                            | 224  | 1  | 7  |
| H. Smith . . . . .                        | 217  | 13 | 10 |
| Wall & Hook . . . . .                     | 214  | 0  | 3  |
| Halls . . . . .                           | 206  | 9  | 4  |
| Wood & Sons . . . . .                     | 197  | 6  | 9  |
| SIMMONDS, Gloucester (accepted) . . . . . | 195  | 10 | 9  |
| Friend . . . . .                          | 194  | 5  | 0  |
| Tanner . . . . .                          | 170  | 5  | 6  |

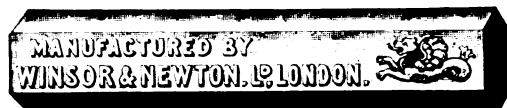
**WIMBLEDON.**For the erection of a house in Murray Road. Mr. G. A.  
LANSDOWN, architect.

BURGESS &amp; SONS (accepted) . . . . . £1,590 0 0

**YARDLEY.**

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MASON (accepted) . . . . . £3,348 0 0

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DAVIES, Llandudno (accepted) . . . £2,328 0 0

**LONDON.**

For making alterations at Nos. 344 and 346 Essex Road, N., for the London and Provincial Bank, Ltd. Mr. V. VAGNOLINI, architect and surveyor, 33 Stirling Road, Clapham Rise, S.W.

|                                       |        |   |   |
|---------------------------------------|--------|---|---|
| J. & W. T. Inkpen . . . . .           | £2,500 | 0 | 0 |
| Wall, Ltd. . . . .                    | 2,297  | 0 | 0 |
| Lascelles & Co., Ltd. . . . .         | 2,265  | 0 | 0 |
| Kent . . . . .                        | 2,237  | 0 | 0 |
| Groves . . . . .                      | 2,175  | 0 | 0 |
| Irwin . . . . .                       | 2,095  | 0 | 0 |
| Parsons . . . . .                     | 1,839  | 0 | 0 |
| EDWARDS & MEDWAY (accepted) . . . . . | 1,658  | 0 | 0 |

For making alterations, &amp;c., at Nos. 12 and 13 Station Parade, Palmer's Green, N., for the London and Provincial Bank, Ltd. Mr. V. VAGNOLINI, architect and surveyor, 33 Stirling Road, Clapham Rise, S.W.

|                                       |      |   |   |
|---------------------------------------|------|---|---|
| Say . . . . .                         | £875 | 0 | 0 |
| Newby & Bros. . . . .                 | 830  | 0 | 0 |
| Wheeler . . . . .                     | 819  | 0 | 0 |
| Mattock Bros. . . . .                 | 747  | 0 | 0 |
| EDWARDS & MEDWAY (accepted) . . . . . | 735  | 0 | 0 |

**TRADE NOTES.**

In connection with the Tourists' Trophy Race, it is of interest to note that the Willesden Paper and Canvas Works, Ltd., of Willesden Junction, were again entrusted by the Automobile Club with the order for the supply of the scoring boards.

Mr. W. H. Godwin, of the Lugwardine Art Tile Works, near Hereford, has taken into partnership his son, Mr. Austin Francis Godwin, and Mr. Thomas Pickerill, many

years manager. The new firm has our best wishes for its success. The business will still be carried on under the familiar style of William Godwin & Son, to whom all accounts should be paid and by whom all debts will be discharged.

MESSRS. W. & R. LEGGOTT, LTD., of London and Bradford, manufacturers of locks, door furniture, window fittings, &c., in response to repeated requests by the local architects, have opened a show-room at 65 King Street, Manchester, where a large assortment of their manufactures will be on view and fixed for demonstrative purposes, and which the profession and their clients are invited to inspect. Messrs. Leggott claim that it is one of the finest selections of architectural ironmongery ever exhibited, and will be offered at such prices as will insure their consideration.

LOVERS of gardens on a large or small scale should know that a substance which is coming into much use lately for rockery purposes, ground walks, asphaltting, pebble dashing and other purposes of a like nature, is the celebrated spar and white spar, with which the name of Messrs. Geo. G. Blackwell, Sons & Co., Ltd., of Liverpool, is associated. The many uses to which rockery and gravel spar can be put in building and other operations render it of importance that it should be widely known that the Messrs. Blackwell, who are the largest producers of spar (from their own quarries and mines) in the world, are now in a position to execute orders to any extent.

PROFESSOR H. A. WOODRUFF, in the course of his introductory lecture at the opening of the new session of the Royal Veterinary College, Camden Town, said it was interesting to note the previous occupations of sanitary inspectors as given in a report to the House of Commons in 1898. In Battersea the inspectors consisted of four men who were plumbers by trade and three who were carpenters, whilst in Hackney the duty was carried out by a bricklayer, a builder's surveyor and a stonemason. A similar state of things existed in other boroughs, where the inspectors included compositors, bricklayers, stonemasons, school teachers and tram conductors.

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**BUILDING AND BUILDERS.**

THE estimate of the architect, Mr. S. J. Adams, for the cost of erection of the new infants' school at Leigh-on-Sea is 2,950*l*.

TOWARDS the erection of the new secondary girls' school at Loughton, which is estimated to cost 8,000*l*., the Essex education committee have made a grant of 2,500*l*.

THE church of St. John, Leytonstone, is to be enlarged at a cost of 6,000*l*.; 480 additional seats are to be provided, making the seating accommodation 1,000.

THE building trade is brisk in Bognor, Sussex, especially in the west end of the town, where some good-sized residences are being erected.

LAND has increased to such an extent in value in Weston-super-Mare that a shop which was purchased freehold for 500*l*. some fifty years back has just changed hands at a cost to the purchaser of 5,000*l*.

At a recent conference of local authorities held at Grays, Essex, a resolution was passed in favour of a joint sewerage scheme for the five riverside parishes of Grays, West Thurrock, Little Thurrock, Stifford and Chadwell St. Mary.

THE East Ham education committee have decided that a clause shall be inserted in the contract for the erection of one of their schools requiring the contractor to employ at least two-thirds of local labour on the work.

APPLICATION has been made to the Westminster Licensing Bench on behalf of Messrs. Lyons for sanction of the plans for rebuilding the Royal Hotel, Rupert Street, W., they intend spending 50,000*l*. on it. The Bench approved the plans.

It has been decided that for the new county lunatic asylum to be erected at Colchester red brick, with artificial stone cornices, shall be used throughout; the internal fittings are to be plain, with yellow deal and pitch-pine floors. It is to be hoped that fireproof floors will be used throughout.

THE general works committee of the Coventry City Council have decided to recommend the Council to proceed with the erection of municipal offices and shops on the vacant land in Earl Street at an estimated total cost of 30,000*l*. Designs for such buildings were accepted some time ago.

THE Upminster Hall estate, which consists of some 700 acres, is about to be developed by Messrs. W. P. Griggs & Co., Limited, of Ilford, who propose to erect roomy villas, allowing a frontage of 60 feet to 70 feet, and where possible leaving all the existing trees, thus preserving the well-timbered and park-like appearance of the property.

THE following loans have been sanctioned by the Local Government Board for alterations to and erection of new schools in the county of Essex:—Hornchurch Council schools, building 2,258*l*., furnishing 134*l*.; Romford Council schools (Mawneys Road), building 5,148*l*.; South Weald Council schools, 3,791*l*.; West Thurrock Council schools, building 2,044*l*., furnishing 87*l*.; and West Thurrock (Purfleet) Council schools, building 1,650*l*., furnishing 88*l*.

THE Penge Town Council recently received a deputation from the Amalgamated Society of Carpenters and Joiners who called attention to what they described as "the unfair conditions under which certain workmen were employed by the Council." The men, it was stated, were employed at less wages and for longer hours than any others in the metropolitan area. The Council promised to consider the matter.

THE Montreal building inspector states that building operations in Montreal, Canada, this year show an increase over those of last year by nearly a million dollars, and still there are four months yet of 1906 to be accounted for. The total amount of work done last year was 5,590,698 dols., while up to the present of this year 6,510,485 dols. has been expended.

A SPECIAL meeting of the Bangor City Council considered a recommendation of the general purposes committee to the effect that the clerk, having reported that Messrs. Hughes & Stirling, Liverpool, whose tender for the erection of the Carnegie library had been accepted, had made mistakes in pricing out their bill of quantities, an increase of 100*l*. be allowed on the tender. The course was adopted.

THE Rochford Hundred education sub-committee are requesting terms for the appointment of an architect for the erection of the new schools at Rayleigh from the following gentlemen:—Mr. S. J. Adams, Messrs. Burles & Harris, W. Y. Hobbiss, Greenhalgh & Brockbank, Clarence Ross, Frank E. Smee, H. Leon Cabuche, Charles Cooke, Douglas

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MARISCHAL COLLEGE, ABERDEEN.—FROM UPPER PARKGATE—  
THE COURT-ROOM.

NEW OFFICES FOR THE HEARTS OF OAK BENEFIT SOCIETY, EUSTON  
ROAD, N.W.—DELEGATES' HALL, LOOKING TO DAIS FROM  
GALLERY—COUNCIL CHAMBER.

CATHEDRAL SERIES.—ST. DAVIDS: SHOWING NORTH DOOR—  
THE CHOIR, WESTWARDS.

H. Smith and W. J. Wood. No mention is made of "Forms of tender may be obtained, &c." It should be interesting employment going through the applications, but a somewhat unprofessional and humiliating procedure for the gentlemen who have been asked to apply for the position.

THE Emigrants' Information Office warns persons against going to the Transvaal at the present time in search of work as the local supply of all kinds of labour is more than sufficient. The building trades at Johannesburg are bad, and large numbers of masons, carpenters, bricklayers, plasterers and others have left the country through inability to obtain employment. Owing to this exodus there is a large number of empty houses, which fact has the double effect of lowering rents and stopping further building operations. There is a similar scarcity of work in other trades which causes much distress. The cost of living remains very high. The same warning is applied to Cape Colony, where large numbers of Malays and other coloured men in all parts of Cape Colony now compete with whites as skilled mechanics at lower wages.

## ELECTRIC NOTES.

A POLL of the ratepayers of Bournemouth on the question of running the Corporation trams on Sundays between the hours of 2 P.M. and 10 P.M. resulted as follows:—For, 2,703; against, 3,606; majority against, 903.

A LOCAL GOVERNMENT BOARD inquiry was held at Malvern with reference to the District Council's application for sanction to borrow 4,500*l.* for extension of mains and other purposes in connection with the electric supply undertaking. Strong opposition was raised.

THE electrical engineer of Hanley has recommended a further extension of the generating plant in order to cope with the rapidly-increasing load and to adequately cope with the motive-power demand. The report has been approved, and steps will be taken to provide a new generating set.

THE new tramway section which was opened on the 27th ult. in the Worsley and Walkden districts makes it possible to travel by car from Deansgate, Manchester, to the Pier Head at Liverpool. The journey can be accomplished in about five hours. The route is by way of Deansgate, Swinton, Walkden, Moses Gate, Great Moor Street, Bolton, Four Lane Ends, Bolton, Atherton, Hindley, Haydock, St. Helens; thence via Eccleston, Prescot, Huyton and Roby to Knotty Ash, thence to the Pier Head. The charges made on the various sections bring the total cost of the journey to about half a crown.

THE town clerk of Stoke-on-Trent recently wrote to the Potteries Electric Traction Company on the subject of increasing the weight of the rails in the various tracks throughout the borough, the necessity for which was emphasised by Colonel Druiitt in his recent report to the Board of Trade on the working of the tramways throughout the district. In reply, the Chairman of the company declined to give any undertaking whatsoever as regarded the reconstruction of the whole of the track, and stated that the company would carry out such repairs as were necessary from time to time to keep the track in a satisfactory state of repair. It was decided to lay a copy of the correspondence before the Board of Trade, with a request that the Board would cause the company to remedy the present unsatisfactory condition of the track.

THE Lothians Electric Power Co. have made an offer for the lighting of Bonnyrigg by electricity, and the proposals have been remitted to the lighting committee of the burgh for full consideration. The company propose to erect ninety-four lamps, or more if desired, and keep them alight

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FAÏENCE  
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PLACES.

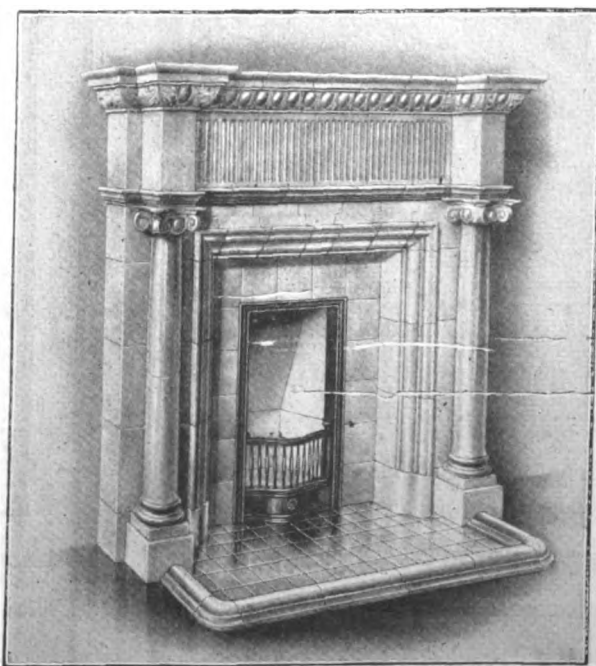


Figure 7.

FAÏENCE  
FIRE  
PLACES.

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from the beginning of September till the beginning of April, between one hour after sunset and 10.30 P.M., amounting approximately to 1,000 lighting hours, for the annual payment of 25s. per lamp, on condition that permission be given to erect poles for the conveying of electric wires overhead for the lighting and for power purposes. The company say the scheme will entail a slightly greater annual expenditure to the Town Council than the system of gas-lighting at present in vogue, but at the same time the actual illumination would be increased by over 500 per cent.

THE Marylebone Borough Council electric supply committee recommend a scheme by which bonuses will be paid to the men employed at the generating station, with the idea of inducing them to keep down expenses. All men engaged in the actual generating of the supply will receive the bonus, which is to be paid on the actual works cost of units sold to mains, the repair cost of plant to be included. It is suggested that the scheme should be tried during the September and December quarters, in which period it is estimated the total units generated will be 4,500,000, of which 16 per cent. will be used on the works and 16 per cent. lost on the distributing system. The average cost per unit will be approximately .54 of a penny, but it is anticipated that with the bonus scheme in force this figure will be reduced to .44 of a penny. On the above estimate .100 of a penny would mean 1,900l., of which 200l. would be paid as bonuses according to a scale drawn up by the resident engineer—the lower the cost the greater the bonus.


An inquest was held at Derby on the body of a man who was killed while he was switching on an electric fan in the cellar at the shop where he was employed. The medical evidence showed that he was a strong, muscular man, and that death was due to sudden failure of the heart consequent upon an electric shock. Mr. T. P. Wilmshurst, chief electrical engineer to the Derby Corporation, said the voltage was only 200, and the regulation low pressure was 250. Mr. Gilbert Scott Ram, consulting electrician to the Government, who attended the inquiry on behalf of the Home Office, said that 200 volts was looked upon as quite

safe. It was his opinion that in a damp cellar certain precautions should be taken. The jury returned a verdict of accidental death, and recommended that the risks of portable fans and other electrical apparatus should be carefully considered, and any necessary warning issued to those using them.

THE Oxford City Council at their last meeting considered tenders for the electrification and reconstruction of the present horse-traction tramways. Two tenders had been sent in—one by the National Electric Construction Co., Ltd., who proposed to lay down the Dolter system, and the other by the Oxford tramways company, who gave conditionally the offer of three systems—the Loraine, the Griffiths-Beddell and the conduit slot. Mr. S. Sellon, of Victoria Street, Westminster, was consulted by the Corporation, and reported in favour of the Oxford company's offer. It was ultimately resolved, by thirty-two votes to ten, to accept the tender of the National Electric Construction Co., as, all things considered, it was the best, subject to the guarantees offered proving satisfactory, and also to an undertaking that, if the Dolter system did not prove satisfactory, the company would lay down another, and to such other modifications and provisions as might be required by the Corporation.

DR. J. F. WALDO held an inquest, at the City coroner's court, into the fire at 47 Holborn Viaduct on the 12th ult. One of the floors was used for sleeping accommodation for about eighty-five men. Several Fire Brigade officers commented on the insufficiency of means of escape. One said that the trap-doors were wrongly placed, and some of them were without ladders. The jury, in returning their verdict, gave as their opinion that the means of escape are not satisfactory, and steps should be immediately taken for the safety of any occupants in case of fire. They censured the employers for the neglect of proper instructions to and precautions for the safety of their men.

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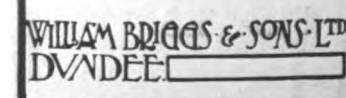
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## VARIETIES.

THE cost of the new secondary schools at Maldon, Essex, will be 6,997/.

THE Norfolk education committee has decided to subscribe 50/ per annum towards the School of Forestry which it is proposed to found at Cambridge University.

MR. HENRY F. JOEL, A.M.I.C.E., has removed from 31 Wilson Street, E.C., to 110 Strand, London, W.C., where he will practise as a consulting electrical engineer and specialist on electric motor-cars.

THE new county lunatic asylum for the county of Essex will cost 418,228/. The plans have been passed by the Lunacy Commissioners, and it will be erected on the Severall's Estate, Colchester.

MR. W. D. CAROE was on Saturday sworn into the office of Master of the Plumbers' Company, and Mr. Adrian Pollock and Mr. Charles Hudson into the offices of Warden and Renter Warden respectively for the ensuing year.

THE Yokosuka Municipality of Japan have under contemplation the construction of breakwaters in the harbour at a cost of 100,000 yen (about 10,200/), for the purpose of facilitating the shipping trade.

THE Birmingham Playgrounds, Open Spaces and Playing Fields Society, which was inaugurated in June last, has offered to the Corporation four pieces of land measuring about 6 acres and valued at 8,000/, for use as open spaces by the children.

THE Finsbury Borough Council have decided to apply to the London County Council for a loan of 22,200/, for the purpose of acquiring new wharf premises, with a frontage to the Thames. It was agreed to give 15,200/ for the Bull Stairs Wharf, and spend 7,000/ in adapting it.

A REMARKABLE case of overcrowding in the village of Great Horkeley, near Colchester, has been brought under the notice of the sanitary authority. In a cottage, which has only one bedroom, reside a man, his wife and five children, yet the parents had taken in three children sent down by the "Fresh Air Fund" from London. The Board decided that the clerk should call the attention of the promoters of the fund to the matter.

THE Mayor of Battersea opened on Saturday an institute constructed by the Borough Council in Plough Road for the use of the poorer classes. The building includes a recreation-room, furnished with a billiard table, bagatelle tables and smaller tables for chess and reading; also a gymnasium, slipper-baths, a reading-room for children and a museum. The site cost 2,635/., the building 7,950/. he furniture 550/.

At a meeting on Monday of the Wednesbury Town Council satisfaction was expressed that plans for a considerable number of new houses had been approved, and it was said the continued activity of the building trade augured well for the town's future. As an indication of the need for the class of property which was being erected, it was noteworthy that the houses were frequently tenanted before they were finished.

THE contract for the foundations of the Singer building extension on Broadway and Liberty Street, New York, has been awarded to the Fountain Company. Mr. Ernest Flagg is the architect. The foundations will consist of thirty pneumatic caissons carried down to bed rock, an average of about 80 feet below the earth. It will be remembered that this building is to be carried to a height of forty-one storeys.

THE waterworks committee of the Coventry City Council are consulting Mr. Hawksley, engineer, as to probable sites for boring with a view to increasing the water supply of the city, and also concerning schemes for an increased supply that have been brought forward. It has been suggested that possibly the Birmingham Corporation might permit of Coventry taking a portion of their supply from Shustoke.

IN view of the growth of Evesham the Town Council have considered the question of augmenting the water-supply or increasing the present storage capacity. It is proposed to construct two additional covered reservoirs of two and four million gallons capacity respectively, making with the present capacity a total of six and a half millions. The estimated cost is 12,500/. A committee of the Council recommended that the smaller reservoir be carried out first.

THE master of the West Ham workhouse has drawn up a report, which is to be forwarded to the Local Government Board, showing that the labour yard last year resulted in a dead loss of 750/. At the present time there is in hand

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700 tons of broken granite and 250,000 bundles of wood, for which there is no sale. He suggests that in the coming winter the Guardians should rent a large tract of land on which the men could be placed, and that they should be paid a fair wage in direct ratio to the amount and nature of the work preferred.

### THE ENGINEERING AND MACHINERY EXHIBITION.

THE Exhibition at Olympia, of which Messrs. G. D. Smith and F. W. Bridges are the organising managers, is a fairly representative one, and well worthy of a visit on the part of all who are interested, inasmuch as an opportunity is afforded of inspecting the various classes of machinery and appliances that are adapted to special businesses or requirements.

In the centre of the building an attractive feature is "Keith's patent electric water and air circulator," which has been lent by the *James Keith & Blackman Co., Ltd.*, and by means whereof air is circulated, humidified, cleansed and cooled within a comparatively short time.

We have only space to briefly mention a few of the many exhibits, and taking them in the order in which they occur there will be seen at the stand of *Messrs. Alex. Findlay & Co., Ltd.*, sections of pressed steel trough flooring plates suitable for road and railway bridges, fireproof buildings, &c., besides built steel columns, steel-pressed gutters, &c. *Cochran & Co. (Annan), Ltd.*, exhibit models and views of their well-known patent vertical multitubular boilers. The *United Kingdom Lighting Trust, Ltd.*, demonstrate the Kitson high-power system of oil-gas incandescent light, and the U.K. automatic air-compressing system of intensified gas-lighting, &c. At the stand of *Messrs. Merriitt & Co.* we noticed some sheet steel and expanded metal lockers, both open and closed type, and steel shelving. The lockers are used principally for providing employes with a place to keep their belongings in, &c.; they are also useful for various other purposes.

At the stand of *Messrs. B. J. Hall & Co., Ltd.*, are seen Hall's patent electric copier for taking photo-prints of

engineers' drawings, and a new rapid copying process, called "Ordoverax," besides a selection of drawing instruments, cabinets, drawing tables, &c.

*Recorders, Ltd.*, exhibit time recorders of all kinds for mechanically controlling various systems of time checking, and the "Magic" patent window balance. *Mr. F. L. Ames* exhibits a model of a dockgate bridge, a model of combined sleeping berth and portable couch, and a full-size specimen of a chimney-top for the cure of smoky chimneys. *Buck & Hickman, Ltd.*, have a very good display of representative American machine tools, adapted for a variety of purposes.

*Messrs. Charles Churchill & Co., Ltd.*, have also a selection of modern machine tools, all of which have been specially chosen either as worthy examples of the most approved practice, as marking some distinct advance in methods of doing work or as embodying interesting novelties of design or constructional detail. *Messrs. Easton & Bessemer, Ltd.*, have on view specimens of their horizontal as well as vertical steam-engines, and a circular saw bench with table to take saw 42 inches in diameter.

At the stand of *Joseph Richmond & Co., Ltd.*, we observed a working model of the "Richmond-Carey" patent automatic electric lift, and of a new patent automatic electric push-button service lift, &c. The *De Laitte Gas Machine Syndicate, Ltd.*, demonstrate the advantages of De Laitte's air-gas plant, which is automatic in working, always ready for work, affords a regular and constant supply, and complete evaporation at all temperatures. The *Sturtevant Engineering Co., Ltd.*, exhibit various types of standard fans for various purposes, besides the "Sturtevant" rotary blower, drying apparatus, and patent junction pipes, &c.

*Sir W. G. Armstrong, Whitworth & Co., Ltd.*, make a display of their 18-inch centre lathe and a vertical drilling machine under working conditions, illustrating the capacity of their high-speed tool steel for both turning and drilling. At the stand of *Messrs. J. Halden & Co.* we noticed the "Simplon" adjustable set square, which enables draughtsmen to draw easily and quickly any lines whether vertical or set at an angle; the universal drafting machine, and various modifications and adaptations for photo-copying machines and apparatus. *Messrs. Charles Wicksteed & Co.* exhibit their patent flexible shaft, electric tube expanding and drilling appliances, besides their new patent pipe-

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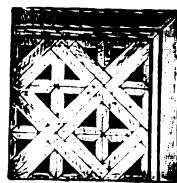
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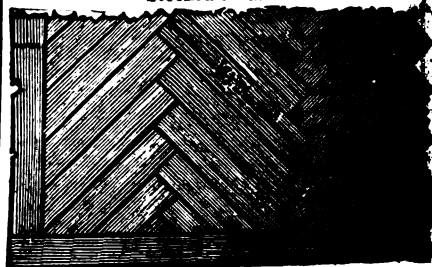
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bending machine, &c. *Messrs. Selig Sonnenthal & Co.* show their patent portable hand crane, with automatic extending and receding jib, which is of special advantage in warehouses where the head room is limited, and where it is necessary to lay down goods at different positions from the centre of the crane. This crane can be used with a much greater degree of safety than an ordinary crane, as it can be brought forward to a window or door in the warehouse wall and the jib shot out, and the load lifted and then pulled in again without the attendants having to go forward to the edge of the loop-hole. The *Walsall Hardware Manufacturing Company* make a display of their steel conduits and fittings for electric-light wiring, as well as of their patent interchangeable junction boxes and grip fittings. The *Simplex Steel Conduit Company, Ltd.*, exhibit the well-known Simplex steel conduit system for electric light and power wiring, including enamelled and galvanised steel conduits, fittings and accessories for the complete mechanical protection of interior electric circuits, as well as various types of electric-light fixtures, &c. The advantages of reproducing plans by "Velography" are demonstrated by *Norton & Gregory, Ltd.*; and working models of distinctive types of "Temperley" patent transporters for unloading and loading vessels and railway trucks and handling material, illustrating the modern method of saving labour, time and cost, are shown by the *Temperley Transporter Company*; while impregnable foundation felt and fire-resisting hair felts are to be seen at the stand of *Mitchells, Ashworth, Stansfield & Co., Ltd.*

Special interest attaches to the patent heat distributor shown by *Mr. J. D. Prior*, of Birmingham, for heating bedrooms with the waste heat from the sitting-room fire. This apparatus is made of gun-metal and solid drawn copper tube of a peculiar section and bent in a special manner. It is fixed at the back of an ordinary open fire-grate (say in the sitting-room), and is used for warming bedrooms, halls, &c., by means of hot water circulating through radiators, pipes, &c. The peculiar formation of the heat distributor causes it to extract the waste heat from the back of the fire and the throat of the chimney.

Lastly we would mention that at the stand of *J. H. Heathman & Co.* may be seen specimens of their well-

known fire-extinguishing appliances, fire escapes, extension ladders, &c., which, as well as many other exhibits, are worthy of attention.

### THE FARNHAM PATENT PROCESSES.

THE building illustrated, No. 116 Fenchurch Street, E.C. which was built about fifty years ago of Portland stone on the ground floor and Caen stone above, has just been subjected to the above processes, which not only give a renovated aspect to it, making it, in fact, to appear quite new, but a fresh and extended lease of life has been afforded by means of the adoption of the firm's method of preservation, which is both efficient and simple. The façade, we may mention, was previously treated in or about 1892, and again about 1893, by different so-called preservative processes of a superficial character which proved utter failures.

The building is a large and important one (occupied on the ground floor by the Union of London and Smith's Bank, Limited), owned by Mr. G. Croshaw, who decided to employ the Farnham processes, which have been carried out in a very satisfactory manner under the supervision of Mr. Alexander R. Stenning, F.R.I.B.A. These consisted first of all of sand blasting the stone for the purpose of removing all the rotten material. The sand blast was operated by an air-compressing machine, with a pressure of 30 lbs. to the square inch, which directed with great force a stream of very sharp sand. The waterproofing process was next employed, which consists of heating the stone surface by means of a Salamander charcoal stove, so as to get it at a high temperature in a favourable condition to absorb molten paraffin wax, and when the stone has taken in all that is possible of this material, which penetrates to a considerable depth, thus giving it not merely a coating but filling up the pores with the solidified wax that remains there under all conditions, it is impossible for moisture to gain access to the stone. The sand blast was then once more employed to remove the surplus wax and clean the surface so as to remove all traces of the waterproofing,

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and now the building presents an entirely natural appearance, as though just newly finished from the hands of the builder, except, of course, the carvings and mouldings have lost their sharpness of outline during the many years in



which the stone was unprotected from the decaying influences of the atmosphere.

It is important to remember that paraffin wax being an inert material cannot be affected by the action of acid or alkali, and therefore when all the pores of the stone are filled with this material it follows that the surface is per-

manently waterproofed, and as none of the deleterious chemicals held in suspension by the London atmosphere can penetrate the stone, decay is absolutely impossible after the treatment.

There is an interesting though secondary advantage arising from the treatment; the pores of the stone being permanently closed cannot absorb moisture, and therefore all subsequent dirt deposits remain on the surface, so that heavy rains, which carry the dirt into the pores of untreated stone, wash such deposits from the surface of a waterproofed building, with the result that a building when treated by the Farnham wax process will retain its natural colour years after a new building has been begrimed and disfigured by soot deposits.

There are a vast number of buildings in London and elsewhere, we will add, which might with advantage be subjected to the processes referred to.

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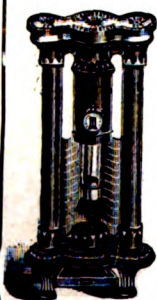
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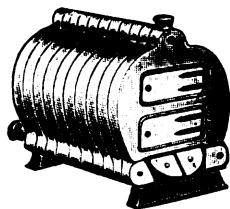
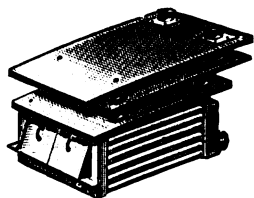
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COLOURS

SANITARY PIPES.

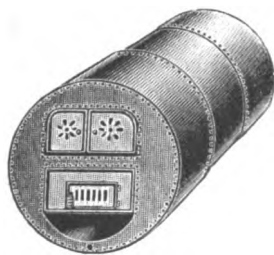
GLAZED BRICKS.



largely used. It is, however, modernised throughout, and is trustworthy and durable. The old method of setting them in brickwork is superseded. Instead of external brick flues to conduct the hot gases underneath and along the



outside shell of this boiler, all the flues of the Cotton type are internal, and made either circular or of sets of tubes, which direct the heat three times through the interior of the



boiler before it escapes up the chimney-stack. The outer casing of the boiler is covered with non-conducting material, and practically no heat is lost. The boilers have, moreover, the advantage of being easily cleaned.

#### SOCIETY OF ENGINEERS.

At a meeting of the Society of Engineers held at the Royal United Service Institution, Whitehall, on Monday evening, October 1, Mr. Maurice Wilson, president, in the chair, a paper was read on "Recent Practice in Cane-Sugar Machinery," by Mr. Perry F. Nursey, past president.

A typical West Indian windmill sugar estate was

described, after which the author entered upon the consideration of the question of central factories. That system, he observed, constituted the most important advance of modern times as regarded the general condition of sugar production, central factories having proved most successful, especially in connection with small estates. They were alike satisfactory to the owners of such estates, who sold their cane crops to the factory companies, and to the latter, who made the sugar and placed it on the market.

The author next described the Antigua central factory, the inception and inauguration of which were mainly due to the untiring exertions of the Hon. Francis Watts, C.M.G. It was erected and fitted under contract by the Mirrlees Watson Company in 1904, and the author pointed out that the report of the directors of the Central Factory Company for 1905 showed that the working of the factory for that year resulted in a net surplus of 3,956l. 9s. 8d. This result was obtained notwithstanding a prolonged drought; a saving point, however, was the somewhat advanced price of sugar during the early part of the year. The author then submitted a detailed specification of the plant and machinery of the Antigua factory, the cost of which, inclusive of several miles of light railway connecting up the various estates with the factory, was 42,408l. The factory was handed over under steam to the company by the contractors within eleven months of the acceptance of the contract, and was publicly opened on December 19, 1904.

The author afterwards described a modern Cuban central factory as erected and fitted by D. Stewart & Co., Ltd., and he concluded by stating that the Harvey Engineering Company had carried out contracts for no fewer than nine central factories in the East during the past five years.

#### HENLEY BRIDGE.

A REPORT has been prepared by Mr. Griffiths, engineer to the Thames Conservancy, respecting the condition of Henley Bridge. He says:—"On inspecting the foundations of No. 3 pier I was able to ascertain more definitely than heretofore the general conditions of the timberwork. It appears as far as I could see that the timbers in the platform run

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longitudinally under the main pier and transversely at either end under the cutwaters. I was able to get my arm underneath the timber at a point after the chalk rubble had been cleared away, and found that the decking was originally 10 inches in depth. The outside timber of all has wasted away (in section), and timber at another point had washed away appreciably, and what was originally 10 inches in depth is now only 5½ inches. Until more rubbish is cleared away from around the foundations it cannot be decided how great a space there is between the underside of the timber decking and the gravel bed. It seemed to me the space was of about 1 foot 6 inches. There are two courses open to the committee: firstly, to clear away the chalk rubble and then put in a concrete toe round the foundations as has been done in the case of No. 2 pier; and secondly, to excavate to a depth of about 2 feet 6 inches below the top of the decking, then clear out all the soft material from under it by either air or water pressure, and afterwards fill in the space with concrete and grout, to be well rammed in. It is for the committee to decide which of these two courses they will adopt, but it is obvious that the latter will be the most permanent, and I would impress on them how the scouring and wasting action has reduced the length of the timbers which are exposed and on which the whole structure depends. No. 2 pier.—A portion of the concrete toe has been put in round this pier, but in view of the facts that have come to light about the timbers of No. 3 pier it would be advisable before any more concrete is put in that the diver should lay bare a portion of the timber foundation in order to ascertain its condition."

#### THE WALWORTH SETTLEMENT.

At the meeting of the Church Congress in Barrow on Tuesday, a paper was ready by the Rev. W. J. Conybeare on housing. He said of all our social problems none was so full of hope as the question of the housing of the working classes. So much of a practical nature had already been done, that we might almost say that we had passed through the experimental stages. The best known example of private effort was that of Mr. Cadbury at Bournville, but in Barrow they could see for themselves Vickerstown, the

name of which revealed its origin. There was also that interesting experiment of private effort which was taking shape in the "Garden City," near Hitchin. He would give an example of an effort made by the Ecclesiastical Commissioners. In 1903 the leases of 22½ acres of Church house-property in Walworth fell in. It was then what is commonly known as a slum. For months those dismal streets looked like those of a bombarded town; the windows were broken, the doors boarded up preparatory to the operations of the housebreaker. Now a model town of 790 families had arisen on this same area. Three broad streets in place of four narrow ones had been made. Four public-houses had been closed. An acre and a quarter of land had been set apart as a recreation ground. Each row of houses had been built with some peculiar design of its own, so as to remove that painful monotony which made the common "bow window and door" design, of which there were scores of miles in nearly every large town, so deadening to the sense of individuality. Many kinds of houses had been set up. No longer those so-called model dwellings, the experiment of twenty years ago, countless storeys high, with dark, steep staircases, but cottages, cottage flats and tenements with never more than three flights of stairs. Each cottage and cottage flat had its own private garden, and the tenements had a large back yard, along the sides of which flower beds were laid out and well kept by the tenants. The weekly rents ran from 11s. for a five-roomed cottage to 4s. 4d. for a two-roomed tenement, to which must be added the variable weekly rate, averaging about 3s. the cottage and 1s. 2d. for the tenement. Only those of good character were accepted as tenants. But a visit to the Walworth estate naturally gave rise to the question, Where had the former tenants gone? Were they now making a slum elsewhere? To such questions there was no satisfactory answer. To counteract this evil an attempt was now being made in Camberwell, to quote South London again, where the Borough Council had bought up some of the worst houses, and, instead of dishousing the people, had improved the houses as they stood with better wall-papers, better light, better water supply and cooking arrangements, and more sanitary accommodation. The difficulty was to secure appreciation of the reform and the right use of the additional conveniences.

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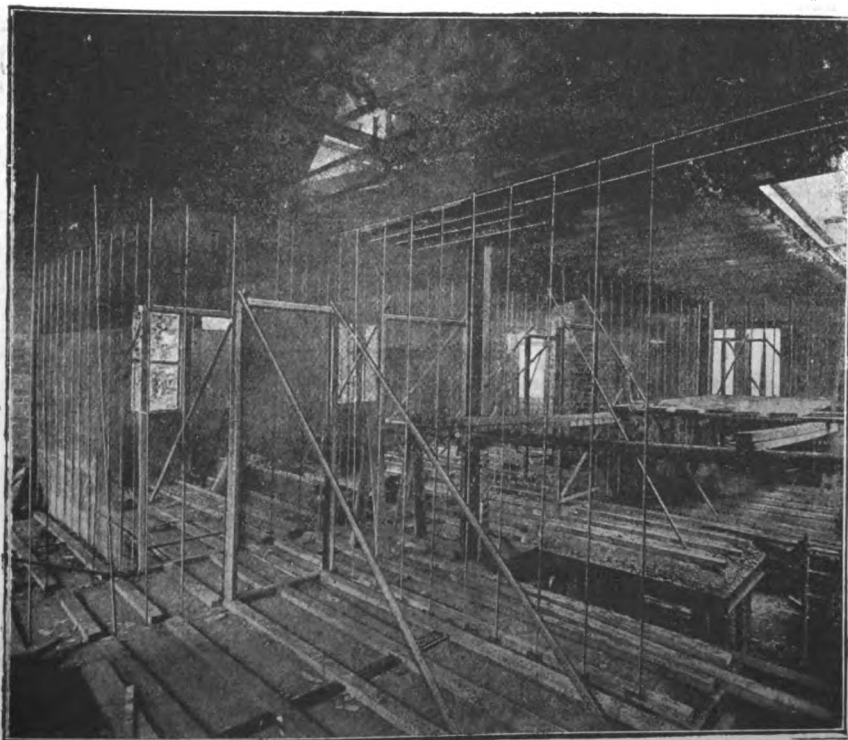
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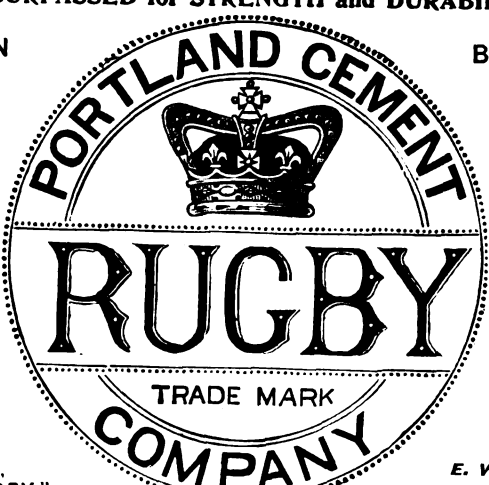
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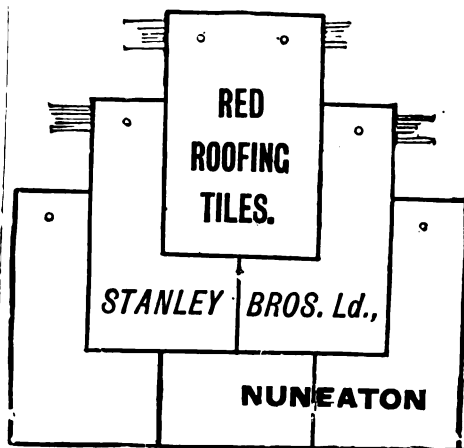
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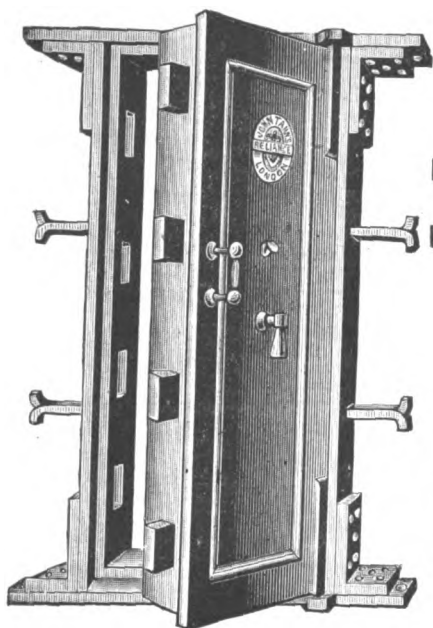
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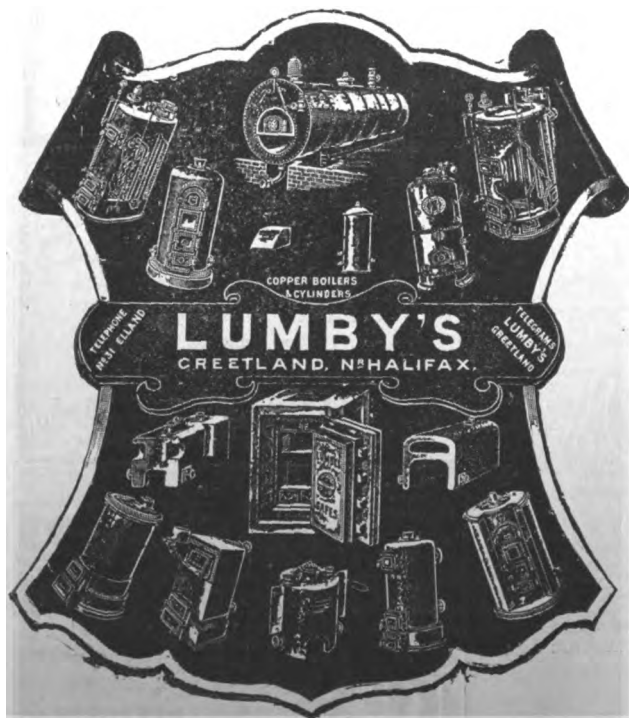
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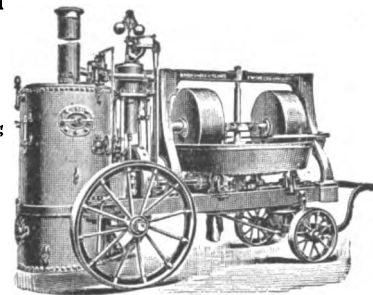
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**THIS GULLY TRAP** provides means whereby, in the event of a sudden back flush of water in the drains, the Gully is automatically sealed from the interior and the water in the drains prevented from escaping through the inlet of the Gully.

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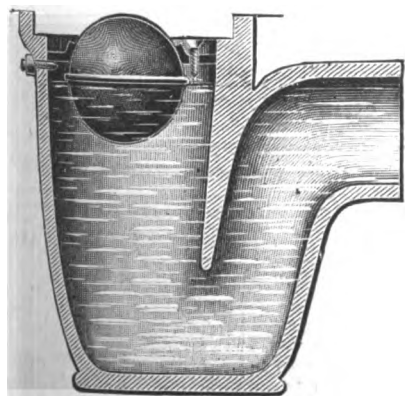
Gully can be fixed without touching the drains.  
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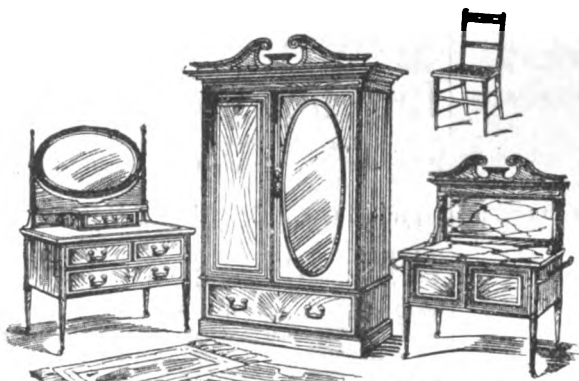
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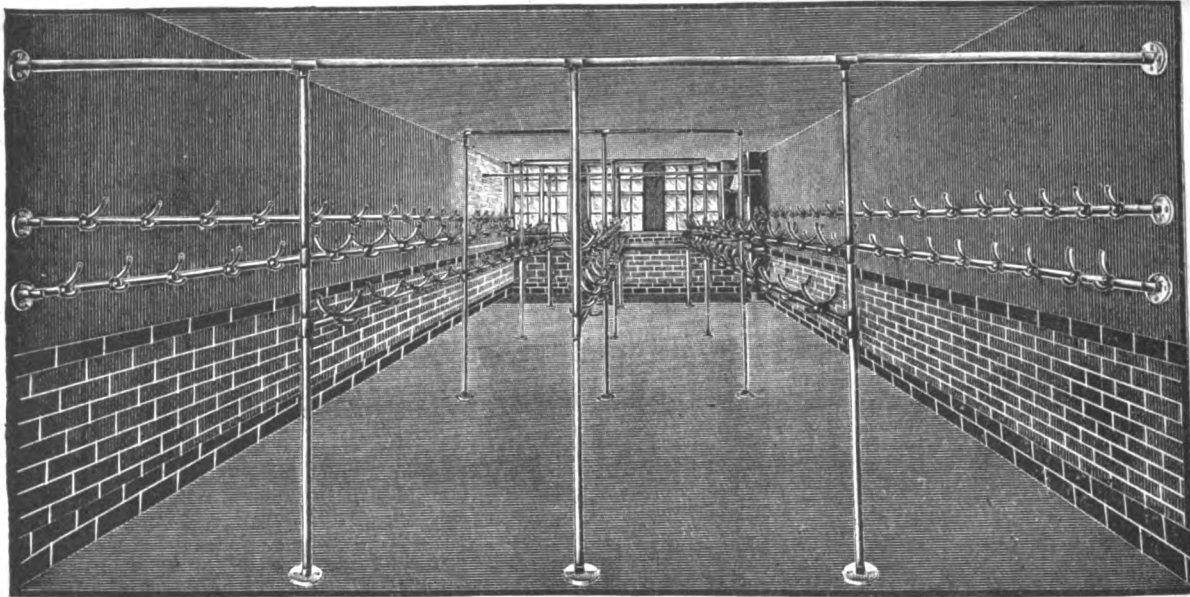
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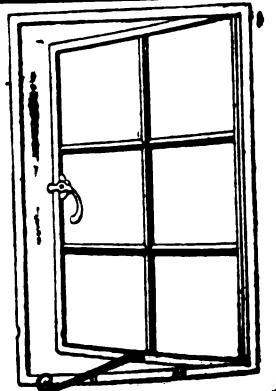
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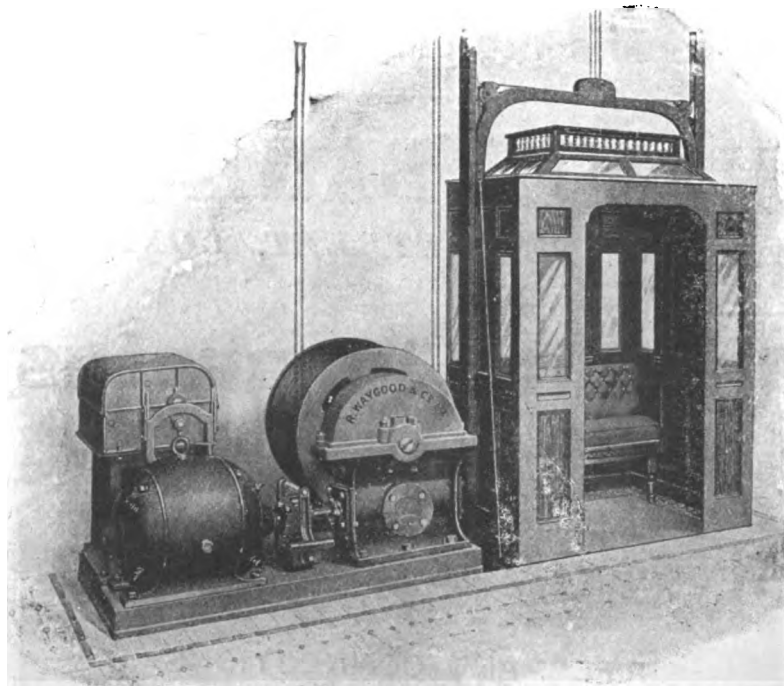
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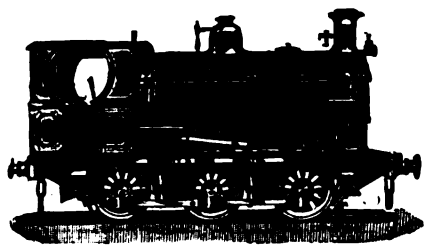
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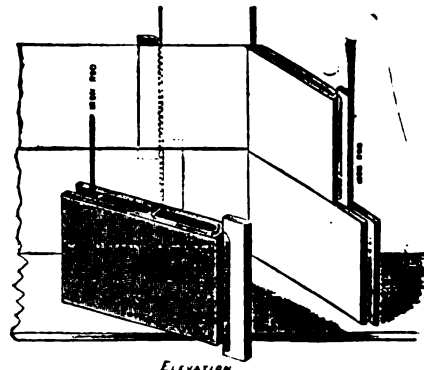
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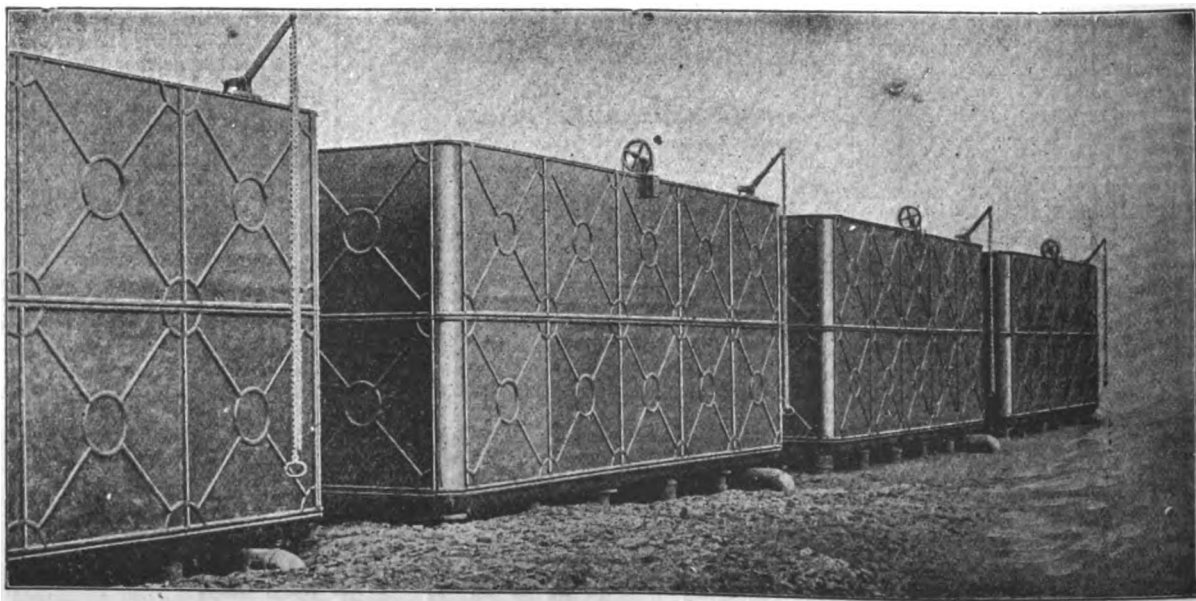
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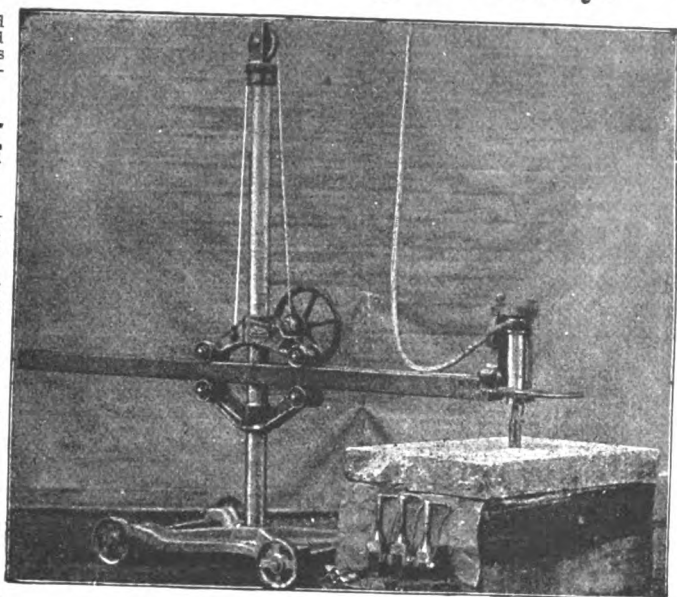
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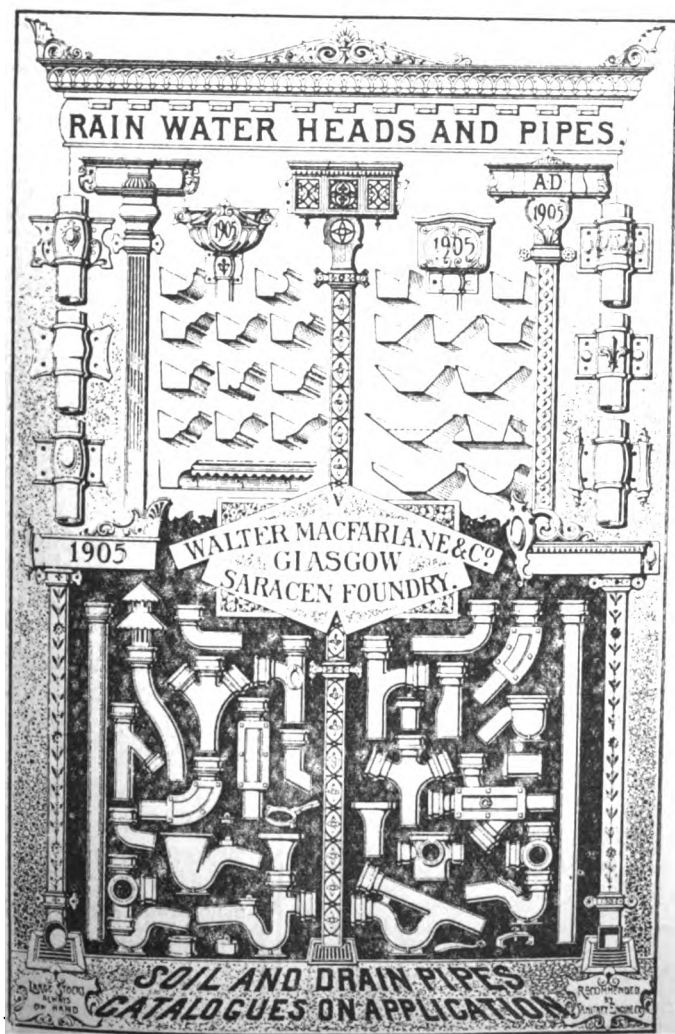
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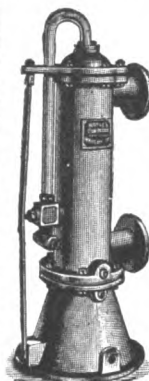
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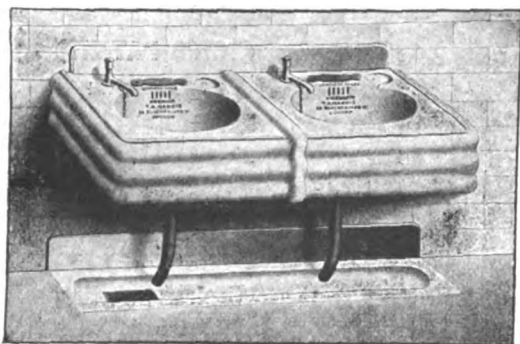
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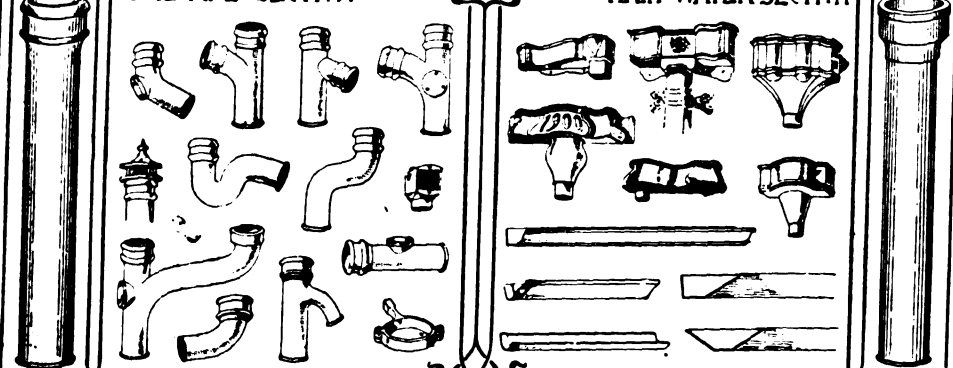


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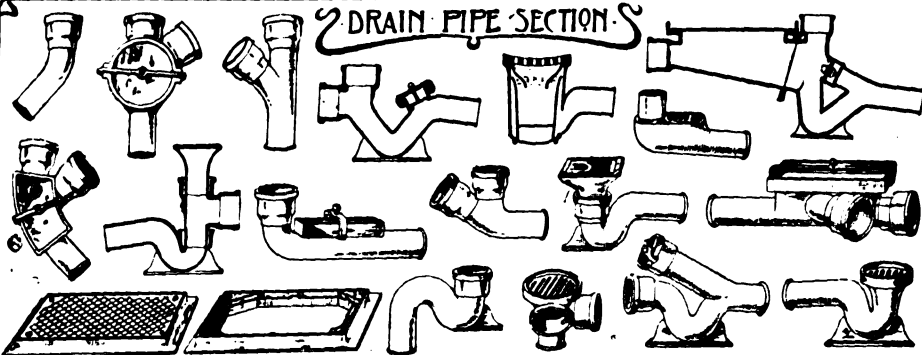
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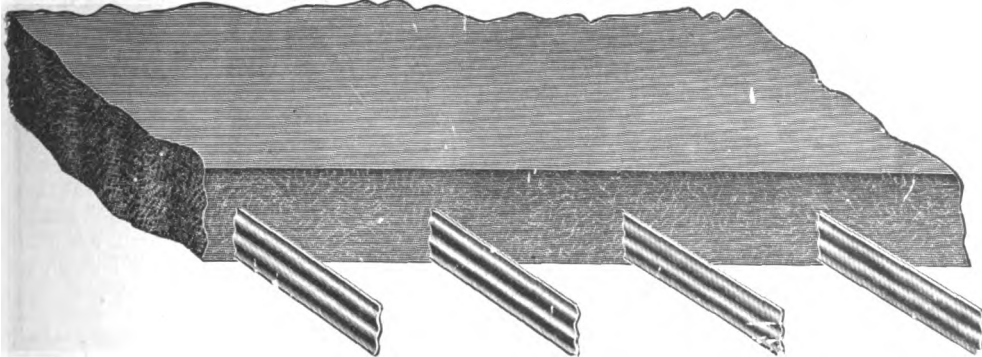
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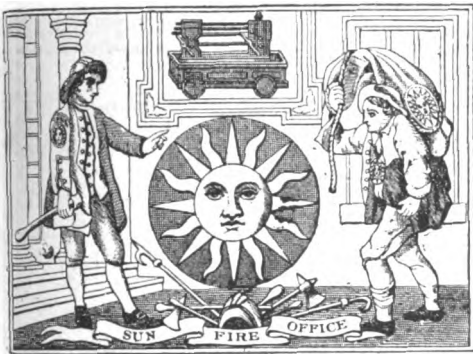
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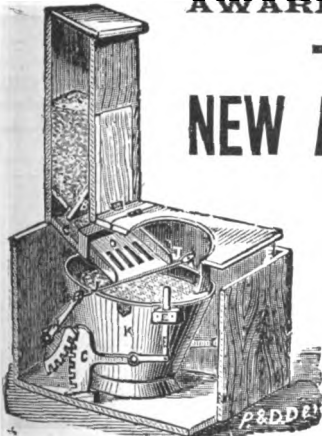
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**NOTICE TO ADVERTISERS.**

Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

**EDITORIAL NOTICES.**

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further

answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

**TENDERS, ETC.**

\* \* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

**COMPETITIONS OPEN.**

GAYWOOD.—Oct. 22.—The Norfolk education committee invite plans, specifications, elevations and estimates for a new school. The plan (if any) selected will be accepted subject to the approval of the Board of Education. Particulars can be obtained on application to the Secretary, at the County Education Office, 57 London Street, Norwich.

MONTEVIDEO.—Dec. 14.—La Comision Nacional de Caridad require competitive plans for new foundling hospital with approximate cost. Plans and report, under mottoes, and, in sealed envelope, name and address of competitor. The four selected plans will receive 212l. each, and will be asked to further compete. Further particulars from the Consulate-General for Uruguay, 5 and 6 Clement's Inn, Strand, W.C.

**CONTRACTS OPEN.**

AUSTWICK.—Oct. 22.—For the taking-down of existing fences, providing necessary materials for and building in lime mortar about 69 lineal rods of rubble stone boundary walls, 6 feet 6 inches high, at Ell Meadow, near Harden Bridge, Austwick, for the Settle Rural District Council. Mr. T. A. Foxcroft, Town Hall, Settle.

BALBY.—Oct. 30.—For alterations and repairs at Balby Mixed Provided school, near Doncaster. Mr. L. J. Blackburn, divisional clerk, 10 Priory Place, Doncaster.

BEDALE.—Oct. 15.—For alterations, &c., at the Snape school. The Vicar, Well, Bedale.

BIRSTALL, &c.—Oct. 13.—The West Riding education committee invite whole or separate tenders in connection with the following schools, viz. Birstall, new school and

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alterations, and Denholme district provided school, alterations, &c. (builder, joiner, slater, plasterer, plumber, painter); Thornton-in-Craven, Earby Riley Street provided school, alterations and repairs (builder, joiner, plumber, painter, heating engineer); Snaith Wesleyan school, alterations and repairs (all trades). Deposit 1*l.* in each case. Mr. J. Vickers-Edwards, county architect, the Offices, County Hall, Wakefield.

BIRKENHEAD.—Oct. 31.—For the erection and completion of eighteen tenement dwellings on the east side of Egerton Street. Deposit 3*l.* 3*s.* Mr. C. Brownridge, M.I.C.E., borough engineer, Town Hall, Birkenhead.

BRADFORD.—Oct. 24.—For additions to National schools, Thornton. Mr. Sam Spencer, architect, Old Bank Chambers, Great Horton, Bradford, Yorks.

BRIDGEND.—Oct. 13.—For erecting a mortuary, &c., at the workhouse. Mr. P. J. Thomas, architect, Bridgend.

BRIDLINGTON.—Oct. 13.—For the erection of a villa residence, Cardigan Road. Messrs. Brodrick, Lowther & Walker, architects, Hull and Bridlington, 52 Quay Road, Bridlington.

CLEETHORPES.—Oct. 17.—For the erection of an elementary school in Elliston Street, Cleethorpes, Lincs. Deposit 2*l.* 2*s.* Messrs. Scorer & Gamble, architects, Bank Street Chambers, Lincoln.

COLCHESTER.—Nov. 6.—For the foundations of the main building at the Essex lunatic asylum at Mile End. Deposit 20*l.* The County Asylum Office, 4 Duke Street, Chelmsford.

COVENTRY.—Oct. 15.—For erection of buildings at Foleshill works, comprising retort-house, 220 feet by 130 feet by average height of 45 feet; coal stores, 100 feet by 70 feet by 32 feet high; coal-breaker pit, 42 feet by 17 feet by 25 feet deep; two chimneys, each 82 feet high; 350 yards of sunk dock for single line of railway stokers; mess-rooms, lavatories, &c., for the gas committee. Deposit 1*l.* 1*s.* Mr. Fletcher W. Stevenson, general manager and engineer, Gasworks, Coventry.

ERITH.—Oct. 15.—For the deepening and repair of the existing brick-steined well in the electricity works yard, High Street, Erith, Kent, for the Urban District Council. Deposit 2*l.* 2*s.* Mr. Charles H. Fry, clerk, County Offices, Bexley Road, Erith, Kent.

EDINBURGH.—Oct. 15.—For the erection of a convenience and cloak-room for women at Holyrood. Burgh Engineer, City Chambers, Edinburgh.

ELGIN.—Oct. 19.—For the mason, carpenter, slater, plumber, plasterer, painter and glazier's work of double cottage to be erected in Grant Street. Mr. Charles C. Doig, architect, Elgin.

FENTON.—Oct. 18.—For the builders' work required in the construction of public underground conveniences. Mr. S. A. Goodall, surveyor, Town Hall, Fenton, Staffs.

GLASGOW.—Oct. 22.—For the construction of offices for Carron Company on the tongue at Grangemouth Docks, for the Caledonian Railway Company. Deposit 2*l.* 2*s.* The Company's Engineer, Buchanan Street Station, Glasgow.

HALIFAX.—Oct. 15.—For erection of a retaining wall in Southowram New Road. Mr. Lister Coates, architect, Central Chambers, 10 Central Street.

HALIFAX.—Oct. 17.—For the joiner, slater and plasterer and plumberwork required in erection of a house at Catherine Slack. Mr. Arthur G. Dalzell, architect, 15 Commercial Street, Halifax.

HAVERFORDWEST.—Oct. 20.—For the construction of the meat market, including new steel roof with elliptical lattice-braced principals, &c., for the Corporation. Deposit 2*l.* 2*s.* Mr. J. Preece James, architect, Tenby.

IRELAND.—Oct. 19.—For erecting and completing a Crown post office at Bandon, co. Cork. Deposit 1*l.* The Carpenter in Charge, Queen's College, Cork.

IRELAND.—Oct. 22.—For building and completing two houses at Gillabbey. Messrs. W. H. Hill & Son, architects, 28 South Mall, Cork.

IRELAND.—Oct. 30.—For the erection and completion of a parish church at Timoleague, co. Cork. Deposit 3*l.* 3*s.* Mr. M. A. Hennessy, architect, 74 South Mall, Cork.

LINCOLN.—Oct. 15.—For erection of additions to the municipal technical school. Deposit 1*l.* Messrs. W. Watkins & Son, architects, Silver Street, Lincoln.

LONDON.—Oct. 13.—For the pulling-down of the existing brick-arched carriageway bridge over the canal, and the construction and erection of a new brick, concrete and steel carriageway bridge (30-feet span), a new tollkeeper's

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LONDON.—Oct. 16.—For alterations and additions to the underground conveniences in Bishopsgate Street Without and Aldgate. Deposit 1*l.* The Engineer to the Corporation, Guildhall, E.C.

LONDON.—Oct. 18.—For erection of a disinfecter shed at the workhouse, St. Leonard Street, E., for the Guardians of Stepney Union. The Guardians' Offices, Barnes Street, Ratcliff, E.

LONDON.—Oct. 19.—For the erection of a public library in the borough of Southwark. Mr. T. A. Johnson, town clerk, Town Hall, Walworth Road, S.E.

LONDON.—Oct. 25.—For adapting Worsley Road school building as a branch library, for the Hampstead Borough Council. Mr. O. E. Winter, A.M.I.C.E., borough engineer, Town Hall, Haverstock Hill, N.W.

LONDON.—Oct. 25.—For alteration and extension of the laundry at the workhouse, Swaffield Road, for the Guardians of Wandsworth Union. Deposit 2*l.* The Guardians' Offices, St. John's Hill, Wandsworth, near Clapham Junction railway station, S.W.

LONG EATON.—For the following works, or any of them, for the Long Eaton Working Men's Co-operative Society:—Contract No. 1, builders' work required in the erection of bakery, loading shed, stables, boiler-house, &c., in Fletcher Street, Long Eaton; 2, steel roofing and steel girders and stanchions; 3, plumbing and glazing. A deposit of 2*l.* 2*s.* for Contract No. 1 and 1*l.* 1*s.* for Contracts Nos. 2 or 3. Messrs. Ridgway & Smith, architects, Long Eaton, near Nottingham.

MANCHESTER.—Oct. 30.—For the erection of the Oswald Road Municipal school, Chorlton-cum-Hardy. Deposit 2*l.* 2*s.* The Education Offices, Deansgate, Manchester.

NEWTON-IN-MAKERFIELD.—Nov. 30.—For the erection of a public library at an inclusive cost of 4,000*l.* Mr. C. Cole, Clerk, Town Hall, Earlestown, Lancs.

NORTH BRANCEPETH.—Oct. 16.—For new cookery centre, &c., at North Brancepeth Council school, Durham. Mr. W. Rushworth, F.R.I.B.A., architect, Shire Hall, Durham.

ORMESBY.—Nov. 2.—For the enlargement of the Ormesby school, Norfolk. Deposit 1*l.* 1*s.* Messrs. Olley & Haward, architects, 5 Queen Street, Great Yarmouth.

ST. BLAZEY.—Oct. 30.—For the erection and completion of shops, stores and other offices at Station Road, St. Blaze. Deposit 1*l.* 1*s.* Mr. F. C. Jury, architect, 1 Alma Villas, Tregonissey Road, St. Austell.

ST. HELENS.—Oct. 24.—For additions to Cowley Middle schools, Cowley Hill Lane, St. Helens, Lancs. Deposit 1*l.* 1*s.* Mr. Frank S. Biram, architect, Hardshaw Street, St. Helens.

ST. HELENS.—Oct. 24.—For the erection of schools at Parr, St. Helens, Lancs. Deposit 1*l.* 1*s.* Mr. Frank S. Biram, architect, Hardshaw Street, St. Helens.

SALFORD.—Oct. 18.—For the removal of existing buildings and the erection of cottages in Springfield Lane. Deposit 2*l.* 2*s.* The Borough Engineer's Office, Town Hall, Salford.

SCOTLAND.—Oct. 19.—For the erection of a fishmart and offices on Alexandra Wharf, Lerwick. Mr. James Barron, M.I.C.E., 216 Union Street, Aberdeen.

SELBY (YORKS).—Oct. 23.—For the erection of cottage, office and boundary wall at the new waterworks, Brayton Barri. Deposit 1*l.* 1*s.* Mr. Percy Griffith, 54 Parliament Street, Westminster, S.W., and Mr. Bruce McG. Gray, Council Offices, Selby.

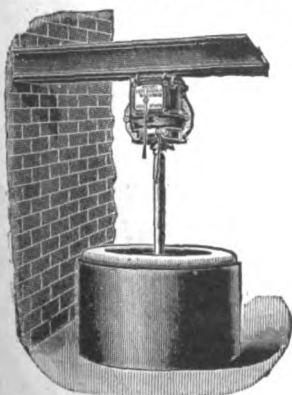
SHOTTON.—Oct. 16.—For alterations to Shotton temporary school, Durham. Mr. W. Rushworth, architect, Education Offices, Shire Hall, Durham.

STAFFORD.—Oct. 18.—For the erection of a weigh office and for the building of the necessary foundations required for new weighbridge at the workhouse, for the Guardians. Mr. William Morgan, clerk, 4 Martin Street, Stafford.

STAFFORD.—Oct. 20.—For the erection of a high school for girls. Deposit 2*l.* 2*s.* Mr. Graham Balfour, director of education, County Education Offices, Stafford.

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VENTNOR.—Oct. 22.—For the construction of a timber groyne 170 feet in length, on the eastern shore of Ventnor. The Town Surveyor, Town Hall, Ventnor.

WALES.—Oct. 13.—For the erection of a filter-house near the Lower Neuadd reservoir, Torpantau, to be built of old red sandstone. The Borough Engineer, Town Hall, Merthyr Tydfil.

WALES.—Oct. 13.—For the erection of a police-station at Nantymoel, Glamorgan. The County Council Offices, Cardiff.

WALES.—Oct. 13.—For erecting a mortuary, &c., at the workhouse, for the Guardians of Bridgend and Cowbridge Union. Mr. P. J. Thomas, architect, Bridgend.

WALES.—Oct. 16.—For carrying-out alterations and additions to the High Street old boys and infants' schools, Barry. Deposit 2*l.* 2*s.* Mr. G. A. Birkenhead, architect, Caledonian Chambers, St. Mary Street, Cardiff, and 21 Park Avenue, Barry.

WALES.—Oct. 20.—For the erection of a library and institute at Pontlottyn, for the trustees of the Pontlottyn Workmen's library. Deposit 1*l.* 1*s.* Mr. David W. Jones, School House, Pontlottyn.

WALES.—Oct. 22.—For the erection and carrying-out of the following works:—(a) Erection of a new school for 300 infants at Golftyn, Connah's Quay; (b) erection of a new school for 300 infants at Custom House Lane, Connah's Quay; (c) certain alterations and additions at the Abermorddu Council school, near Wrexham, for the Flintshire education committee. Deposit 2*l.* 2*s.* Mr. Samuel Evans, county surveyor, County Buildings, Mold.

WALES.—Oct. 22.—For alterations and additions to 4 St. John's Square, Cardiff, to convert the same into club premises. Deposit 1*l.* 1*s.* Mr. W. H. D. Caple, architect, 2 Church Street, Cardiff.

WALES.—Oct. 23.—For the construction of an underground public convenience, consisting of four urinal stalls, water-closet, lavatory, fittings, &c., near the entrance to the Rhymney railway station at Bargoed (Gelligaer). Mr. James P. Jones, engineer, Council Offices, Hengoed, via Cardiff.

WALES.—Oct. 31.—For the erection of shop premises, coach-house and stables (with conveniences) in Plymouth Road, Merthyr. Deposit 1*l.* 1*s.* Mr. T. Edmund Rees, architect, Gernant, Merthyr.

WELLINGTON.—Oct. 13.—For alterations to house and farm buildings at Gidland's farm, near Wellington. Mr. F. W. Roberts, architect, 2 Hammet Street, Taunton.

WOLVISTON.—Oct. 16.—For alterations to Wolviston County school, Durham. Mr. W. Rushworth, architect, County Education Offices, Shire Hall, Durham.

### A NEW INVISIBLE HINGE.

ONE of the novel features of interest to the architect, engineering world, builder and cabinet-maker at the Engineering and Machinery Exhibition, Olympia, is a new and an invisible hinge. This new hinge is shown upon Stand 115, and has already commanded a large sale with the Pullman Car Company and railway companies. It is claimed that the Soss invisible or pinless hinge entirely supersedes the old pin hinge. The new hinge gives an absolutely tight joint, and when open does not leave a wide gap or crack between the woodwork. This hinge is eminently suitable for all high-class work, such as doors, trunks, cases, pianos, doors of automobiles and railway carriages, &c. It is of simple construction and is made in three pieces only, and when fitted is absolutely invisible and altogether different from the old-fashioned protruding butt hinge.

THE Mayor of Dover has been surcharged 401*l.*, the amount of interest on money borrowed to purchase the Barton Road schools. The auditor's ground for making the surcharge is that the money was borrowed before the approval of the Local Government Board had been received. The Mayor's explanation is that the Local Government Board did not give their assent for nine months, and it was necessary in the meantime to acquire the schools, the purchase of which was approved by the Education Department.

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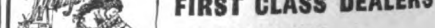
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## BELFAST.

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|                                    |        |    |   |
|------------------------------------|--------|----|---|
| Goddard, Massey & Warner . . . . . | £1,027 | 0  | 0 |
| Patterson & Co. . . . .            | 1,049  | 0  | 0 |
| Braithwaite & Son . . . . .        | 1,034  | 10 | 0 |
| Smith & Paget . . . . .            | 1,091  | 6  | 6 |
| D. & J. Tullis . . . . .           | 1,059  | 5  | 0 |
| Bradford & Co. . . . .             | 1,016  | 0  | 0 |
| Summerscales & Sons . . . . .      | 1,008  | 15 | 0 |

## BRIXWORTH.

For the construction of a septic tank for the Rural District Council.

|                                       |      |   |   |
|---------------------------------------|------|---|---|
| CHENEY, Spratton (accepted) . . . . . | £260 | 0 | 0 |
|---------------------------------------|------|---|---|

## CARDIFF.

For widening masonry bridge carrying Park Place over the docks feeder. Mr. W. HARPUR, city engineer.

|                                             |      |    |    |
|---------------------------------------------|------|----|----|
| Knox & Wells . . . . .                      | £655 | 0  | 0  |
| Allan & Sons . . . . .                      | 611  | 17 | 0  |
| Davies . . . . .                            | 488  | 18 | 11 |
| TURNER & SONS, Cardiff (accepted) . . . . . | 485  | 11 | 4  |

## CARISBROOKE.

For providing and laying sewer in Clatterford Road. Mr. H. NEWLAND, Carisbrooke, surveyor.

|                                          |      |   |   |
|------------------------------------------|------|---|---|
| Scott . . . . .                          | £245 | 0 | 0 |
| Quinton . . . . .                        | 239  | 0 | 0 |
| Streeter & Co. . . . .                   | 224  | 0 | 0 |
| HAYTER, Carisbrooke (accepted) . . . . . | 212  | 0 | 0 |

## EAST GRINSTEAD.

For the sewerage of the following roads. Mr. W. E. WOOLLAM, engineer and surveyor.

## Morton Road.

|                                            |      |    |    |
|--------------------------------------------|------|----|----|
| Iles . . . . .                             | £291 | 3  | 1  |
| Gasson . . . . .                           | 287  | 0  | 0  |
| Reade & Sons . . . . .                     | 273  | 5  | 10 |
| King . . . . .                             | 272  | 10 | 2  |
| Rayner . . . . .                           | 261  | 18 | 6  |
| James & Co. . . . .                        | 239  | 0  | 0  |
| YOUNG, East Grinstead (accepted) . . . . . | 209  | 10 | 0  |

## EAST GRINSTEAD—continued.

## Coronation Road (part of).

|                            |     |    |   |
|----------------------------|-----|----|---|
| Iles . . . . .             | £48 | 17 | 8 |
| Reade & Sons . . . . .     | 40  | 0  | 0 |
| Gasson . . . . .           | 39  | 17 | 0 |
| King . . . . .             | 36  | 16 | 8 |
| James & Co. . . . .        | 36  | 0  | 0 |
| Rayner . . . . .           | 35  | 12 | 0 |
| YOUNG (accepted) . . . . . | 32  | 0  | 0 |

## Stockwell Road (part of).

|                            |     |    |    |
|----------------------------|-----|----|----|
| Iles . . . . .             | 251 | 1  | 4  |
| Reade & Sons . . . . .     | 241 | 2  | 5  |
| King . . . . .             | 229 | 13 | 10 |
| Gasson . . . . .           | 220 | 0  | 0  |
| Rayner . . . . .           | 218 | 12 | 6  |
| James & Co. . . . .        | 211 | 0  | 0  |
| YOUNG (accepted) . . . . . | 165 | 10 | 0  |

## FRIMLEY.

For the ballasting and metalling of 7½ miles of roads, for the Urban District Council. Mr. T. CLEMENT JONES, engineer and surveyor, Camberley.

|                                                |         |    |    |
|------------------------------------------------|---------|----|----|
| Smith . . . . .                                | £16,491 | 18 | 0  |
| Tilbury Contracting and Dredging Co. . . . .   | 15,753  | 10 | 8  |
| Kavanagh & Co. . . . .                         | 15,412  | 19 | 0  |
| Ripley, Strong & Co. . . . .                   | 15,275  | 6  | 7  |
| Zadig & Co. . . . .                            | 14,524  | 17 | 0  |
| Knight . . . . .                               | 14,298  | 0  | 6  |
| Frauks . . . . .                               | 13,515  | 10 | 6  |
| Osman . . . . .                                | 13,473  | 14 | 11 |
| North . . . . .                                | 13,121  | 2  | 9  |
| Lee . . . . .                                  | 11,732  | 4  | 8  |
| Martin, Wells & Co. . . . .                    | 11,684  | 0  | 0  |
| STREETER & Co., Godalming (accepted) . . . . . | 11,021  | 3  | 1  |

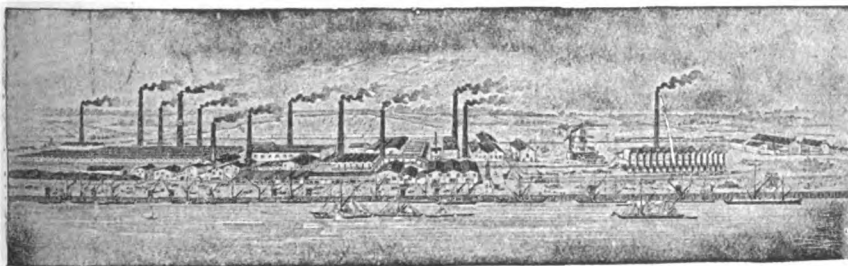
## LONDON.

For repairs and decorations to house, Carlton Vale, London, N.W. Mr. HERBERT RICHES, architect, 3 Crooked Lane, King William Street, E.C.

|                                    |      |   |   |
|------------------------------------|------|---|---|
| OSBORN & SONS (accepted) . . . . . | £185 | 0 | 0 |
|------------------------------------|------|---|---|

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For the erection of Council offices, for the Metropolitan Borough of Holborn.

|                            |         |   |   |
|----------------------------|---------|---|---|
| Dove Bros.                 | £25,080 | 0 | 0 |
| Ashby & Horner             | 24,185  | 0 | 0 |
| Holland & Hannen           | 23,964  | 0 | 0 |
| Smith & Son, Ltd.          | 23,880  | 0 | 0 |
| H. L. Holloway             | 23,600  | 0 | 0 |
| F. & H. F. Higgs           | 23,589  | 0 | 0 |
| Higgs & Hill               | 23,524  | 0 | 0 |
| Holloway Bros.             | 23,000  | 0 | 0 |
| Trollope & Sons            | 23,113  | 0 | 0 |
| Carmichael                 | 22,862  | 0 | 0 |
| Richards & Co.             | 22,840  | 0 | 0 |
| Lawrance & Sons            | 22,831  | 0 | 0 |
| Patman & Fotheringham      | 22,600  | 0 | 0 |
| Prestige & Co.             | 22,443  | 0 | 0 |
| Kilby & Gayford            | 22,258  | 0 | 0 |
| GREENWOOD, LTD. (accepted) | 22,025  | 0 | 0 |

For erecting central library, for Tottenham Urban District Council. Mr. W. H. PRESCOTT, architect, Council Offices.

|                                      |        |    |   |
|--------------------------------------|--------|----|---|
| Jackson                              | £4,237 | 0  | 0 |
| Clark & Sons                         | 4,050  | 0  | 0 |
| Hale & Co.                           | 4,009  | 0  | 0 |
| Monk                                 | 3,963  | 0  | 0 |
| Sands & Burley                       | 3,880  | 0  | 0 |
| Stedmann & Co.                       | 3,868  | 0  | 0 |
| Porter                               | 3,821  | 0  | 0 |
| Fitch & Cox                          | 3,777  | 0  | 0 |
| Jerram                               | 3,761  | 17 | 5 |
| LAWRENCE & SON, Tottenham (accepted) | 3,692  | 0  | 0 |
| Nightingale                          | 3,677  | 0  | 0 |

For the erection of shop and private house at Leyton, London, N.E. Mr. HERBERT RICHES, architect, 3 Crooked Lane, King William Street, London, E.C.

|                          |        |    |   |
|--------------------------|--------|----|---|
| Perry & Co.              | £1,800 | 0  | 0 |
| Shurmur & Sons           | 1,593  | 0  | 0 |
| Good                     | 1,590  | 0  | 0 |
| Osborn & Sons            | 1,357  | 0  | 0 |
| CLEMENS BROS. (accepted) | 1,340  | 10 | 0 |

**LONDON—continued.**

For the execution of the roadwork and platelaying in connection with the construction of the Westminster Bridge and Victoria Embankment tramways.

|                                           |         |    |   |
|-------------------------------------------|---------|----|---|
| Mowlem & Co., Ltd.                        | £47,744 | 0  | 0 |
| White & Co., Ltd.                         | 46,334  | 16 | 2 |
| DICK, KERR & Co., LTD., London (accepted) | 45,836  | 14 | 2 |

For the repair of overhead sludge-tanks at the Barking outfall works.

|                                      |      |    |   |
|--------------------------------------|------|----|---|
| Bull                                 | £753 | 1  | 0 |
| Stokes & Sons                        | 639  | 17 | 6 |
| Mason & Sons                         | 618  | 16 | 0 |
| Symes                                | 532  | 14 | 0 |
| Harris                               | 494  | 16 | 0 |
| PROCTOR & SONS, Plumstead (accepted) | 456  | 18 | 0 |

**LONDONDERRY.**

For the erection of technical school at Strand Road. Mr. EDWARD J. TOYE, architect, Londonderry.

|                                 |         |    |   |
|---------------------------------|---------|----|---|
| Gallagher & Sons                | £12,633 | 0  | 0 |
| Cooke                           | 10,568  | 19 | 1 |
| Lavery & Sons                   | 10,220  | 0  | 0 |
| Smyth Bros.                     | 9,931   | 6  | 7 |
| Sweeney                         | 9,800   | 0  | 0 |
| Courtney & Co.                  | 9,781   | 0  | 0 |
| Maultsaid                       | 9,696   | 17 | 8 |
| COLHOUN, Londonderry (accepted) | 8,970   | 0  | 0 |

**LLANTRISANT.**

For providing and laying drains and other works at the Llantrisant sewer outfalls. Mr. GOMER S. MORGAN, surveyor, Pontyclun.

|                                           |      |    |    |
|-------------------------------------------|------|----|----|
| Williams                                  | £156 | 12 | 2  |
| John                                      | 143  | 8  | 9  |
| Dyer                                      | 143  | 0  | 9  |
| Rutter                                    | 139  | 1  | 1  |
| Rees                                      | 130  | 6  | 0  |
| Saunders                                  | 127  | 5  | 3  |
| Morgan                                    | 123  | 16 | 5  |
| Collins & Co.                             | 120  | 10 | 1  |
| Brown                                     | 118  | 0  | 11 |
| John & West                               | 115  | 16 | 10 |
| BARNES, CHAPLIN & Co., Cardiff (accepted) | 113  | 16 | 6  |

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For drainage and other works for the Llantrisant and Llantwit Fardre Rural District Council. Mr. G. S. MORGAN, surveyor, Pontyclun.

*Church Village sewerage.*

|                                                     |      |    |   |
|-----------------------------------------------------|------|----|---|
| Blackmore . . . . .                                 | £593 | 0  | 6 |
| Williams . . . . .                                  | 547  | 10 | 2 |
| Rutter . . . . .                                    | 514  | 7  | 9 |
| Rees . . . . .                                      | 509  | 13 | 6 |
| Mundy . . . . .                                     | 505  | 4  | 9 |
| John . . . . .                                      | 494  | 7  | 7 |
| Saunders . . . . .                                  | 490  | 11 | 8 |
| Barnes, Chaplin & Co. . . . .                       | 481  | 12 | 3 |
| Sutherland . . . . .                                | 472  | 6  | 1 |
| John & West . . . . .                               | 470  | 10 | 1 |
| Morgan . . . . .                                    | 445  | 9  | 5 |
| Brown . . . . .                                     | 443  | 16 | 5 |
| COLLINS & Co., Cadoxton, Barry (accepted) . . . . . | 428  | 3  | 3 |

*Road improvement.*

|                                                   |     |    |    |
|---------------------------------------------------|-----|----|----|
| Blackmore . . . . .                               | 151 | 18 | 6  |
| Collins & Co. . . . .                             | 119 | 2  | 3  |
| G. L. Morgan . . . . .                            | 111 | 10 | 6  |
| Brown . . . . .                                   | 105 | 3  | 10 |
| Barnes, Chaplin & Co. . . . .                     | 101 | 6  | 4  |
| John . . . . .                                    | 98  | 16 | 7  |
| Saunders . . . . .                                | 98  | 6  | 9  |
| Rutter . . . . .                                  | 90  | 3  | 6  |
| Mundy . . . . .                                   | 89  | 10 | 7  |
| Sutherland . . . . .                              | 86  | 10 | 1  |
| John & West . . . . .                             | 80  | 4  | 0  |
| Rees . . . . .                                    | 79  | 19 | 1  |
| W. T. MORGAN, Church Village (accepted) . . . . . | 75  | 5  | 3  |

**MERTON.**

For construction of concrete walls and floors and other works at sewage works. Mr. R. M. CHART, surveyor, Town Hall, Croydon.

|                                            |      |    |   |
|--------------------------------------------|------|----|---|
| Cooke & Co. . . . .                        | £978 | 0  | 0 |
| Jackson . . . . .                          | 964  | 13 | 9 |
| Rayner . . . . .                           | 880  | 0  | 0 |
| Kavanagh & Co. . . . .                     | 872  | 0  | 0 |
| Page & Son . . . . .                       | 849  | 0  | 0 |
| E. & E. ILES, Mitcham (accepted) . . . . . | 756  | 0  | 0 |

**NEWTON ABBOT.**

For the construction of a concrete bridge. Mr. LEWIS STEVENS, surveyor, Town Hall, Newton Abbot.

|                                           |      |    |   |
|-------------------------------------------|------|----|---|
| Narracott . . . . .                       | £430 | 0  | 0 |
| Andrews . . . . .                         | 313  | 11 | 4 |
| Parker Bros. . . . .                      | 282  | 0  | 0 |
| Stevens Bros. . . . .                     | 249  | 0  | 0 |
| STACEY, Newton Abbot (accepted) . . . . . | 240  | 0  | 0 |

**OTLEY.**

For the sewerage, paving, &c., in Back Garnett Street. Mr. J. E. SHARPE, engineer and surveyor.

|                                    |      |    |   |
|------------------------------------|------|----|---|
| W. & H. Richmond . . . . .         | £357 | 0  | 0 |
| Ward & Tetley . . . . .            | 337  | 7  | 1 |
| Naylor & Son . . . . .             | 335  | 0  | 0 |
| Parkin & Co. . . . .               | 323  | 0  | 0 |
| Morley & Sons . . . . .            | 312  | 19 | 4 |
| HANNAM, Otley (accepted) . . . . . | 310  | 10 | 0 |

**SOUTHSEA.**

For the reconstruction of the South Farade Pier, for the Town Council.

|                                                    |        |   |   |
|----------------------------------------------------|--------|---|---|
| Thorne & Sons, Westminster (recommended) . . . . . | £8,175 | 0 | 0 |
|----------------------------------------------------|--------|---|---|

**SPENNYMOOR.**

For relaying cement concrete flags in the High Street.

|                           |      |    |   |
|---------------------------|------|----|---|
| BELL (accepted) . . . . . | £172 | 17 | 6 |
|---------------------------|------|----|---|

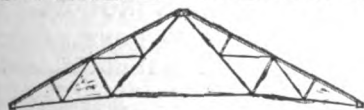
**STANLEY.**

For street works at Shield Row, Gordon Terrace, Sylvia and Robert Terraces. Mr. T. E. CROSSLING, architect, Stanley.

|                                                 |      |    |    |
|-------------------------------------------------|------|----|----|
| Routledge . . . . .                             | £935 | 0  | 0  |
| McLaren . . . . .                               | 894  | 6  | 1  |
| A. & R. Davis . . . . .                         | 864  | 12 | 0  |
| Boiston . . . . .                               | 841  | 11 | 4  |
| Stephenson . . . . .                            | 805  | 6  | 10 |
| Johnson . . . . .                               | 792  | 11 | 0  |
| Goldsborough . . . . .                          | 782  | 3  | 2  |
| Johnson & Strong . . . . .                      | 762  | 2  | 1  |
| SIMPSON, Newcastle-on-Tyne (accepted) . . . . . | 707  | 19 | 1  |

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|                                              |        |   |   |
|----------------------------------------------|--------|---|---|
| Mills . . . . .                              | £2,900 | 0 | 0 |
| Sheppard . . . . .                           | 2,829  | 3 | 0 |
| Pasterfield & English . . . . .              | 2,749  | 0 | 0 |
| Sanford . . . . .                            | 2,555  | 0 | 0 |
| Warr . . . . .                               | 2,547  | 0 | 0 |
| Fenn . . . . .                               | 2,542  | 0 | 0 |
| Stewart . . . . .                            | 2,514  | 0 | 0 |
| Blay . . . . .                               | 2,490  | 0 | 0 |
| Sanford & Co. . . . .                        | 2,460  | 0 | 0 |
| Mills . . . . .                              | 2,444  | 0 | 0 |
| F. & G. Foster . . . . .                     | 2,398  | 0 | 0 |
| Kent . . . . .                               | 2,398  | 0 | 0 |
| Steadman & Co. . . . .                       | 2,370  | 0 | 0 |
| R. & E. Evans . . . . .                      | 2,349  | 0 | 0 |
| THOMAS & EDGE, Woolwich (accepted) . . . . . | 2,273  | 0 | 0 |

THE Horsfall Destructor Company, Ltd., have just completed several important destructor plants, including, at Falmouth, a power plant for Messrs. Crompton & Co., Ltd. (general contractors for the Corporation electricity scheme), in which the refuse is to be used to generate electric light and power for tramways; and a very important plant at St. Petersburg of eight high-capacity cells, in which the new "Horsfall" patent system of "mechanical charging" has been embodied. In this system, which is in full operation at Leeds, the objectionable handling of the refuse by workmen is entirely done away with and a very large saving effected on the working costs. The company has also recently shipped destructor plants to Perth, Western Australia, and Singapore, and has in hand a 4-cell "back-feed" plant for Dunoon, on the Clyde; a 2-cell plant at Kingstown, co. Dublin; and a "mechanically-charged" plant at Newcastle-on-Tyne. The last-named has been somewhat delayed by extra work in the foundations, which the company are carrying out in concrete piles. The company have also in hand the extension of the "Horsfall" destructor at Stourbridge.

## TRADE NOTES.

A LARGE clock, with four illuminated dials, striking the hours and chiming the Westminster quarters, has just been erected in St. Paul's Church, Widnes, by Messrs. John Smith & Sons, Midland Clock Works, Derby.

## ELECTRIC NOTES.

THE Folkestone Corporation have obtained the consent of the Earl of Radnor, the lord of the manor, to the new marine promenade, on condition that electric light is used.

THE Madras Government have sanctioned the installation of electric light and fans in the Guindy residence of the Governor of Madras, at a cost of 4,000l.

THE London County Council having intimated their intention to instal the overhead trolley system on a portion of the route covered by the northern tramways, the Islington Borough Council have passed a resolution adhering to their decision that none but the conduit system should be adopted.

THE Watford Town Council intend to apply for sanction to borrow 13,500l. for improving the electric-light undertaking. A sum of 80,000l. has already been laid out on the scheme. At the forthcoming Local Government Board inquiry a majority of the Council will oppose the loan.

THE Manchester City Council adopted a recommendation of the tramways committee to confine the parcel-carrying operations of the department to the area of the tramways. The loss last year was nearly 6,000l., and there was a prospect of at least 4,000l. loss per annum in the present and succeeding years. The difficulty lay in the decision of Mr. Justice Farwell that the Corporation could not act as common carriers—could not, in fact, convey any parcels that were not actually carried on their tramways for at least some portion of the journey. An amendment to discontinue parcel-carrying altogether was rejected.

CUTTING structural steel beams and girders by the electric arc has been carried on in clearing away the debris and wreckage resulting from the fire at San Francisco, Cal. For this purpose a current of about 250 amperes, at from

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90 to 100 volts, was supplied to the electrodes through long flexible cables by a 25-kw. direct-current generator mounted on a truck and driven by a 40 horse-power single-cylinder gasoline engine. The use of a voltage higher than that ordinarily used in the electric arc was found an advantage in that the arc is thereby rendered less susceptible to the influence of the wind. Remarkably satisfactory results were secured, a 15-inch I-beam being cut in two in about 20 minutes, whereas to cut a beam of this size with a hacksaw would have required several hours. This method of cutting is specially adaptable to inaccessible places.

The City of Birmingham electric-supply department announce that in connection with the official opening of the Summer Lane generating station on the 10th inst. the works will be open to the public on October 13, 15, 16 and 17 between the hours of 2 P.M. and 10 P.M. A part of the works will be utilised for the exhibition of electrical appliances, and apparatus will be on view showing the use of electrical energy for lighting, power, heating and medical purposes. A working exhibit will show the process of manufacture of incandescent electric lamps, and the latest types of arc, incandescent and mercury vapour lamps will be shown. The generating plant is divided into two sections, one section supplying low-tension current for local lighting and tramway load, the second section generating high-tension current, which is transmitted to sub-stations in various parts of the city, where it is transformed down to the pressure required for tramways and public supply in these areas. Sub-stations have been erected at Saltley, Bordesley, Parker Street, Court Road and Dudley Road.

A CONFERENCE was held in the Durham Miners' Hall on Saturday to discuss the county electrical and other municipalisation questions. The Miners' Council unanimously agreed that "This conference of workers in the county of Durham, having watched the progress of the discussion in the Durham County Council for the past three years upon the subject of the municipalisation of the electric services of the county, desires to record its hearty approval of the public ownership of such schemes as (1) for public and private lighting; (2) for trams and light railways; (3) power for industries, particularly in view of the extended and increasing use of electricity in the working of coal-mines, which was bound to have a very important bearing on

wages and working conditions of mine workers in the future. Therefore, we desire to urge upon the County Council to (1) arrest the further inroads of exploiting companies; (2) to frame and promote a public scheme of electric service in all branches for the county of Durham; (3) as early as possible to promote measures to buy up existing electric companies in the county as a means of having one unified scheme of service for the county; and (4) that all schemes be prepared by qualified experts."

### BUILDING AND BUILDERS.

As a result of the efforts of the Newport sanitary dilapidated houses committee the town clerk has been instructed to submit a draft by-law to insist of a bath being provided in each new house erected in the borough.

AN instance of how land has increased in value in Portsmouth was mentioned at a recent municipal election meeting. Some years ago land near Fratton Bridge was sold for 40l. an acre. Recently a local builder purchased it, including the value of the clay for brickmaking and the land for building purposes, at the rate of 3,000l. an acre.

THE Birmingham Trades' Council on Saturday agreed to the following resolution proposed by a representative of the wood and stone carvers:—"That the Birmingham City Council be urged to adopt the following:—'That on all undertakings comprising several different branches of industry each branch be tendered for separately, where practicable, the whole to be carried out under the supervision of the city surveyor or officer appointed by the Council, and sub-letting shall not be allowed. The contractor shall pay the trade union rate of wages current in the district in which such work is executed, provided that such rate is not below the trade union rate of Birmingham.'"

THE Croydon Town Council have refused a request by the housing committee for authority to bring up plans and a scheme for building more municipal cottages on the Woodside land, where there are already eighty-six houses. It was shown that though the original houses were built in compliance with an agitation to provide houses for the working-classes of Croydon, tenants had to be taken from London to fill them. Among the present tenants are

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"independent gentlemen," "travellers," an "organ builder" and a "retired engineer." A motion for the insertion of a trade-union rate of wages clause in all contracts was also defeated.

THE public works committee of the Smethwick Town Council reported recently that they had considered the question of the proposed amendment of the by-laws as to the height of rooms intended to be used for human habitation, and were of opinion that a minimum height of 9 feet in ordinary bedrooms in a district like Smethwick was extremely desirable from a health point of view, and they therefore recommended that the Local Government Board be again approached upon the subject. They also recommended that the Local Government Board should be asked to sanction a by-law to the effect that in every dwelling-house having three or more rooms above the ground floor at least two of such rooms should be constructed so that they should be in every part 9 feet at the least in height from the floor to ceiling.

LAST year the Glasgow Corporation rejected a proposal to consider the expediency of establishing a works department. At the meeting last week notice was given of the following motion:—"That the resolution of October 26, 1905, in reference to the establishment of a works department, be rescinded, and in place thereof the following motion be adopted:—That it be remitted to a special committee of the Corporation to consider and report on the expediency of instituting in the public interest, where practicable, a works department of the Corporation, whose committee shall be charged with the duty of carrying out the work that at present is executed for the Corporation by private contractors."

THE Birkenhead Town Council received formal sanction from the Local Government Board to the borrowing of 3,680*l.* for the erection of nine double-tenement dwellings on the east side of Egerton Street and the provision of a playground in connection therewith, in part satisfaction of the requirements of the order confirming the scheme of 1901. The persons to be rehoused under the Birkenhead improvement scheme, 1901, numbered 420. In Getley Street sixteen dwellings had already been erected to accommodate seventy-two. In Getley Street twelve tenements, already

erected, accommodated thirty-six. Excess accommodation in Mason Street already erected was thirty-nine. The houses to be erected in Egerton Street would accommodate eighty-one, which made a total of 228, which left 192 persons to be accommodated or rehoused.

BANGOUR Village asylum which was opened on the 3rd inst. by Lord Rosebery, is laid out on the segregate system. It has a present accommodation of about 750 patients, but is capable of great expansion. It consists of a series of villa residences of small and varying dimensions, no two alike either in outward form or interior arrangement and decoration; an administrative block and a church, hospital, laundry, farm, electric-power station and other buildings scattered over a wide expanse of hill pasture land. The estate acquired for the purposes of the institution is 800 acres in extent. Of these 150 acres are built upon, 500 acres are under grass, and the remainder is arable land, most of which will be used for the growing of potatoes and oats. To a large extent Bangour asylum will be self-contained. A water supply was obtained on the estate, and the reservoir is sufficient for the storage of 16,000,000 gallons of water. In the power station is machinery equal to the provision of electrical energy to the extent of 400 horse-power. The architect is Mr. Hippolyte J. Blanc, of Edinburgh.

THE harbour committee of Kirkcaldy Town Council have approved plans submitted by the engineers, Messrs. Rendel & Robertson, for the further extension of the harbour and dock. The scheme consists of (1) a dock formed partly on the site of the present dock and commercial part of the harbour, and partly on the sands immediately outside them; (2) a south pier built on and partly outside the south pier of the parliamentary plans; (3) further extension of the east pier for a length of 50 feet; (4) construction of a spur 30 feet long to the east pier, inside of it, opposite to the end of the south pier, and (5) a tidal basin forming a protected approach to the dock. The engineer's estimate for this work is 78,610*l.*, while the contract for the extension of the east pier at present being carried out by Messrs. C. Brand & Son, Glasgow, is 26,000*l.* Sir Alex. Rendel strongly recommended that the contract for the new work should be placed in the hands of the



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present contractors, Messrs. Brand & Sons. The committee recommend the Council to accept the advice of their engineer, and place the whole contract in the hands of Messrs. Brand at prices which had already been privately submitted to the engineer. A plan was also submitted for a graving dock to cost 10,000*l.*, but it was decided to delay the matter for further consideration.

## VARIETIES.

THE Mersey Docks and Harbour Board contemplate the provision of training walls so as to prevent silting-up at the mouth of the river.

THE reconstruction of the South Parade Pier at Southsea is to be commenced by Messrs. Thorne & Sons as soon as possible and to be completed in seven months. As the previous structure was burnt down fireproof decking will be employed.

DR. R. W. JOHNSTONE, Local Government Board inspector, held a public inquiry at the Birmingham Council House concerning an application by the City Council for sanction to borrow 3,000*l.* for the erection of a mortuary in Newton Street.

THE Warrington Town Council have agreed that the Mayor be indemnified in actions pending against him and

the Corporation for the performance of an agreement signed by him in the name of the Corporation, purchasing a mill for 8,000*l.* for street improvements.

"High Temperatures and Modern Industry" is the subject of a very instructive article in *Harper's Magazine* for September, which also contains among much other reading matter and a wealth of illustrations, a disquisition on "The University of London," by C. F. Thwing, LL.D.

THE Aberdeen Town Council, previous to adopting a recommendation that application should be made to Parliament for powers authorising the drawing of a new water supply from the river Avon, have carried out inquiries as to the condition of the present supply. It was found that serious pollution by the overflow of sewage is occurring.

THE Manchester promoters of the garden city movement have secured the option of purchase of an estate containing between 700 and 800 acres within a distance of about five miles from the Manchester Exchange. It is proposed to establish a garden city with a capacity for about 30,000 population.

THE streets and buildings committee of the Edinburgh Town Council have under consideration a report as to the extension of the sea wall at Joppa from the burgh engineer, showing a sea wall, promenade, shelter and gardens; the promenade to be 20 feet wide, the gardens 20 feet wide and 10 feet for a footpath, and the sea wall to be of cement and concrete. The estimated cost is between 7,000*l.* and 8,000*l.*

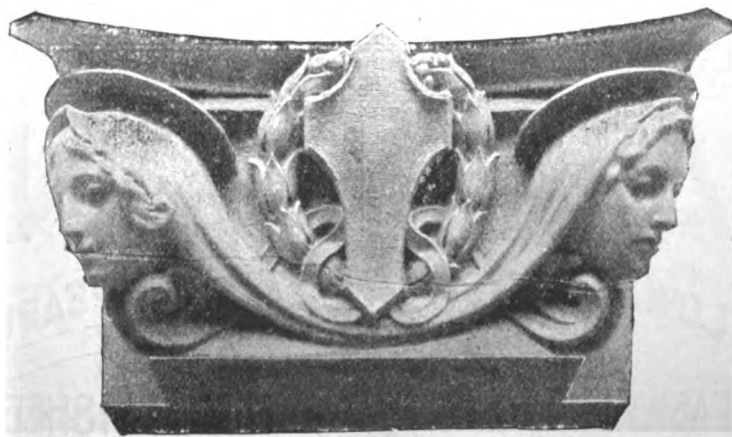
THIS week's *Commercial Intelligence* will contain a coupon giving free admission on Saturday, October 13, to the Engineering and Machinery Exhibition now open at Olympia. In order to enable the working engineer and apprentice in the provinces to take advantage of this offer, special trains have been organised to London on that day from Lincoln, Leicester, Nottingham, Loughborough and other stations.

At the last meeting of the Salford Corporation, Mr. J. Corbett, the burgh surveyor, submitted a scheme for enlarging the town hall, possible if certain land was acquired. Mr. Corbett stated that if a more spacious and convenient site could be obtained at a reasonable cost it would be ultimately more economical to build an entirely new town hall. The proposal was finally rejected.

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THE Swansea Harbour Trust at their last meeting favourably considered a proposal to extend the scheme now in course of completion at a cost of 1,500,000/. There is a demand for more ample dock accommodation, so it is suggested to increase the capacity of the King's Dock by 25 per cent. If the work is commenced before the other contract is completed it could be carried out for 100,000/., as against 250,000/. if at some indefinite future time.

THE board of management of the Wolverhampton and Staffordshire General Hospital desire to raise 10,000/. in order to build a nurses' home and to improve the existing hospital. It is proposed to build, on ground close to the hospital, a modern and comfortably-appointed nurses' home, which will provide bedrooms for about fifty nurses, and also provide a dining-room for them.

THE Bournemouth Town Council have received intimation that the Local Government Board will, subject to the Board of Trade's approval being obtained to the works, so far as they are below high-water mark, sanction a loan of 18,000/. for the purposes of constructing an undercliff drive and works of cliff protection there. The Council have decided to obtain tenders for the work, so that facilities might be given for finding employment for the unemployed in the borough during the winter months.

SIR JOHN WOLFE BARRY, the engineer, who resides in Perthshire and who is a motorist, has written to the clerk of the highways committee of the Perth County Council that it would be safer for motor traffic and for general users of the roads of the county if the hedges were cut down so that a better view could be obtained of approaching traffic. The hedges were often unnecessarily high, and Sir John suggests that they be cut down to a height of 4 or 4½ feet.

An arrangement has been made with Messrs. Czeczowiczka & Son, builders, of Prague, for the erection at Andrychow, Galicia, of a large cotton-weaving mill, with a capital of two million Austrian crowns. The authorities are assisting the enterprise by (1) giving the necessary site free of cost, (2) freeing the factory from all national taxes for twenty years, and (3) advancing a loan of 400,000 crowns free of all interest for a period of five years; after that date the loan will be repayable within thirty years at 2½ per cent. interest.

THE Local Government Board are to be asked to sanction the following loans for the following elementary schools in the county of Essex:—Great Bursted Council school, enlargement, 1,278/.; North Fambridge, enlargement, 184/.; Leigh-on-Sea, site and school, 3,716/.; Chadwell Heath, new buildings, 4,055/.; Chadwell Heath infants', enlargement, 1,441/.; Wanstead, site, school for 1,138 children, manual training and cookery centre and caretaker's house, 17,563/.; Woodford Bridge and Ray Lodge school, expenditure in excess of loan of 18,222/., originally borrowed, 1,457/.; total, 29,694/.

THE Lea Conservancy Board are urging the Epping Rural District Council to avoid the pollution of the Lea by introducing a new system of drainage at Roydon. The Council take the view that any expenditure in this connection would be largely for the benefit of London water consumers. They are also of the opinion that the present law operates most unfairly upon the local authorities in the Lea Valley, and that any expenditure upon river purification beyond what the Rivers Pollution Act demands should be borne by the Metropolitan Water Board.

A CONFERENCE of the various governing bodies of Glamorganshire was held at Neath on the 8th inst. to discuss the subject of the preservation of Welsh water for the people of Wales, and especially the water of South Wales for the people of South Wales. After some discussion it was resolved:—"That this conference is of opinion that the Glamorgan County Council should engage an expert or experts to prepare a report as to the best method of dealing with the present and future water-supply of the administrative county; and that when such a report is prepared a further conference shall be called to consider the report under the powers of the Glamorgan Water Act."

DR. MACNAMARA, M.P., recently addressed a letter to the Prime Minister drawing attention to the "unjust incidence of the burden of local rating" in London, and inquiring whether the Government propose to prosecute with promptitude the Bill for the further equalisation of rates in London promised by the King's Speech of February 19. Sir H. Campbell-Bannerman, in reply, said:—"Although the Government have not found it practicable this year to intro-

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duce a measure for the further equalisation of London rates, you may rest assured that the matter will continue to receive their active attention. The injustice of the present arrangement, in virtue of which the wealthier areas are enabled to escape a large portion of their obligations to the community of London as a whole must be manifest to us all."

THE North-Eastern Railway Company will shortly renew the large bridge carrying their passenger lines over the Tees near Thornaby. The bridge was built in 1841 and consists of cast-iron girders strengthened by wrought-iron tension straps, and carried by masonry piers resting upon piled foundations at about low-water level. Throughout the three river spans of 89 feet and the two shore spans of 31 feet the girders are continuous, being fastened together over the piers by bolts and straps. The flooring is entirely of timber, and there being four girders over each span, each of the two lines of way is independent of the other. The piers are being retained, the masonry and foundations being in good condition, but the upper courses are to be replaced by new bedstones and cornices. The new bridge, designed by Mr. W. J. Cudworth, of York, will be of the three-girder type.

A LOCAL GOVERNMENT inquiry was opened in June and adjourned until this month respecting the proposed re-arrangement and reconstruction of the London area known as the Italian colony. The housing of the working classes committee of the Holborn Borough Council report that with regard to the underground rooms, although all the other owners represented at the inquiry agreed to discontinue the use of the basements for living purposes, the Chandos Land and Building Society (the owners of the largest portion of the colony), "are making every effort to obtain consent for their continued use." The committee therefore recommend that, at the adjourned inquiry, the town clerk be instructed "to press for an undertaking for the discontinuance of the use of the whole of the underground rooms in the area for living purposes."

A REMARKABLE compensation case came before Judge Bryn Roberts at Mountain Ash County Court on the 1st inst. E. J. Lawrence, a haulier working at Penrhiwceiber, in July 1905 met with an accident while at work, and was

paid compensation almost the whole of the time from that date until March last, when he committed suicide by cutting his throat. Three medical men called for the applicant attributed the act to his loss of reason, owing to the pain and depression caused by the shock following the accident. No evidence was called for the respondents, but counsel argued on their behalf that it had not been proved that the man's suicide was the result of the accident. His Honour, however, held that he was bound by the medical evidence, which was all on one side. If it had not been for that, he said, he would hold that the suicide could not be traced to the accident. Judgment was given for the applicant, but stay of execution was granted pending an appeal.

THE rebuilding of the hydropathic establishment at Peebles, which was destroyed by fire in July last year, is being rapidly pushed forward. The new structure is being erected from designs by Mr. J. Miller, A.R.S.A., Glasgow. The grand corridor, which is 210 feet in length, will form, with the conservatory, a promenade of over 300 feet. The new dining-room will accommodate 300 people at separate tables. The roof of the dining-room being flat, a roof garden has been provided. The drawing-room, writing-room and grand lounge windows open upon verandahs, so that visitors may dine "al fresco." The new recreation-room will have accommodation for 400 people. All the floors and partitions will be fireproofed, and the buildings will be lighted by electricity. The baths will again be one of the distinctive equipments of the establishment. The cost of rebuilding and furnishing and equipping is estimated at about 100,000/. It is expected that the building will be open by Easter 1907.

THE Rugby Urban District Council some years ago acquired, for between 2,000/. and 3,000/., land in the middle of a rapidly-developing estate, for the purpose of public baths, but subsequently they decided that the site was not suitable. A proposal that the land should be sold was defeated. Ultimately it was agreed to retain it as an open space, provided adjoining owners would contribute, and they raised 600/. The Local Government Board sanctioned the spending of 214/. on the fencing and laying-out of the land. At the last meeting the Council decided to return the 600/. and not commit themselves to the retention of the land as an open space for ever. The clerk advised that the

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Council had already committed themselves to the retention of the land by the covenants they had entered into, and the chairman said the only effect of the vote that night was that the 600*l.* would be returned and the land would be retained. Ultimately it was decided to take the opinion of counsel as to the exact legal position.

THE Edinburgh Dean of Guild Court have granted a warrant to the Royal Victoria Hospital Trustees for an administrative block at Craighleith. The additions are to consist of an administrative block and two pavilions containing twelve beds in each. The principal feature is the patients' dining hall—60 feet 6 inches by 23 feet. Immediately in connection with the hall are the kitchen offices and service-room between. There are also lady superintendent's business-room, dispensary and board-room. Accommodation is provided in an attic for servants. The two pavilions are exact copies of the pavilions which were erected some years ago, these having been found thoroughly adapted for the purposes for which they were designed. They are built of brick and harled, and are thoroughly comfortable and suitable in every respect. The architects are Messrs. Sidney Mitchell & Wilson.

THE Labour Department of the Board of Trade have issued a report on the changes in the rates of wages and hours of labour in the United Kingdom in 1905. The decline which characterised the movement of wages in 1901, 1902, 1903 and 1904 continued in 1905. In the latter year, however, the falling off was much less marked than in the four preceding years, and during the second half of the year an upward tendency was shown. This upward tendency has continued for the first six months of 1906, during which advances have taken place in all the more important groups of trades with the exception of the building trades. So far as could be ascertained by the Department, nearly 689,000 workpeople had their rates of wages changed during the year. Of these, about 319,000 received advances, amounting to 16,300*l.* per week, and nearly 250,000 sustained decreases amounting to about 18,500*l.* per week. Of the latter class 11,000 belonged to the building trades and 7,000 in the quarrying industry. The changes in hours of labour reported affected 95,985 workpeople, of whom 90,179 had their hours of labour reduced. The net effect of all the changes was a reduction of 65,265

hours in the weekly working time of the workpeople affected. Of the workpeople whose hours were changed over 92,000 (or 96 per cent.) were in the building trades. Of that number 70,000 were workpeople in the various branches of the building trades in London who had a rearrangement of their winter working hours.

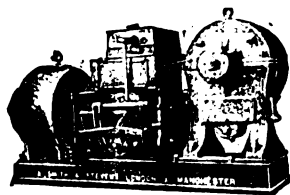
THE new suspension bridge which has been erected over the Trent with the dual purpose of carrying the water mains necessary to serve the reservoir that is being constructed on Wilford Hill, and giving additional foot facilities across the river, has been formally opened. The bridge has a span of 225 feet between the centres of the abutments, and is 12 feet wide. Below the footway are two steel water mains, each 14 inches diameter. The pressure of water in these mains is about 90 lbs. to the square inch. The four cables, each constructed of 259 wires, are manufactured of the best plough steel. The ends of the cables on either side of the river are anchored to steel girders with adjustment arrangements, the girders being weighted by immense blocks of concrete. The cables pass over massive steel rockers on the tops of the abutments, and these rockers are firmly attached to steel girder frames built in the stone abutments. The ultimate strength of each cable is about 280 tons. The cables support, by means of fifty-eight suspension rods, the whole of the weight of the cross girders, pipes, footway, &c. Two lines of 12-inch diameter gas pipes have also been laid across the bridge for use at any future time, and there is also provision for electric cables. The bridge was designed by Mr. W. B. Bryan, the consulting water engineer, assisted by Mr. J. B. Lewes, the city architect.

THE new sewage works for Stratford-on-Avon were opened on the 27th ult. The outfall works, comprising 17 acre, adjoin the south-east side of the Great Western Railway about midway between Stratford and Milcote stations. A loan of 23,500*l.* was sanctioned by the Local Government Board for the purpose of the scheme which was commenced in September 1904. The pumping machinery consists of three gas-engines, each 30 b.h.p., together with three sets of double-acting piston-pumps 13 inches diameter and 16 inches stroke. Each set of engines and pumps is capable of raising a volume of sewage equal to twice the dry weather flow through about

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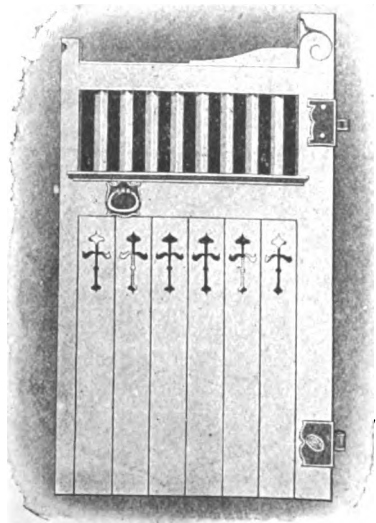
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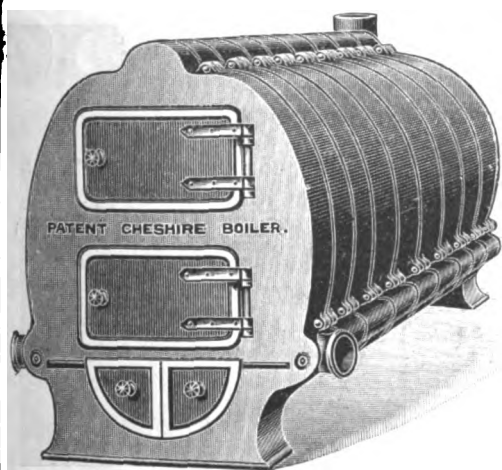


2,200 yards of 15-inch rising main, the total lift being 100 feet. On leaving the station the sewage is conveyed for a distance of about one mile through a 15-inch cast-iron rising main laid across the racecourse and under the river Avon by an inverted syphon, thence under the Great Western Railway to the highest point of the site of the outfall works. On reaching the outfall works the sewage is first of all treated in liquefying tanks, and afterwards on bacteria beds worked on the continuous flow or percolating system, provision being made for the treatment of filtered effluent on specially prepared land filters, while some 10 acres of land is also laid out to receive the filtered effluent, the storm sewage being dealt with by means of contact beds. The contractors were Messrs. T. Vale & Sons, Ltd., Stourport, and the consulting engineers Messrs. Willcox & Raikes.

THE Stockport Town Council held a private meeting to consider the recommendations of the waterworks committee with respect to the execution of the first instalment of the Kinder waterworks. The town clerk had accepted service, on behalf of the Corporation, of a writ at the suit of Mr. Abram Kellett, the late contractor for the works, whose contract was terminated by the Corporation. Mr. Kellett claims damages for breaches of contract occasioned by the stoppage and abandonment of the works. He also claims the price of the work done since February 13, 1905, and 7,572*l.* held by the Corporation in trust, and a declaration that, being in possession of the land at Kinder comprising the site of the works, he is entitled to retain possession until his claims are discharged and he has removed his machinery and plant. He also asks for an injunction to restrain the Corporation from interfering with his possession of the land. A letter was read from the contractor for the laying of the pipe line from the Kinder to the Lyme reservoir stating that Mr. Kellett had given him notice that he should not permit the Corporation or their agents to interfere with any of his plans or the land comprised in his contract until they had satisfied his claim now before them. The committee resolved that in the event of Mr. Kellett persisting in his interference with the execution of the intake works and completion of the Kinder pipe line the town clerk be instructed to take immediate proceedings against him for an injunction.

### BELGIAN WORKMEN.

IN his report on the trade of Belgium, the British Consul-General refers to the prosperity of the industries of Belgium and the advantages to Belgian contractors in carrying out works of construction owing to the low rates of wages prevailing in that country for all classes of labour. In certain of the towns of Belgium a fixed minimum rate of wages is established by the municipality, which all tenderers for the contracts have to take into consideration before sending in their estimates. In Belgium the hours of labour are considerably longer than in the United Kingdom, and it is no uncommon thing for a labourer to commence work at 6 A.M. and terminate his work at 7 P.M., with the customary breaks for meals. For this he is probably paid an average wage of 3½*d.* to 4½*d.* per hour for each hour's work up to ten hours, and an increase of 25 per cent. for each of two additional hours, bringing up his daily earnings to from 3*s.* 6*d.* to 4*s.* 6*d.* for twelve hours' work. Many of the labourers in the towns are domiciled in the surrounding country, and have to rise at an early hour in order to be at work by 6 A.M. in summer and 7 A.M. in winter. A law regulating the employment of persons on Sundays came into force on July 27. It prohibits the employment of labourers and clerks and all other paid workers for more than six days in each week in any commercial or industrial occupation, with the exception of (1) transport by water, (2) fishing enterprises, and (3) itinerant vending. The exceptions permitted by the law in regard to the difficult categories of trade are so numerous and varied that the ultimate result will doubtless be in most respects similar to the conditions prevailing previous to its enactment, by which the majority of the employés were allowed respite from their labours on Sunday. The object of the law appears to be to prevent the compulsory attendance of workmen on Sunday in opposition to their own wishes. In certain industries requiring the presence of workmen on Sunday permission is given by the law to employ men in gangs working thirteen days in every fortnight, and again it is allowable to employ workmen twelve times a year on seven days in the week in the industries in which wind or water is the sole or principal motive-power.



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**ARCHITECTS AND HEATING.**

FOLLOWING on the report made at the last annual general meeting of the National Association of Master Heating and Domestic Engineers, the following circular letter was issued to architects and others interested throughout the country :—

June 6, 1906.

**HOT-WATER AND HEATING SERVICES.**

I am instructed by my Council to communicate with you and respectfully draw your attention to the action of the plumbing trade (both masters and operatives) in interfering with the execution of contracts placed in the hands of heating and domestic engineers by architects and other clients, and to the attempts of the plumbers to secure a monopoly of the work of domestic hot-water supply.

The plumbers' claims, which have been made in various places throughout the country, are that all such work in any metal is plumbers' work only, and that it must not be undertaken by heating and domestic engineers. These claims have been successfully resisted, although in some cases the plumbers struck work and caused serious loss and annoyance to all concerned.

This class of work has always been largely carried out by heating and domestic engineers, and the experience of some firms (members of this Association) covers a period of over eighty years. The claims of the plumbers are of quite recent date, and cannot be admitted, as, if acceded to, the monopoly created would be a hardship and injustice not only to the master engineers, but also to the workmen engaged in this special branch of engineering, who by training and experience are thoroughly qualified to do the work in the most efficient and satisfactory manner.

The annexed resolution (Appendix No. 1), which was adopted at a joint conference between representatives of both master engineers and master plumbers, expresses the general position taken up and maintained by the members of this Association.

I am further to advise that, with the object of preventing trouble and giving correct information as to facts, my Council submitted representations to the Royal Institute of British Architects, and an extract from a letter conveying the decision of this body is also annexed (Appendix No. 2).

This, you will observe, is strictly neutral and impartial, and gives no support to the plumbers' claims for a monopoly.

As repeated assertions have been made by the plumbers that the Manchester Society of Architects agree that the work in question is plumbers' work only, I further annex (Appendix No. 3) copy of a letter received from this Society which makes it clear that their position is the same as that of the R.I.B.A.

My Council desire me to ask your kind and careful consideration of this matter and the favour of your co-operation, and I am to say that any communication from you will receive the best attention, and further information can be supplied if required.

H. B. WATT, Secretary,  
National Association of Master Heating and Domestic Engineers.

**APPENDIX NO. 1.****Joint Resolution of Master Engineers and Master Plumbers.**

"At a meeting held May 22, 1902, it was mutually resolved by the representatives of the National Association of Master Plumbers of Great Britain and Ireland and the Institution of Heating and Ventilating Engineers that in future it be observed that all leadwork be considered plumbers' work, but that a neutral line be taken as regards all iron, brass, copper or other metalwork, which may be executed by engineers or plumbers."

Proposed by Mr. D. M. Nesbit, London, on behalf of the Institution of Heating and Ventilating Engineers; seconded by Mr. J. H. Taylor, Huddersfield, on behalf of the National Association of Master Plumbers, and unanimously agreed to.

**APPENDIX NO. 2.****Extract from Letter from the Royal Institute of British Architects.**

"February 27, 1906.

"I am directed by the Council to inform you that the committee appointed to receive deputations from the National Association of Master Plumbers of Great Britain and Ireland, the National Association of Master Heating and Domestic Engineers, and the United Operative Plumbers' Association, with regard to the right of the

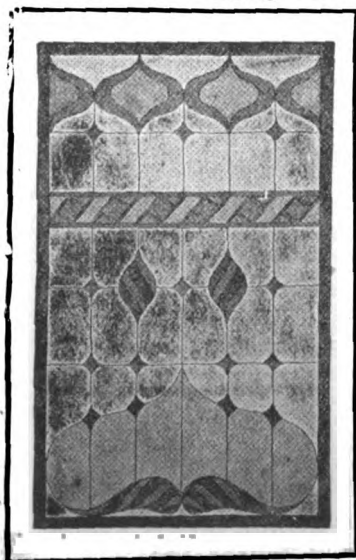
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different trades to deal with hot-water work for heating and hot-water supply, has presented its report, with which the Council is in entire agreement.

"I am to inform you that the Royal Institute of British Architects is concerned only with the improvement and efficiency of craftsmanship, and does not concern itself with trade questions. It therefore cannot see its way to lay down any rule or to advise its members as to which trade should have the right or preference in the execution of hot-water work.

"(Signed) W. J. LOCKE, Secretary.

APPENDIX No. 3.

*Copy of Letter from the Manchester Society of Architects.*

"March 16, 1906.

"With reference to the circular issued by the Master and Operative Plumbers' Associations, dated March 25, 1903, which emanated from this Society, my Council regrets to hear that it has not been construed in the spirit it intended.

"I am instructed by my Council to inform you that it is in complete accord with the letter, copy of which I enclose, issued from the Royal Institute of British Architects, dated February 27, 1906 [see above], and to inform you that it desires the same to be accepted as its view of the matter.

"(Signed) PAUL OGDEN,  
"Honorary Secretary."

### NEW BUILDING STONES.

THE trade has been by repetition so accustomed to various artificial substitutes for natural stone that it views with a dubious eye anything announced as a novelty in this direction. We have just seen, however, a process which appears to be most successful. It is claimed that the processes of nature are in some degree imitated, and many years have elapsed since the process now perfected has been brought to its present state. It is certainly most wonderful to see slag, of which some 8,000 tons are taken out to sea and dumped in the broad ocean every week, utilised into handsome and useful adjuncts of building. Not only slag, but every waste of stone is used, and there

seems no limit to the modification which produces rare and costly marbles or a close-grained easily-worked building stone. Set out briefly, the process follows as nearly as possible the geological action of the forces of nature in making marble. The artificial method may be summarised as follows:—A pure carbonate of lime is composed of 56 parts of lime and 44 parts of carbonic acid gas. The necessary amount of stone is calcined in closed retorts for the purpose of liberating the gas and obtaining lime. The gas thus obtained is liquefied and stored in bottles for future use. The oxide is then withdrawn and mixed in a revolving drum, with a certain proportion of the ground carbonate. When the lime and fine powder are thoroughly mixed the whole is slaked. The hydrate of lime thus obtained is now in a fit state for pressing into slabs or other forms desired. Should, however, a coloured marble be desired, the colour, which is principally due to iron in its various combinations, is thoroughly mixed with the proportionate parts of the limestone and lime. The whole is then slaked. This method insures absolute evenness of colour throughout the mass, whether it be red, sienna, green, black or other colour. The plastic material is now taken to a hydraulic press capable of exerting a pressure which will give a cubic measurement to the block equal to the best and closest grained stone to be found in nature. After the slabs are removed from the press they are taken to a drying-room to expel the remaining moisture. The desiccated blocks are then placed in a cylinder, a vacuum is created and the carbonic acid gas originally extracted from the limestone and stored is now brought into action. The gas is first fed into the tank at practically no pressure, but the assimilation of the gas by the lime is so rapid that heat is speedily generated. So long as heat is maintained the tank requires feeding regularly only, but if signs of decrease are shown then pressure must be gradually applied until such time as the gauge remains stationary. When this occurs, the lime previously disseminated throughout the mass has become carbonate again, and the blocks are hardly to be distinguished from the natural stone. For marbles, lithographic stones, and Portland, Caen and other building stones the process seems most effective in its achievements. The Lithographic Stone and Marble Company, Ltd., of Ponder's End, and of 11 and 12 Finsbury Square, E.C., who

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### METROPOLITAN IMPROVEMENTS.

THE improvements committee of the London County Council have prepared a list of the improvements in respect of which they recommend that Parliamentary powers should be sought in the session of 1907.

Most of the schemes which have engaged attention are those prepared by the highways committee for the construction of tramways, involving the acquisition of property and the widening of portions of the thoroughfares along which the tramways will pass. If the tramway schemes be sanctioned by the Council it will be necessary for application to be made to Parliament by means of the Improvements Bill in the session of 1907 for powers for the compulsory acquisition of the property, with a view to the necessary widening of the thoroughfares.

The highways committee have urged the committee to advise the Council to arrange at once for the widening of the thoroughfares and to submit the necessary recommendations to the Council, so that the particular street improvements may be undertaken without delay. Having regard to the urgent representations of the highways committee, and with every desire to assist the general traffic in London, they have decided at once to recommend the Council to apply to Parliament for powers to execute the improvements, subject to the local authorities agreeing in due course to consent to the tramways and to make the suggested contributions towards the cost.

The committee have also considered the question of the street widenings which might be necessary or desirable in connection with the proposals for the construction of tramways from Forest Hill to the Crystal Palace, from the Marble Arch to Cricklewood, and from Streatham High Road to the county boundary.

Much of the property to be acquired consists of portions of gardens and forecourts, and it will therefore be necessary

to ask Parliament, as has been done with success in several past years, to grant the Council exemption from the operation of the 92nd section of the Lands Clauses Consolidation Act, 1845, which provides that where the promoters of a public undertaking, acting under statute, require to take a part of a house, building or manufactory, the owner shall have the right of calling upon them to take the whole. The cost of acquiring the whole instead of merely a portion of the property would in certain cases be prohibitive.

The manner in which the cost of street improvements in connection with tramways is apportioned as between the improvement account and the tramways account is under consideration. It should be mentioned that in each case of an improvement along the route of an existing or a proposed tramway the whole cost of laying down and paving the tramway track will be charged, in accordance with the usual practice, to the tramways account.

Not any of the schemes will involve the displacement of a large number of persons of the labouring class, but where any displacements whatever are contemplated provision for rehousing has been made in the estimates of the cost of acquiring the necessary property.

Having regard to the nature and small extent of the improvements in question it is not desirable in this instance to apply to Parliament for powers to levy an improvement charge upon owners of property benefited; nor do the committee consider that the improvements are of such a character as to justify the Council in incurring the very great expense of constructing subways for pipes and wires along the particular thoroughfares, though they propose to adopt the precaution of inserting in the Bill the usual clause to empower the Council to require the companies to move their gas, water and other pipes affected by the improvement in question. This will enable the Council, if it so desires, to determine hereafter to construct certain subways in particular places.

The total net cost to the Council of the suggested improvements included in the list is estimated at 140,760*l.*, after deducting the contributions from the local authorities. If there be added to this an amount in respect of contribu-

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tions towards the cost of local improvements, say 100,000*l.*, the amount recommended for the year 1906-7 becomes 240,760*l.* This is less than the annual amount recommended in some of the previous years. If the Council adopt the report the net amount voted for street improvements during the eighteen years commencing March 1889, and ending in March 1907, will be about 7,968,456*l.*, which represents an average annual expenditure of about 442,692*l.* The Metropolitan Board, during the thirty-three years of its existence, spent upon street improvements, including the embankment of the Thames, 11,516,974*l.*, an average annual expenditure of about 349,000*l.* Since the Board was superseded by the Council the traffic in London has considerably increased, and the need for new and widened thoroughfares has become more and more pronounced. Having regard to this great public need it became exceedingly difficult to refrain from submitting to the Council several important and necessary schemes, but, in view of the large amount to which the Council is already committed in respect of street improvements, and having regard to the opinions recently expressed in the Council against further extensive liability being incurred, we have decided to submit this year only a few of the most urgent schemes, all of which, with one exception—namely, the reconstruction of Neckar Bridge, Trundley's Road, Deptford—are connected with tramway proposals, special circumstances making it desirable for them to be undertaken without delay.

### BUILDING IN GLASGOW.

An address was delivered by Colonel Robert King as Dean of Guild of Glasgow. He said:—As this is the last occasion on which I shall have the honour of presiding over this Court as Dean of Guild, I have to ask your indulgence while for a few minutes I refer to the work brought before the Court during the past year. In addressing you last year I referred to the falling-off in the work brought before us during the year—a falling-off for which we were all prepared, and you will not be surprised to be told that the improvement which has taken place has been comparatively small, but you will rather be surprised to hear that there has been any betterment at all. The total valuation of the

work passed by the Court during the year to August 31, 1906, was 1,440,387*l.*, against 1,303,502*l.* for the previous year, or an increase of 136,885*l.*, the average for the last fifteen years, from 1891-2 till 1905-6, being 1,693,634*l.* so that last year's work is less than the average of the fifteen years by 253,247*l.* I hope, however, that as an improvement has set in it will go on increasingly, and that the reign of my successor in office will be marked by a steady and important advance in the work brought before the Court, and that that advance will be indicative of a general improvement in the prosperity of our city. When we come to look more particularly into the statistics of the work we find that last year there were 2,863 houses sanctioned as against 2,078 the previous year.

Of one-roomed houses there were 505, as against 260 the previous year. Much has been said against one-room houses, and it is to be regretted that the necessity for them exists; but, on the other hand, it is a cause for satisfaction that the miserable hovels in the congested parts of our city are being replaced by new and better ventilated and more sanitary houses. In a city like Glasgow there must always be a large number of unskilled and, consequently, lower paid workers who, in beginning housekeeping at least, cannot afford to pay high rents for their houses. The increase during the year of 548 in the number of houses of two apartments is satisfactory. In regard to public buildings there were only six linings granted, against twenty-one last year, but they were more important, as the valuation was 56,450*l.* as against 73,180*l.* In churches, halls and schools there were twenty linings, valued at 133,535*l.*, against fourteen, valued at 130,480*l.*, showing that the spiritual, moral and intellectual interests of the city are still being attended to. In warehouses, stores and workshops there were ninety-nine linings, with a valuation of 393,983*l.*, against 124 linings and a valuation of 280,168*l.*; and for alterations there were 213 linings, with a valuation of 241,067*l.*, against 248, with a valuation of 253,433*l.* There were 7,345 lineal yards of new streets passed, against 3,018 last year, so that I leave plenty of new ground for my successor to build up. In addition to the granting of new linings for these houses, shops, churches, halls, &c., the value of work carried out under authority of the Dean of Guild Court in connection

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with notices issued by the master of works to proprietors in terms of the Glasgow Police Acts, 1866 and 1900, and payable by these proprietors, was 7,906*l*. When we consider the number of houses built in each of the eight districts into which the city is divided, we note that in the central there were only fifteen houses sanctioned, showing how entirely this district is being devoted to business purposes. The eastern, with 1,005, has the largest number of houses; St. Rollox is next with 621; Maryhill is third with 467; Queen's Park is fourth with 359; the Western fifth with 242; the Southern sixth with 163; the Northern seventh with 37; and the Central last with only 15. I have to apologise for troubling you with so many figures, which are always wearisome, and which it is impossible to remember, but they are, I think, interesting in showing to some extent the amount of work which passes this Court, and as indicating the prosperity of the city. I have said that this is the last occasion on which I shall preside over this Court as Dean of Guild, and I give up the work with much regret. I have received so much kindness and consideration from everyone connected with the Court that my work has been rendered not only pleasant but easy, although I have been conscious of my shortcomings. To those gentlemen who have been associated with me in the work I desire to return my sincere thanks.

### MAINTENANCE OF ROADS.

A SPECIAL report upon improved methods of road construction was presented by the surveyor (Mr. J. S. Crawshaw) at the last meeting of the Weybridge Urban Council. Mr. Crawshaw stated that he had made careful inspection of many of the most recent methods of road construction, as devised for the purpose of resisting the wear caused by the great change in the vehicular traffic of the country, and with a view to obviate the nuisance arising from the road dust, which was occasioning great inconvenience to the residents and considerable loss to tradespeople. Amongst the places he visited were Madeira Road, Brighton; main road, Malling to Maidstone; main streets, Louth; the London Embankment; main street, Skegness; Victoria Terrace, Norton Road, and Sackville Road, Hove; main road, Worthing.

He had also examined the Surrey main roads near Guildford and Cobham, which had been tar-coated. In his opinion the method in use at Hove was far more serviceable, and not so likely to be disturbed under bad weather conditions. This method was to coat the road with tar by a special patented process called the Laissailly method. The tar was boiled and applied to the clean road surface at a very high temperature. The result was that the tar, being in such a liquid form, penetrated to a depth of from 1 to 2 inches, and, after exposure, a coat of chippings was spread over the surface, which absorbed the surplus tar and increased the thickness of the impervious material. This, after considerable traffic or rolling, presented a good surface, and was no doubt the best tarring process in use. It was, however, unfortunate that the road surface remained black, which did not improve the clean appearance of the district. The surveyor also submitted the results of tests of various materials used in road-making. He was strongly of opinion that all bad material, coated with tar or not, would prejudice the life of a road.

It was found from these tests that the materials which the Weybridge Council had been using were the best of their respective kinds, proving that the short lengths of road which were in such bad condition were subject to exceptionally heavy and damaging traffic. He found that the cost of granite used for the repairs of Church Street during the past four years amounted to 1*s.* 8.3*d.* per square yard, or 5.06*d.* per annum. The cost for Queen's Road amounted to 1*s.* 2.2*d.* per square yard, or 3.55*d.* per annum. These were very small amounts and were likely to be considerably increased in the future, even if the same kind of material were used, as he found that it was four years since Queen's Road was recoated, and Church Street was recoated in January 1905. He, therefore, recommended that a length of road should be coated with tar slag macadam of a thickness of 4½ inches, at a cost of 4*s.* 3*d.* per square yard; that a further length should be laid of granite in combination with the matrix which he had described, at a cost of 1*s.* 4*d.* per square yard; and if sufficient work could be undertaken, that a short length of tarred Kent rag be laid down at a cost of 3*s.* 9*d.* per square yard.

The surveyor's recommendation to lay down tar slag in Church Street was approved.

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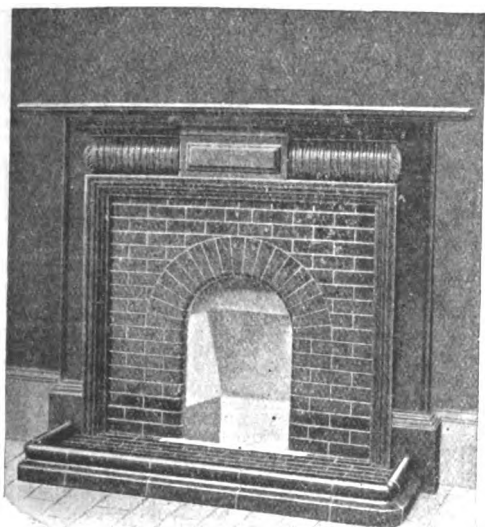
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### REPORT

(See page 25 of Supplement in issue of June 8).

As a final result of the whole of the tests the Examiners find that of the  
grates submitted those of

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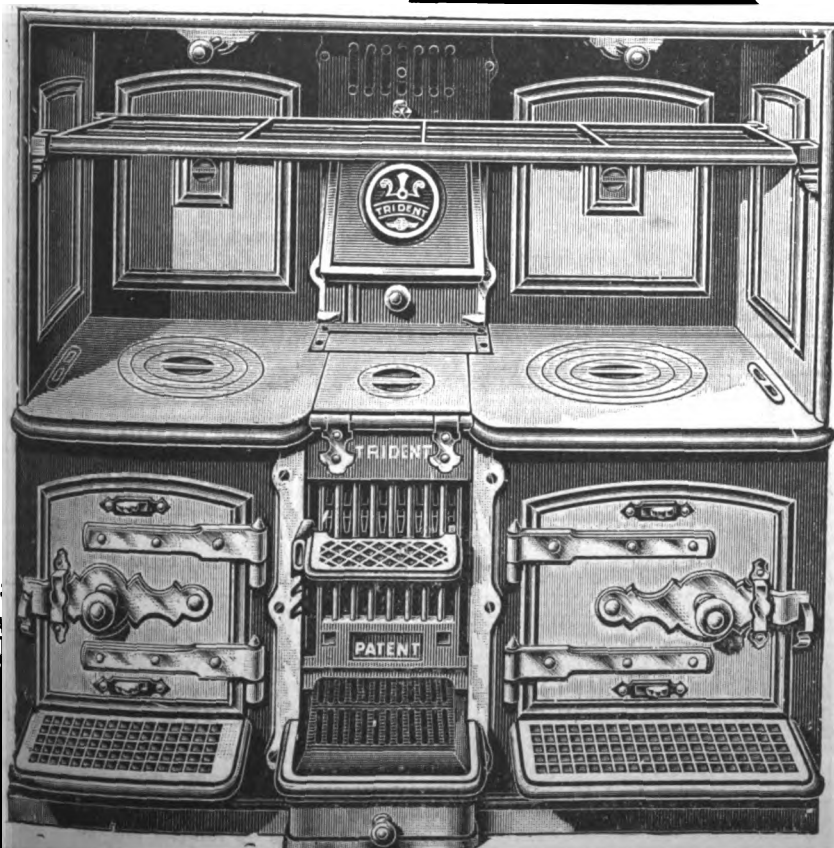
and of two other makers are the best, showing practically equal results.  
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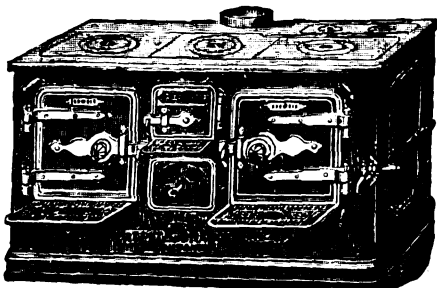
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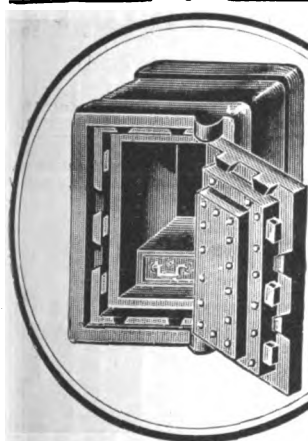
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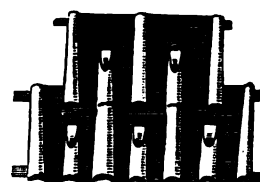
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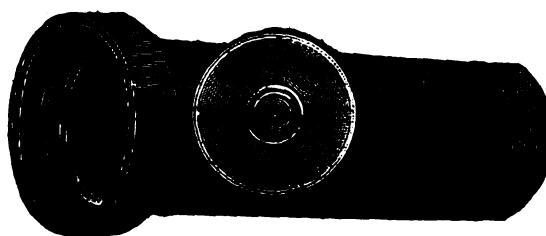
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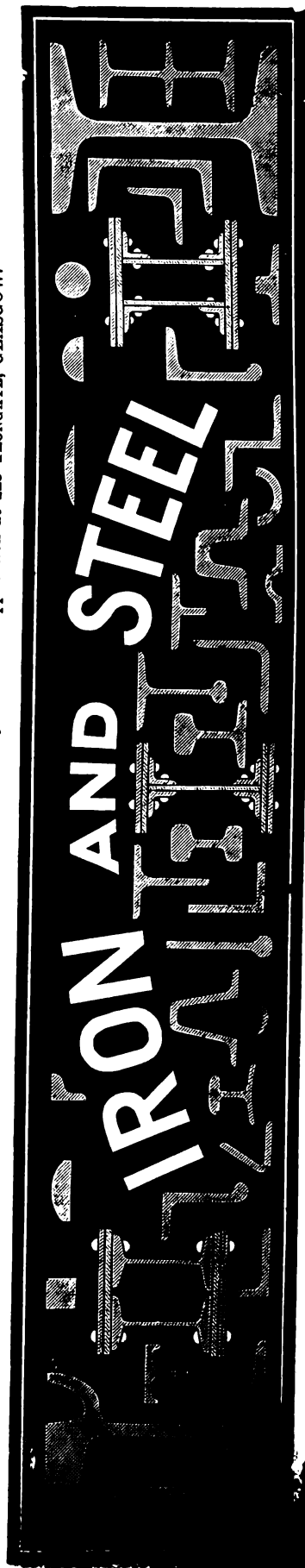
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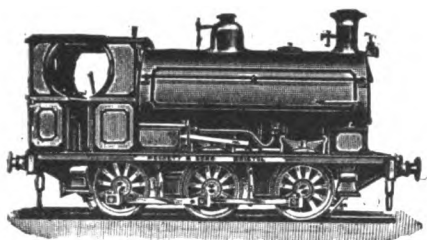
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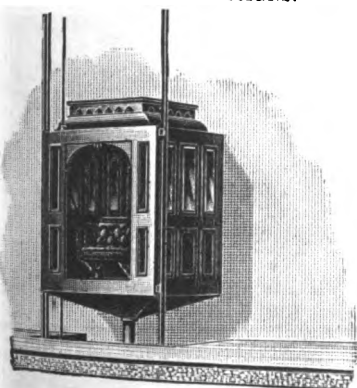
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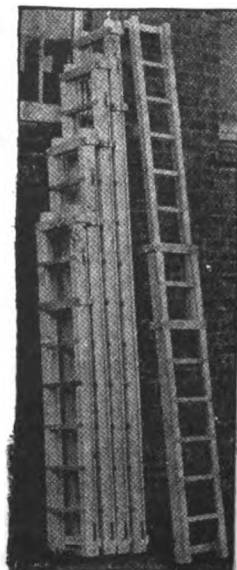
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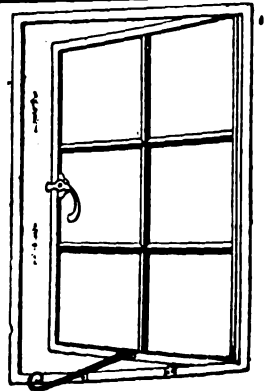
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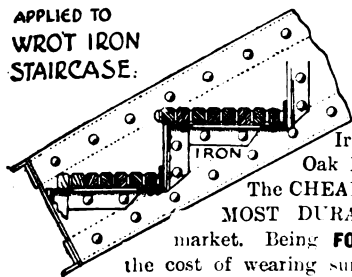
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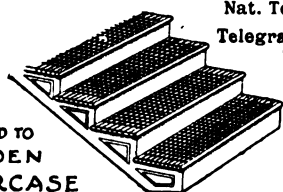


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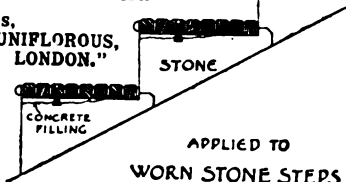
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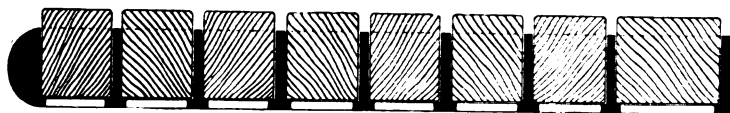
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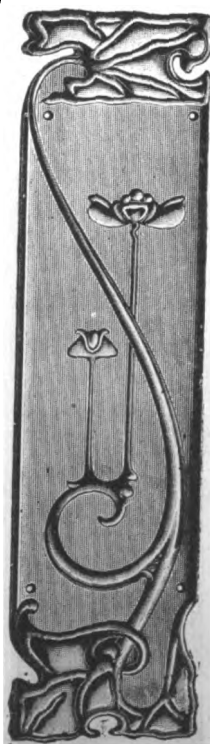
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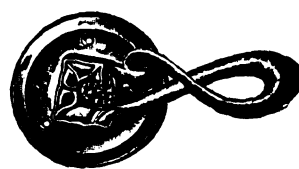
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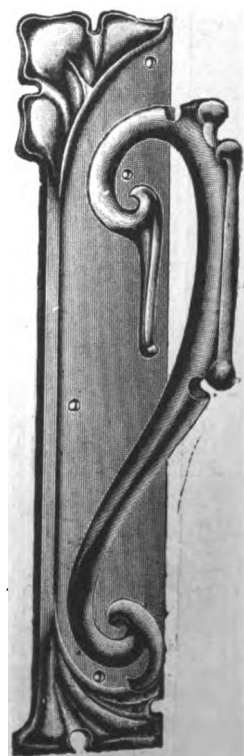
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THE  
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FRIDAY, OCTOBER 19, 1906.

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P. A. GILBERT WOOD,

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

**EDITORIAL NOTICES.**

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further

answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

**TENDERS, ETC.**

\* \* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

**COMPETITIONS OPEN.**

GAYWOOD.—Oct. 22.—The Norfolk education committee invite plans, specifications, elevations and estimates for a new school. The plan (if any) selected will be accepted subject to the approval of the Board of Education. Particulars can be obtained on application to the Secretary, at the County Education Office, 57 London Street, Norwich.

MONTEVIDEO.—Dec. 14.—La Comision Nacional de Caridad require competitive plans for new foundling hospital with approximate cost. Plans and report, under mottoes, and, in sealed envelope, name and address of competitor. The four selected plans will receive 212/ each, and will be asked to further compete. Further particulars from the Consulate-General for Uruguay, 5 and 6 Clement's Inn, Strand, W.C.

**CONTRACTS OPEN.**

AUSTWICK.—Oct. 22.—For the taking-down of existing fences, providing necessary materials for and building in lime mortar about 69 lineal rods of rubble stone boundary walls, 6 feet 6 inches high, at Ell Meadow, near Harden Bridge, Austwick, for the Settle Rural District Council. Mr. T. A. Foxcroft, Town Hall, Settle.

BALBY.—Oct. 30.—For alterations and repairs at Balby Mixed Provided school, near Doncaster. Mr. L. J. Blackburn, divisional clerk, 10 Priory Place, Doncaster.

BARNSELY.—Oct. 20.—For the erection of a mortuary at Beckett hospital. Mr. Harold Taylor, architect, Jordan Hill, Barnsley.

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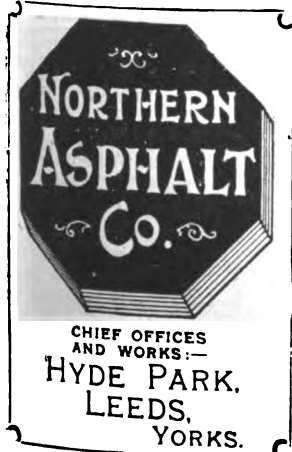
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BELFAST.—Nov. 15.—For the construction of an underground convenience in Donegall Street North. Deposit 1*l*. 1*s*. The City Surveyor's Office, Belfast.

BELFAST.—Oct. 23.—For additions to and alterations at the dispensary, Lorettoville, Springfield Road. The Clerk's Office, Workhouse, Belfast.

BELFAST.—Oct. 24.—For the erection of the following at Whitehead—viz. four workmen's dwellings, and stables for four horses—for the Midland Railway Company (Northern Counties committee). Deposit 1*os*. The Engineer's Office, York Road terminus.

BIRKENHEAD.—Oct. 31.—For the erection and completion of eighteen tenement dwellings on the east side of Egerton Street. Deposit 3*l*. 3*s*. Mr. C. Brownridge, M.I.C.E., borough engineer, Town Hall, Birkenhead.

BRADFORD.—Oct. 24.—For additions to National schools, Thornton. Mr. Sam Spencer, architect, Old Bank Chambers, Great Horton, Bradford, Yorks.

BRIDGWATER.—Oct. 23.—For the repair, cleaning, painting and renovating dwelling-house in Penel Orliou, and also the cleaning and painting the outside work to two cottages in West Street, for the Town Council. The Borough Surveyor, Municipal Buildings, High Street.

BRIDPORT.—Oct. 23.—For the erection of a secondary school with accommodation for 150 pupils on a site in St. Andrew's Road. Mr. F. Cooper, architect, 77 East Street, Bridport.

CLEVELEYS.—Nov. 20.—For the erection of a public elementary school at Cleveleys, near Fleetwood, Lancs, to accommodate 300 scholars. Deposit 2*l*. Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

COLCHESTER.—Nov. 6.—For the foundations of the main building at the Essex lunatic asylum at Mile End. Deposit 2*ol*. The County Asylum Office, 4 Duke Street, Chelmsford.

EPSOM.—Nov. 12.—For the erection of two acute blocks and the rebuilding of a nurses' block at the Manor asylum, Epsom, Surrey, for the London County Council. Deposit 5*l*. The Clerk of the Asylums Committee, 6 Waterloo Place, London, S.W.

ECCELES.—For the heating and ventilating of the new school in Lewis Street, Patricroft, Lancs, for the Corpora-

tion. Deposit 1*os*. Mr. John H. Woodhouse, architect, 100 King Street, Manchester.

EXETER.—Oct. 30.—For the erection of offices at Exeter (St. David's) Station, for the Great Western Railway Co. The Engineer at Plymouth (North Road) Station.

FARNWORTH.—Oct. 29.—For the erection of a public elementary school in Plodder Lane, Farnworth, Lancs. Deposit 1*l*. 1*s*. Mr. H. Rostron, secretary of education, Education Office, Darley Street, Farnworth, near Bolton.

GLASGOW.—Oct. 22.—For the construction of offices for Carron Company on the tongue at Grangemouth Docks, for the Caledonian Railway Company. Deposit 2*l*. 2*s*. The Company's Engineer, Buchanan Street Station, Glasgow.

GLASGOW.—Nov. 14.—For (1) the digger, mason and bricklayer's work; (2) the cast-iron and steelwork; (3) the fireproof floors; (4) the wrightwork; (5) the metal sashes; (6) the roof glazier's work; (7) the wood block floors; (8) the slater's work; (9) the plumber's work; and (10) the plasterer's work required in connection with the Mitchell library buildings to be erected in North Street. Deposit 5*l*. 5*s*. Mr. William B. Whitie, 219 St. Vincent Street, Glasgow.

GREAT BURSTEAD.—Oct. 27.—For structural alterations and additions to the Council school, Great Burstead, Essex. Mr. Frank Whitmore, architect, 73 Duke Street, Chelmsford.

HAVERFORDWEST.—Oct. 20.—For the construction of the meat market, including new steel roof with elliptical lattice-braced principals, &c., for the Corporation. Deposit 2*l*. 2*s*. Mr. J. Preece James, architect, Tenby.

HOLBECK.—Oct. 29.—For all trades required in additions and alteration of works and offices. Deposit 1*l*. Names by October 22. Mr. James B. Fraser, architect, Leeds.

HORSHAM.—Oct. 25.—For extending the cloak-room accommodation to the boys, girls and infants' departments at the East Parade Council schools. Mr. C. H. Burstow, architect, 6 West Street, Horsham.

ILFORD.—Nov. 12.—For the roofing in with reinforced concrete of the septic tanks, &c., at the outfall works, Loxford Lane. Deposit 2*l*. 2*s*. Mr. H. Shaw, engineer and surveyor to the Council, Town Hall, Ilford.

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IRELAND.—Oct. 22.—For building and completing two houses at Gillabney. Messrs. W. H. Hill & Son, architects, 28 South Mall, Cork.

IRELAND.—Oct. 30.—For the erection and completion of a parish church at Timoleague, co. Cork. Deposit 3*l*. 3*s*. Mr. M. A. Hennessy, architect, 74 South Mall, Cork.

KENDAL.—Oct. 25.—For pulling-down a wing and alterations and additions at Eller Bank. Mr. Stephen Shaw, architect, Kendal.

LONDON.—Oct. 25.—For adapting Worsley Road school building as a branch library, for the Hampstead Borough Council. Mr. O. E. Winter, A.M.I.C.E., borough engineer, Town Hall, Haverstock Hill, N.W.

LONDON.—Oct. 25.—For alteration and extension of the laundry at the workhouse, Swaffield Road, for the Guardians of Wandsworth Union. Deposit 2*l*. The Guardians' Offices, St. John's Hill, Wandsworth, near Clapham Junction railway station, S.W.

LONDON.—Oct. 31.—For alterations and additions at 96 King Street, Hammersmith, for the Borough Council. Mr. H. Mair, borough surveyor, Town Hall, Broadway, Hammersmith, W.

MANCHESTER.—Oct. 23.—For the strengthening of Philips Park Road Bridge over the Ashton Canal. Deposit 2*l*. 2*s*. City Surveyor's office, Town Hall, Manchester.

MANCHESTER.—Oct. 30.—For the erection of the Oswald Road Municipal school, Chorlton-cum-Hardy. Deposit 2*l*. 2*s*. The Education Offices, Deansgate, Manchester.

MILE END.—Oct. 26.—For additions to the administration block at the infectious diseases hospital, Mile End, near Colchester. Mr. Herbert Goodyear, borough engineer and surveyor, Town Hall, Colchester.

NEWTON-IN-MAKERFIELD.—Nov. 30.—For the erection of a public library at an inclusive cost of 4,000*l*. Mr. C. Cole, Clerk, Town Hall, Earlestown, Lancs.

NORDELPH.—Nov. 3.—For the following works at the Chapel farm, for the Norfolk County Council:—Conversion of house into two cottages, drainage and subdivision of yard and buildings, fencing of grass land. Mr. E. C. Warner, Nordelph.

ODIHAM.—Nov. 5.—For alterations at the Odiham police station, Hants. Deposit 2*l*. 2*s*. Mr. W. J. Taylor, county surveyor, Winchester.

ORMESBY.—Nov. 2.—For the enlargement of the Ormesby school, Norfolk. Deposit 1*l*. 1*s*. Messrs. Olley & Haward, architects, 5 Queen Street, Great Yarmouth.

RYE.—Oct. 31.—For new grammar school. Mr. E. J. Cory, High Street, Rye, Sussex.

ST. BLAZEY.—Oct. 30.—For the erection and completion of shops, stores and other offices at Station Road, St. Blaze. Deposit 1*l*. 1*s*. Mr. F. C. Jury, architect, 1 Alma Villas, Tregonissey Road, St. Austell.

ST. HELENS.—Oct. 24.—For additions to Cowley Middle schools, Cowley Hill Lane, St. Helens, Lancs. Deposit 1*l*. 1*s*. Mr. Frank S. Biram, architect, Hardshaw Street, St. Helens.

ST. HELENS.—Oct. 24.—For the erection of schools at Part, St. Helens, Lancs. Deposit 1*l*. 1*s*. Mr. Frank S. Biram, architect, Hardshaw Street, St. Helens.

SALFORD.—Oct. 23.—For the removal of existing buildings and the erection of a recreation-room at the rear of the branch library in Greengate. The Borough Engineer's Office, Town Hall, Salford.

SCOTLAND.—Oct. 20.—For the mason, carpenter, plumber, plasterer and painter's work of a semi-detached dwelling-house in West Church Street, Buckie. Mr. William Cumming, burgh surveyor.

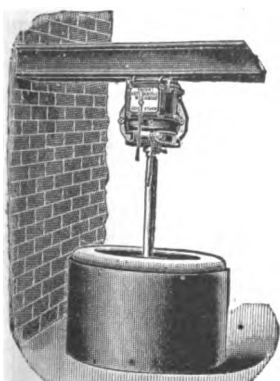
SELBY (YORKS).—Oct. 23.—For the erection of cottage, office and boundary wall at the new waterworks, Brayton Barff. Deposit 1*l*. 1*s*. Mr. Percy Griffith, 54 Parliament Street, Westminster, S.W., and Mr. Bruce McG. Gray, Council Offices, Selby.

STAFFORD.—Oct. 20.—For the erection of a high school for girls. Deposit 2*l*. 2*s*. Mr. Graham Balfour, director of education, County Education Offices, Stafford.

VENTNOR.—Oct. 22.—For the construction of a timber groynes 170 feet in length, on the eastern shore of Ventnor. The Town Surveyor, Town Hall, Ventnor.

WALES.—Oct. 20.—For the erection of a library and institute at Pontllynn, for the trustees of the Pontllynn Workmen's library. Deposit 1*l*. 1*s*. Mr. David W. Jones, School House, Pontllynn.

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**WALES.**—Oct. 22.—For the erection and carrying-out of the following works:—(a) Erection of a new school for 300 infants at Goltyn, Connah's Quay; (b) erection of a new school for 300 infants at Custom House Lane, Connah's Quay; (c) certain alterations and additions at the Abermorddu Council school, near Wrexham, for the Flintshire education committee. Deposit 2/ 2s. Mr. Samuel Evans, county surveyor, County Buildings, Mold.

**WALES.**—Oct. 22.—For alterations and additions to 4 St. John's Square, Cardiff, to convert the same into club premises. Deposit 1/ 1s. Mr. W. H. D. Caple, architect, 2 Church Street, Cardiff.

**WALES.**—Oct. 22.—For alterations and repairs to the Georgetown (Tredegar) junior mixed and infants' Council schools, for the Monmouthshire education committee. Mr. David Morgan (Messrs. James & Morgan), architect, Charles Street Chambers, Cardiff.

**WALES.**—Oct. 23.—For the construction of an underground public convenience, consisting of four urinal stalls, water-closet, lavatory, fittings, &c., near the entrance to the Rhymney railway station at Bargoed (Gelligaer). Mr. James P. Jones, engineer, Council Offices, Hengoed, via Cardiff.

**WALES.**—Oct. 26.—For extensive alterations and additions to the Vulcan hotel, Merthyr Tydfil. Mr. Arthur Lloyd Thomas, engineer and architect, Church Street Chambers, Pontypridd.

**WALES.**—Oct. 27.—For erecting eight semi-detached villas at Gorseinon, Swansea. Messrs. Williams & Henton, architects and surveyors, Bank Chambers, Heathfield Street, Swansea.

**WALES.**—Oct. 31.—For the erection of shop premises, coach-house and stables (with conveniences) in Plymouth Road, Merthyr. Deposit 1/ 1s. Mr. T. Edmund Rees, architect, Gernant, Merthyr.

**WALES.**—For the erection of a villa, stables and piggeries at Ferryside. Mr. Joseph Billet, architect and surveyor, 33 Prospect Place, Llanelli.

**WALES.**—Oct. 30.—For alterations and additions to the isolation hospital, Ystrad, Rhondda, including the erection of a pavilion, combined convalescent and discharging block,

and additions to the present administrative block, laundry and stable blocks, for the Rhondda Urban District Council. Deposit 2/ 2s. Mr. W. D. Morgan, architect, Post Office Chambers, Pentre.

**WOLVERHAMPTON.**—Oct. 24.—For the erection of cart-sheds at the depot in Crown Street. Mr. George Green, borough engineer, Town Hall, Wolverhampton.

**WOOLWICH.**—Oct. 31.—For women's dining hall at the union house, High Street, Plumstead. Deposit 1/ 1s. Mr. J. O. Cook, architect, 1A Eleanor Road, Woolwich.

Mr. CONSUL TEICHMANN, of Eibenstock, reporting to the Washington Bureau of Manufactures concerning the world's supply of wood, says that the demand has gone on increasing until the question of a continued supply to meet the present rapidly-increasing rate of consumption is a very serious problem. The United States has not enough to supply its own demand, and is dependent upon Canada, which, with its 798,133,000 acres of forests, represents probably the largest single area of any country in the world. Although large territories of forests, especially in China, Korea, India and South America remain to be utilised, it is certain that the question of the future wood supply of the world, now attracting the attention of the economists, will continue to excite great interest.

ACCORDING to an official return, in forty-five cases the County Councils have received no applications from Rural District Councils to put in force Part 3 of the Housing of the Working Classes Act, and no resolutions by Parish Councils under section 6 had been reported to them. Sixty-one County Councils were communicated with by the Local Government Board. In two of the remaining sixteen cases a resolution by a parish council under section 6 was reported. In the case of the Durham County Council a local inquiry was held, but no decision had been arrived at up to the date when the information was forwarded to the central authority. In the second instance, the Hertfordshire County Council satisfied themselves that the existing cottage accommodation in the area concerned was adequate for the needs of the place, and the County Council took no further action in the matter.

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|---------------------------------------------|--------|----|---|
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| Leggott & Speight                           | 1,597  | 19 | 6 |
| Muirhead & Co.                              | 1,595  | 15 | 9 |
| Cochrane & Sons.                            | 1,316  | 8  | 7 |
| Jackson                                     | 1,217  | 5  | 3 |
| Greig & Matthews                            | 1,161  | 11 | 8 |
| Smith, Barking (recommended)                | 1,060  | 0  | 0 |

### CARDIFF.

For forming, metalling, paving, kerbing and channelling streets at Roath and Canton. Mr. W. HARPUR, city engineer.

#### Accepted tenders.

|                                          |        |    |    |
|------------------------------------------|--------|----|----|
| Evans, Pontypridd—Shirley Road           | £1,040 | 4  | 0  |
| Evans—Tydfil Place                       | 493    | 12 | 3  |
| Osmond & Sons, Ely, Cardiff—Daisy Street | 298    | 7  | 5  |
| Evans—Rhydney Lane                       | 213    | 14 | 0  |
| Osmond & Sons—Orchard Place              | 161    | 10 | 11 |
| Evans—Monthermer Road                    | 116    | 7  | 10 |
| Evans—Penywain Road                      | 111    | 15 | 9  |
| Evans—Monthermer Lane                    | 73     | 6  | 3  |
| Evans—Shirley Lane                       | 59     | 10 | 0  |
| Evans—Tydfil Lane                        | 59     | 1  | 0  |
| Evans—Ninian Lane                        | 22     | 13 | 0  |

### DORCHESTER.

For the erection of Roman Catholic church. Rev. Canon A. J. SCOLES and G. RAYMOND, architects, Presbytery, Basingstoke.

|                                      |        |    |   |
|--------------------------------------|--------|----|---|
| Trask & Sons                         | £2,475 | 10 | 0 |
| Bird & Pippard                       | 1,690  | 0  | 0 |
| Slade                                | 1,666  | 0  | 0 |
| Watts Bros.                          | 1,451  | 0  | 0 |
| Davis & Son                          | 1,398  | 10 | 0 |
| J. W. & H. CHILDS, Yeovil (accepted) | 1,347  | 0  | 0 |

### DEAL.

For the erection of a school to accommodate 240 infants, boundary walls and other works. Mr. C. L. CROWTHER, architect, Deal.

|                     |        |    |   |
|---------------------|--------|----|---|
| Turner              | £3,664 | 16 | 0 |
| Goodbourne          | 3,610  | 8  | 0 |
| Bowles              | 3,491  | 10 | 0 |
| Martin              | 3,366  | 0  | 0 |
| Gann & Co.          | 3,324  | 0  | 0 |
| Harris & Son        | 3,312  | 17 | 0 |
| Miriamas            | 3,245  | 0  | 0 |
| Woodhall & Son      | 3,200  | 0  | 0 |
| Trevers             | 3,150  | 3  | 0 |
| S. & R. Jefford     | 3,133  | 7  | 0 |
| Sturry Building Co. | 3,120  | 0  | 0 |
| Phillips            | 3,090  | 0  | 0 |
| Turner & Watts      | 3,075  | 0  | 0 |
| Lewis & Sons        | 3,028  | 10 | 0 |
| Denne               | 2,997  | 0  | 0 |
| Hayward & Paramor   | 2,988  | 0  | 0 |
| Thompson            | 2,980  | 0  | 0 |
| Judges              | 2,942  | 0  | 0 |
| Browning            | 2,931  | 0  | 0 |
| Grigg               | 2,906  | 0  | 0 |
| Cottew              | 2,799  | 0  | 0 |
| Wise                | 2,716  | 0  | 0 |

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| The Stirling Boiler Co., Ltd., boiler, pipe-work, &c.                                            | 962    | 0 | 0 |
| Wheeler Condenser and Engineering Co., surface condenser with combined air and circulating pumps | 419    | 0 | 0 |
| Musgrave & Co., Ltd., induced draught fan                                                        | 80     | 4 | 0 |

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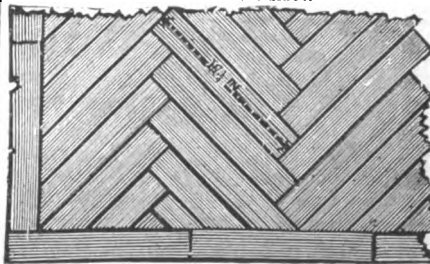
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|-------------------------|------|----|---|
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|                                         |        |    |    |
|-----------------------------------------|--------|----|----|
| Spriggings . . . . .                    | £1,105 | 0  | 0  |
| Wright . . . . .                        | 1,072  | 0  | 0  |
| Dugan . . . . .                         | 998    | 0  | 0  |
| McCarthy Bros. . . . .                  | 991    | 0  | 0  |
| Privett . . . . .                       | 975    | 0  | 0  |
| Rogers . . . . .                        | 955    | 11 | 4  |
| Clark & Son . . . . .                   | 950    | 0  | 0  |
| Crockerell . . . . .                    | 922    | 0  | 0  |
| Learmouth . . . . .                     | 900    | 0  | 0  |
| Borrow . . . . .                        | 896    | 5  | 11 |
| MUNDAY, Portsmouth (accepted) . . . . . | 777    | 5  | 10 |
| Scammell . . . . .                      | 495    | 0  | 0  |

**HEREFORD.**

For additions to Burghill Church, first contract. Messrs. GROOME & BETTINGTON, architects, Hereford.

|                            |     |   |   |
|----------------------------|-----|---|---|
| Lewis & Co. . . . .        | £37 | 0 | 0 |
| Bowers & Co. . . . .       | 36  | 4 | 0 |
| WILKS (accepted) . . . . . | 33  | 0 | 0 |

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|                                           |        |   |   |
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|-------------------------------------------|--------|---|---|

**ILFORD.**

For levelling, metalling, channelling, paving, kerbing and making good various roads. Mr. H. SHAW, surveyor.

|                                                |        |    |   |
|------------------------------------------------|--------|----|---|
| PARSONS & PARSONS, Ilford (accepted) . . . . . | £1,699 | 13 | 7 |
|------------------------------------------------|--------|----|---|

**KIBWORTH BEAUCHAMP.**

For construction and making-up of streets in the parish of Kibworth Beauchamp, Market Harborough. Messrs. EVERARD, SON & PICK, engineers, Leicester.

|                                        |        |    |    |
|----------------------------------------|--------|----|----|
| Meredith Bros. . . . .                 | £2,373 | 18 | 8  |
| E. & T. Smith . . . . .                | 2,097  | 5  | 0  |
| Worthington . . . . .                  | 2,088  | 18 | 11 |
| Smart . . . . .                        | 1,988  | 19 | 2  |
| Holmes & Sons . . . . .                | 1,978  | 19 | 6  |
| Hickman . . . . .                      | 1,969  | 8  | 0  |
| Macdonald . . . . .                    | 1,806  | 14 | 8  |
| Haycock & Son . . . . .                | 1,784  | 9  | 0  |
| Henson & Son . . . . .                 | 1,750  | 15 | 6  |
| Wilmott . . . . .                      | 1,687  | 14 | 3  |
| Jewell . . . . .                       | 1,686  | 1  | 4  |
| Holme & Sons . . . . .                 | 1,641  | 5  | 0  |
| Loch . . . . .                         | 1,617  | 4  | 0  |
| PALMER, Leicester (accepted) . . . . . | 1,596  | 17 | 0  |

**LONDON.**

For the supply of the motors necessary for the conversion of the two existing generators into motor generators, at Elephant and Castle sub-station.

|                                                                   |        |   |   |
|-------------------------------------------------------------------|--------|---|---|
| Siemens Brothers Dynamo Works, Ltd. . . . .                       | £8,428 | 0 | 0 |
| British Westinghouse Electric and Manufacturing Co., Ltd. . . . . | 8,177  | 0 | 0 |
| DICK, KERR & CO., LTD. (accepted) . . . . .                       | 7,100  | 0 | 0 |

For (1) paving, kerbing and channelling at Winchmore Hill and Southgate, and (2) for works of private street improvement, Palmer's Green. Mr. C. G. LAWSON, C.E., surveyor.

**Contract No. 1.**

|                                        |        |   |   |
|----------------------------------------|--------|---|---|
| Frost . . . . .                        | £1,719 | 0 | 0 |
| Mann . . . . .                         | 1,450  | 0 | 0 |
| Griffiths & Co. . . . .                | 1,448  | 0 | 0 |
| ADAMS, Wood Green (accepted) . . . . . | 1,198  | 0 | 0 |

**Contract No. 2.**

|                                    |       |   |   |
|------------------------------------|-------|---|---|
| Val de Travers Co. . . . .         | 1,705 | 0 | 0 |
| Turner . . . . .                   | 1,645 | 0 | 0 |
| Griffiths & Co. . . . .            | 1,640 | 0 | 0 |
| Adams . . . . .                    | 1,595 | 0 | 0 |
| Frost . . . . .                    | 1,448 | 0 | 0 |
| MANN, Edgware (accepted) . . . . . | 1,421 | 0 | 0 |

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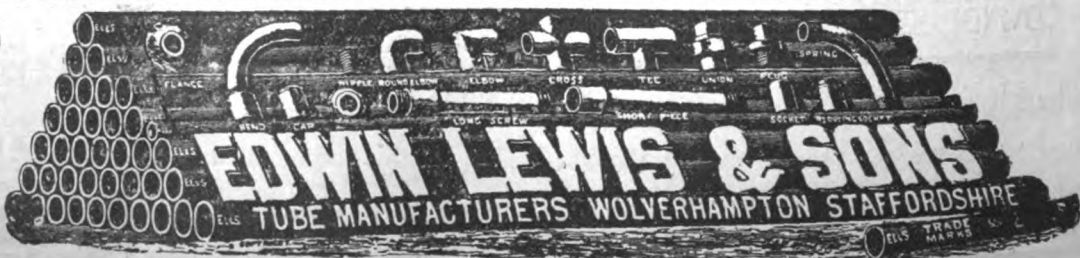
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AND  
FITTINGS**





## LONDON—continued.

For the erection of twelve cottages, blocks Nos. 26 and 27, on Section A of the Totterdown Fields estate, Tooting.

|                                           |        |    |   |
|-------------------------------------------|--------|----|---|
| Morley, jun. . . . .                      | £3,710 | 0  | 0 |
| Merrett & Co. . . . .                     | 3,296  | 0  | 0 |
| W. & C. Brown . . . . .                   | 3,170  | 0  | 0 |
| Prestige & Co. . . . .                    | 3,068  | 0  | 0 |
| Lawrance & Sons . . . . .                 | 3,044  | 0  | 0 |
| Carmichael . . . . .                      | 3,020  | 0  | 0 |
| Wall . . . . .                            | 2,924  | 0  | 0 |
| F. & T. Thorne . . . . .                  | 2,902  | 0  | 0 |
| Holloway . . . . .                        | 2,760  | 0  | 0 |
| Jones Bros. . . . .                       | 2,760  | 0  | 0 |
| Kirk & Randall . . . . .                  | 2,728  | 0  | 0 |
| Martin, Wells & Co. . . . .               | 2,719  | 0  | 0 |
| Gale . . . . .                            | 2,700  | 0  | 0 |
| F. & H. F. Higgs . . . . .                | 2,676  | 0  | 0 |
| Parsons . . . . .                         | 2,586  | 0  | 0 |
| Nash & Lillywhite . . . . .               | 2,359  | 10 | 0 |
| Fletcher, Tooting (recommended) . . . . . | 2,320  | 10 | 0 |
| Architect's estimate . . . . .            | 2,600  | 0  | 0 |

For additions and alterations to building at electricity works, Osborn Street, E. Mr. M. W. JAMESON, borough engineer, 15 Great Alie Street, Whitechapel, E.

|                                                           |        |   |   |
|-----------------------------------------------------------|--------|---|---|
| Coles . . . . .                                           | £1,567 | 0 | 0 |
| Stedman & Co. . . . .                                     | 1,380  | 0 | 0 |
| Thomas & Edge . . . . .                                   | 1,273  | 0 | 0 |
| Holliday & Greenwood . . . . .                            | 1,259  | 0 | 0 |
| F. & T. Thorne . . . . .                                  | 1,247  | 0 | 0 |
| Symes . . . . .                                           | 1,245  | 0 | 0 |
| F. & F. J. Wood . . . . .                                 | 1,238  | 0 | 0 |
| Perry & Co. . . . .                                       | 1,224  | 0 | 0 |
| Calcutt . . . . .                                         | 1,220  | 0 | 0 |
| Spencer, Santo & Co. . . . .                              | 1,200  | 0 | 0 |
| Barker . . . . .                                          | 1,195  | 0 | 0 |
| Patman & Fotheringham . . . . .                           | 1,172  | 0 | 0 |
| F. & E. Davey . . . . .                                   | 1,120  | 0 | 0 |
| McLaughlin & Harvey . . . . .                             | 1,093  | 0 | 0 |
| NIGHTINGALE, Albert Embankment, S.E. (accepted) . . . . . | 1,066  | 0 | 0 |

## LONDON—continued.

For the erection of mission church and hall, Albert Road, Peckham. Mr. G. A. LANSDOWN, architect, 9 Regent Street, S.W.

|                               |        |   |   |
|-------------------------------|--------|---|---|
| Gorham . . . . .              | £4,091 | 0 | 0 |
| Lascelles & Co. . . . .       | 3,875  | 0 | 0 |
| Marsland & Sons . . . . .     | 3,713  | 0 | 0 |
| Johnson & Co. . . . .         | 3,673  | 0 | 0 |
| Higgs & Hill . . . . .        | 3,642  | 0 | 0 |
| H. & E. Lea . . . . .         | 3,599  | 0 | 0 |
| Kirk & Kirk . . . . .         | 3,589  | 0 | 0 |
| Parker . . . . .              | 3,549  | 0 | 0 |
| Burgess & Sons . . . . .      | 3,548  | 0 | 0 |
| R. & E. Evans . . . . .       | 3,479  | 0 | 0 |
| Sharpington . . . . .         | 3,468  | 0 | 0 |
| F. & H. F. Higgs . . . . .    | 3,434  | 0 | 0 |
| Ansell . . . . .              | 3,333  | 0 | 0 |
| Nash . . . . .                | 3,287  | 0 | 0 |
| HOLLOWAY (accepted) . . . . . | 3,180  | 0 | 0 |

## RUGBY.

For new billiard-room to be added to Rainsbrook Manor, Rugby, for Dr. Nelson Harness. Mr. ALBERT E. KINGWELL, architect, 102 and 104 Cheapside, E.C.

|                            |        |    |   |
|----------------------------|--------|----|---|
| Bloxham & Son . . . . .    | £1,457 | 0  | 0 |
| Gray, Hill & Co. . . . .   | 1,455  | 0  | 0 |
| Foster & Dicksee . . . . . | 1,420  | 10 | 0 |
| Parnell & Son . . . . .    | 1,373  | 0  | 0 |
| Poole & Son . . . . .      | 1,273  | 0  | 0 |
| Kingerlee & Son . . . . .  | 1,179  | 0  | 0 |

## ST. ALBANS.

For the erection of a villa residence, Carlisle Avenue. Mr. S. DODDIMEADE EDMUNDS, architect, St. Albans.

|                                         |      |    |   |
|-----------------------------------------|------|----|---|
| Vail & Shore . . . . .                  | £626 | 10 | 0 |
| Skelton . . . . .                       | 560  | 0  | 0 |
| Ivory . . . . .                         | 495  | 10 | 0 |
| ELWOOD, St. Albans (accepted) . . . . . | 475  | 0  | 0 |

For the erection of detached residence, Clarence Road. Mr. S. DODDIMEADE EDMUNDS, architect, St. Albans.

|                                         |        |    |   |
|-----------------------------------------|--------|----|---|
| Goodchild & Son . . . . .               | £1,017 | 10 | 0 |
| Skelton . . . . .                       | 980    | 0  | 0 |
| ELWOOD, St. Albans (accepted) . . . . . | 950    | 0  | 0 |

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Total Security, £4,432,735.

**ST. ALBANS—continued.**

For the erection of house and shop, Catherine Street. Mr. S. DODDIMEADE EDMUNDS, architect, St. Albans.

|                                                  |      |   |   |
|--------------------------------------------------|------|---|---|
| Williamson . . . . .                             | £629 | 0 | 0 |
| Skelton . . . . .                                | 525  | 0 | 0 |
| Bushell . . . . .                                | 515  | 0 | 0 |
| Bastin . . . . .                                 | 510  | 0 | 0 |
| GOODCHILD & SON, St. Albans (accepted) . . . . . | 470  | 0 | 0 |
| Elwood . . . . .                                 | 465  | 0 | 0 |

For the erection of house in Clarence Road. Mr. S. DODDIMEADE EDMUNDS, architect, St. Albans.

|                           |      |   |   |
|---------------------------|------|---|---|
| Skelton . . . . .         | £880 | 0 | 0 |
| Goodchild & Son . . . . . | 864  | 0 | 0 |

For additions, alterations and decorations at The Deanes, Althorp Road. Mr. S. DODDIMEADE EDMUNDS, architect, St. Albans.

|                                      | House. | Motor House. |
|--------------------------------------|--------|--------------|
| Goodchild & Jeffry . . . . .         | £598   | £425         |
| Dunham . . . . .                     | 482    | 398          |
| MISKIN & SONS, St. Albans* . . . . . | 430    | 360          |
| Skelton . . . . .                    | 470    | 280          |

\* Accepted for house only, decoration contract 85% extra.

For the erection of a residence and motor house, &c., Sand Pit Lane. Mr. S. DODDIMEADE EDMUNDS, architect, St. Albans.

|                                                           |        |   |   |
|-----------------------------------------------------------|--------|---|---|
| Skelton . . . . .                                         | £2,070 | 0 | 0 |
| Dunham . . . . .                                          | 1,711  | 0 | 0 |
| Vail & Shore, St. Albans (reduced and accepted) . . . . . | 1,205  | 0 | 0 |

For the erection of a detached villa residence, Blandford Road. Mr. S. DODDIMEADE EDMUNDS, architect, St. Albans.

|                                               |      |    |   |
|-----------------------------------------------|------|----|---|
| Dunham . . . . .                              | £745 | 0  | 0 |
| Goodchild & Son . . . . .                     | 610  | 0  | 0 |
| Skelton . . . . .                             | 555  | 0  | 0 |
| VAIL & SHORE, St. Albans (accepted) . . . . . | 519  | 0  | 0 |
| Ivory . . . . .                               | 516  | 15 | 0 |
| Elwood . . . . .                              | 515  | 0  | 0 |

**SMALLTHORNE.**

For paving, kerbing and channelling in Station Road and Bagnall Road, Milton. Mr. JOHN WILLIAM DEANE, surveyor.

|                                        |      |    |   |
|----------------------------------------|------|----|---|
| Sanders & Torrance . . . . .           | £421 | 0  | 0 |
| Barke . . . . .                        | 362  | 2  | 3 |
| Bullock . . . . .                      | 350  | 15 | 4 |
| HOROBIN, Cobridge (accepted) . . . . . | 342  | 16 | 0 |

**STEVENSTON.**

For construction of works at Greenhead filtering station, for the Water Board. Mr. JAMES CLARKSON, engineer, Irvine.

|                                               |        |   |   |
|-----------------------------------------------|--------|---|---|
| MACLACHLAN & SON, Irvine (accepted) . . . . . | £5,688 | 1 | 5 |
|-----------------------------------------------|--------|---|---|

**WARMINSTER.**

For the erection of a bungalow at Deverill Road. Messrs. LONG & GLASS, architects, Westminster.

|                                                 |      |    |   |
|-------------------------------------------------|------|----|---|
| Parsons & Sons . . . . .                        | £162 | 0  | 0 |
| Butcher & Son . . . . .                         | 138  | 0  | 0 |
| CURTIS & SONS, Westminster (accepted) . . . . . | 133  | 12 | 6 |

For construction of reservoir. Mr. C. H. LAWTON, engineer.

|                                               |      |   |   |
|-----------------------------------------------|------|---|---|
| Titt . . . . .                                | £545 | 0 | 0 |
| Ponton . . . . .                              | 497  | 0 | 0 |
| Dean Bros. . . . .                            | 475  | 0 | 0 |
| Ambrose . . . . .                             | 420  | 0 | 0 |
| Butcher & Son . . . . .                       | 413  | 0 | 0 |
| Waterhouse . . . . .                          | 410  | 0 | 0 |
| TRYHORN & SON, Salisbury (accepted) . . . . . | 375  | 0 | 0 |

**WEALDSTONE.**

For the construction of about 1,050 feet of road and sewers at Wealdstone. Messrs. ALLEN & HOAR, surveyors.

|                                              |        |    |   |
|----------------------------------------------|--------|----|---|
| F. G. Porter . . . . .                       | £1,225 | 18 | 0 |
| Jackson . . . . .                            | 1,223  | 0  | 0 |
| Wimpey & Co. . . . .                         | 1,200  | 0  | 0 |
| Champliss . . . . .                          | 1,154  | 0  | 0 |
| Watson, jun. . . . .                         | 1,150  | 0  | 0 |
| Free & Sons . . . . .                        | 1,138  | 10 | 0 |
| J. G. Porter . . . . .                       | 1,129  | 0  | 0 |
| G. L. & F. BALL, Harrow (accepted) . . . . . | 1,111  | 3  | 2 |

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## WEYMOUTH.

For the construction of surface-water sewers. Mr. W. BARLOW MORGAN, borough engineer.

|                                   |        |    |    |
|-----------------------------------|--------|----|----|
| Colborne                          | £3,295 | 0  | 0  |
| Cleveland Bridge Co.              | 3,246  | 18 | 5  |
| Nunn                              | 3,124  | 0  | 0  |
| Tabor                             | 3,049  | 17 | 1  |
| Trimm                             | 2,929  | 0  | 0  |
| Mitchell & Sons                   | 2,914  | 15 | 6  |
| Wallis & Sons                     | 2,864  | 0  | 0  |
| Osenton                           | 2,843  | 18 | 0  |
| Wakeham Bros.                     | 2,825  | 0  | 0  |
| Muirhead & Co.                    | 2,800  | 0  | 0  |
| Neal                              | 2,759  | 5  | 2  |
| Bartlett                          | 2,710  | 10 | 0  |
| J. & T. Binns                     | 2,690  | 0  | 0  |
| Riley                             | 2,666  | 12 | 1  |
| Whettam, jun.                     | 2,637  | 0  | 0  |
| Crawford                          | 2,600  | 0  | 0  |
| Moffat                            | 2,551  | 9  | 6  |
| Smith & Co.                       | 2,530  | 18 | 5  |
| Napier & Sons                     | 2,491  | 0  | 0  |
| Streeter & Co.                    | 2,488  | 4  | 11 |
| Bowring                           | 2,450  | 0  | 0  |
| Page & Co.                        | 2,430  | 0  | 0  |
| Chick, Cardon & Co.               | 2,423  | 0  | 0  |
| Baker                             | 2,399  | 9  | 0  |
| Cooke & Co.                       | 2,384  | 0  | 0  |
| Vallance                          | 2,345  | 17 | 0  |
| Macdonald                         | 2,340  | 0  | 0  |
| POLLARD & Co., Taunton (accepted) | 2,000  | 0  | 0  |

For constructing and maintaining retaining wall about 510 feet in length in ferro-concrete. Mr. W. BARLOW MORGAN, borough engineer.

|                                          |        |    |   |
|------------------------------------------|--------|----|---|
| Coles                                    | £8,340 | 0  | 0 |
| Neal, Ltd.                               | 4,989  | 11 | 3 |
| Bevis                                    | 4,890  | 0  | 0 |
| Grace                                    | 4,875  | 0  | 0 |
| Yorkshire Hennebique Co.                 | 4,499  | 8  | 4 |
| Page & Co.                               | 4,477  | 0  | 0 |
| Robertson                                | 4,197  | 12 | 3 |
| PLAYFAIR & TOOLE, Southampton (accepted) | 3,786  | 0  | 0 |

## WICKHAM MARKET.

For additions to infirmary and laundry at workhouse.

|                               |        |    |   |
|-------------------------------|--------|----|---|
| Dale                          | £1,557 | 17 | 0 |
| Bennett                       | 1,540  | 0  | 0 |
| Smith                         | 1,520  | 0  | 0 |
| Barrell                       | 1,495  | 0  | 0 |
| Adams                         | 1,478  | 0  | 0 |
| Grimwood & Sons               | 1,470  | 0  | 0 |
| Linzell                       | 1,445  | 0  | 0 |
| Johnson                       | 1,396  | 0  | 0 |
| Plummer                       | 1,340  | 0  | 0 |
| KNOWLES, Aldeburgh (accepted) | 1,336  | 0  | 0 |

## WIMBLEDON.

For the erection of depot car-shed. Mr. C. H. COOPER, borough engineer and surveyor.

|                                       |      |    |   |
|---------------------------------------|------|----|---|
| Fireproof Co.                         | £615 | 0  | 0 |
| Croggan & Co.                         | 580  | 0  | 0 |
| Smith & Co.                           | 549  | 0  | 0 |
| Fulham Steelworks Co.                 | 519  | 0  | 0 |
| Baldwins, Ltd.                        | 507  | 0  | 0 |
| Westwood & Wright                     | 504  | 0  | 0 |
| Drew, Bear, Perks & Co.               | 500  | 5  | 0 |
| Iles & Co.                            | 493  | 0  | 0 |
| C. & W. Walker                        | 486  | 0  | 0 |
| Darlington Construction Co.           | 467  | 0  | 0 |
| Baker & Co.                           | 465  | 0  | 0 |
| Stevenson & Co.                       | 461  | 0  | 0 |
| Newton, Chambers & Co.                | 460  | 0  | 0 |
| Sands & Son                           | 453  | 0  | 0 |
| Cadogan Ironworks                     | 450  | 0  | 0 |
| Braby & Co.                           | 450  | 0  | 0 |
| Lysaght, Ltd.                         | 449  | 0  | 0 |
| Measures Bros.                        | 445  | 0  | 0 |
| Mulliner & Co.                        | 442  | 0  | 0 |
| Ellis                                 | 440  | 2  | 0 |
| Barry Transporter and Engineering Co. | 440  | 0  | 0 |
| Harbrow                               | 437  | 0  | 0 |
| Hill & Smith                          | 436  | 0  | 0 |
| Hitchen & Sons                        | 435  | 0  | 0 |
| Bain & Co.                            | 430  | 10 | 0 |
| Rowlinson & Co.                       | 430  | 0  | 0 |
| Ellis                                 | 425  | 3  | 0 |

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|                                               |      |    |   |
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| Jackson . . . . .                             | 425  | 0  | 0 |
| Wotherspoon & Co. . . . .                     | 419  | 0  | 0 |
| A. & J. Main & Co. . . . .                    | 417  | 0  | 0 |
| Powers, Deans, Ransomes . . . . .             | 415  | 0  | 0 |
| Little & Sons . . . . .                       | 414  | 0  | 0 |
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**TRADE NOTES.**

THE Servite schools, Chelsea, are being warmed and ventilated by means of Shorland's patent Manchester grates, the same being supplied by Messrs. E. H. Shorland & Brother, of Manchester.

MESSRS. FREEMAN & FREEMAN, brick and tile manufacturers and merchants, of 200 and 202 Phoenix Street, St. Pancras, N.W., have removed their offices to a more central and convenient position at 52 Bedford Row, W.C., at the rear of First Avenue Hotel, High Holborn, W.C.

MESSRS. PATMAN & FOTHERINGHAM, Theobald's Road, W.C., are carrying out extensive alterations to the Savoy Theatre under Mr. Blomfield Jackson, the architect. The theatre was erected by them. The same firm were the contractors for the recently-opened North Library of the Islington Borough Council at Manor Gardens, Holloway Road, N., which is according to the designs of Mr. H. T. Hare.

MR. MAURICE GRAHAM, having recovered from a serious illness, will again attend to the management of the business which has been purchased from the liquidators of Graham, Morton, Ltd., including the whole of the drawings, designs, copyrights, wood patterns, patent rights and models, and a large quantity of tools and machinery. The manufacture of specialties of elevating and conveying machinery will be carried on as before at the new works in Leeds.

A LARGE number of the glasshouses at Welbeck Abbey are being removed and modernised. The new work includes:—Span corridor, 280 feet by 16 feet; three span plant-houses, each 43 feet by 20 feet; six span houses, each 37 feet by 12 feet; span propagating-house, 60 feet by 12 feet; also a lean-to range comprising three fig-houses and two vineries, 300 feet by 15 feet. The work of erecting the houses has been entrusted by the Duke of Portland to Messrs. Messenger & Co., Ltd., horticultural builders, of Loughborough and London.

AN Institute and Reading-room given to the town of Llangefni, Anglesey, by Mrs. Bramston Smith, of Pencraig, and Captain Lawrence Williams, of Parciau, Llanelugrad, was opened on Friday last by Mrs. Bramston Smith. The Institute contains reading-room, games-room, billiard-room, bath-room, lavatories, &c., and accommodation for resident caretaker. The contractors have been Mr. T. P. Thomas, of Llanfair, for the general work, and Mr. Philip E. Jones, of Bangor, for the whole of the sanitary and plumbers' work. The Institute has been designed by and erected under the superintendence of Mr. Richard Hall, architect, Bangor, North Wales.

THE foundation-stones of the new Baptist church at Market Harborough were laid on the 18th inst. The building is designed in Late Gothic, freely treated, the facings being red bricks and dressings of stone. The contract amount for the church, &c., including alterations and additions to the existing school, is 1,982*l.*, and is let to Messrs. H. Herbert & Sons, 33 Millstone Lane, Leicester. The accommodation in church is 543 persons. The architects are Messrs. George Baines & Sons, 5 Clement's Inn, Strand, London, W.C.

THE foundation-stones of the new United Methodist Free church at Banner Cross, Sheffield, were laid on the 9th inst. The contract for the present portion of the scheme, which is the future school premises, is let to Mr. Charles Ward, 80 Langdon Street, Sheffield, the amount being 2,243*l.* The buildings are faced in rock-faced stone in diminishing courses, with ashlar dressings. The architects are Messrs. George Baines & Sons, 5 Clement's Inn, Strand, London, W.C.

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## ILLUSTRATIONS.

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CATHEDRAL SERIES.—ST. DAVIDS: VIEW ACROSS NAVE FROM SOUTH DOOR—SOUTH CHOIR AISLE FROM SOUTH TRANSEPT.

## ELECTRIC NOTES.

THE Stepney Borough Council have decided to dispense with the services of their consulting electrical engineer, who has received a salary of 800*l.* per annum.

THE Sunderland electricity committee on Tuesday appointed Mr. Blackman, of Bradford, electrical engineer for the borough, at a salary of 1,000*l.* per year, in place of Mr. Day, of Bolton.

AT Dewsbury a collier sued the Yorkshire Woollen District Electric Tramway Company for 500*l.* for injuries caused to his four-year-old child by one of defendant's cars, which ran over the child and cut off one of its feet in Huddersfield Road, Dewsbury. The jury awarded 350*l.* damages and costs, the judge ordering that provision should be made for the child's future.

THE Felten and Guillaume-Lahmeyer Works of Germany have concluded a contract with the Societa Industriale Italiana, of Rome, for the construction of a hydraulic-power plant of no less than 18,000 h.p. on the Tronto river. The plant will be used for electro-technical purposes, and will transmit current at a voltage of from 40,000 to 50,000 volts—the highest yet employed in any works in Europe.

Owing to the extensive use now made of electricity for all purposes on board warships the Admiralty are finding out that there is a shortage of these mechanics in the Service. A large entry of electricians is therefore to take place during the next few months. All those desirous of joining should be good fitters. The necessary training in electrical work will be imparted on the torpedo schools at Portsmouth and Devonport after entry.

THE Menai District Council have interviewed a representative of the Mona Electric Lighting Company, who sought the support of the Council to a scheme for supplying the town with electricity. It is proposed to have the generating station at Pwllfanog, and the current would be conveyed along the streets by means of wires placed underground. The meeting decided to approve of the principle of the scheme.

AMONG the improvements being carried out by the Leith Dock Commission is the introduction of electric power in the working of the ponderous gates at the Victoria Dock. An electric motor is being placed on each side of the dock-head, and a connection has been made with the electric-lighting station at the Queen's Dock, from which the power will be obtained. Hitherto the gates have been worked by hand, as many as eight men being required to open and close them.

AT St. Mary's Hall, Coventry, Mr. H. R. Hooper held an inquiry on behalf of the Local Government Board into the application of the Coventry City Council to borrow 37,432*l.* for the purposes of the electric-light department. The amount applied for included 2,000*l.* for laying spare pipes for cables to obviate the necessity of taking up streets, 432*l.* for seventeen new arc lamps and posts, and 35,000*l.* for new generating plant, mains, machinery and minor items. The revenue of the undertaking has increased from the sum of 5,397*l.* in 1901 to that of 19,493*l.* in 1906.

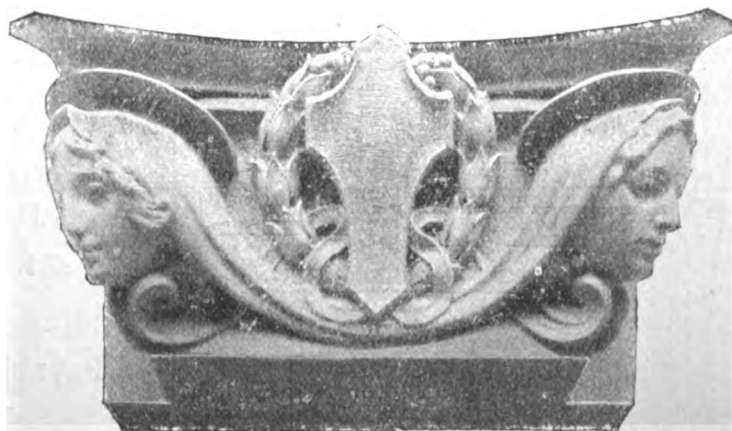
THE Secretary for Scotland has definitely refused the application of the Bo'ness Town Council for authority to borrow, under their provisional order, an additional 4,000*l.* to carry out further capital work in connection with their electric-lighting scheme, originally estimated to cost 25,000*l.* The Scottish Secretary is understood to base his decision on the advice of the Board of Trade that the agreement *ab initio* is *ultra vires* for the parties to enter into. The deadlock is creating a great amount of local interest, which is intensified by the fact that the Council, relying on authority being granted, had paid up to the company the over-expenditure to the extent of about 2,000*l.* borrowed temporarily from the burgh sinking funds.

MR. A. A. DAY, of Bolton, whose appointment as electrical engineer at a salary of 800*l.* was cancelled on the

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10th inst. by the Sunderland Corporation on the ground of a misstatement as to his age, says that on his application form he stated that he was over forty years of age, and he also made the same statement before the committee. Notwithstanding this, the committee recommended him for appointment, and this was confirmed by the Town Council. On his subsequently discovering that he had made a mistake and that he was older than he thought, he wrote to the Sunderland Corporation offering to withdraw his application, but this was not accepted. Mr. Day has not resigned the post of electrical engineer at Bolton.

At Stirling Town Council on the 15th inst. it was reported that a reply had been sent to the National Electric Construction Co., Ltd., stating the terms on which the Town Council were prepared to supply current to the company's cars to be as follows:—2d. per unit for the first 100,000 units per annum, 1½d. for the next 50,000 units, 1¼d. for the next 50,000 units, 1½d. for the next 50,000 units, 1¼d. for the next 50,000 units and 1d. for each additional unit. The Town Council also stated that they were prepared to undertake the maintenance of the track within the burgh on payment of 100l. per mile of single track by the company. It is also prescribed that cars shall only be run on Sunday if the ratepayers approve on a poll. In reply the company state that they cannot give the price proposed for current, and make an alternative offer; they cannot agree to the terms asked for maintenance of track; they will not proceed with the scheme without Sunday running; they cannot continue the present payment of 3½l. per annum, and they must have a forty-two years' concession.

#### BUILDING AND BUILDERS.

An effort is to be made among employers of labour to induce them to patronise the militia battalions raised in their respective counties, and inducements, it is stated, will be held out to them to accept commissions in the force.

Building operations in Portsmouth are expected to be quite brisk in the future, judging from the exceptionally large number of plans submitted for the approval of the roads and works committee on Monday. No fewer than seventy-five houses figured on the list.

Two or three large building estates are on the eve of development at Winchester. At a Local Government inquiry it was officially estimated that the population of Winchester has increased 2,000 since 1901.

Mr. E. A. SANDFORD FAWCETT, Local Government Board inspector, held an inquiry at New Tredegar into the application of the Bedwelty Urban District Council to borrow 35,000l. for sewerage and sewage disposal for the Bedwelty area.

The Sunderland Town Council have decided to have a scheme prepared for building a sea-wall and promenade at Roker. It is proposed to set the unemployed to do the work during the winter, and it is expected that a grant will be received from the fund at the disposal of Mr. John Burns. The cost is expected to be about 20,000l.

OFFICIAL information has been received at the Emigrants' Information Office to the effect that although a demand for labour in the building trade exists at San Francisco, the present condition of prices in that city makes labour in the United Kingdom better remunerated. Those intending to go out must be prepared for an expensive journey and most expensive living.

Mr. W. G. SUTHERLAND, secretary to the National Association of Master Painters, in the course of his report presented at the opening of the annual conference and exhibition, drew attention to the new Workmen's Compensation Bill, which, he said, was likely to press very heavily on the employers and to be provocative of a great deal of litigation. All this more and more pointed to the necessity of employers protecting themselves against legal costs and personal liability. The year had been singularly free from trade disputes, but it must not be supposed that this was a condition of affairs likely to last. The Trade Disputes Bill would let loose a considerable body of "differences" that might entirely change the situation, and that not for the better. Local associations would need to be on the alert for these troubles. The President's prizes to apprentice students for excellence in general work were awarded as follows:—Gold badge, R. J. Collins, Plymouth; silver badge, John Thomas Wilson, Halifax; bronze badge, Charles Wood, Hull.

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## VARIETIES.

THE Sleaford Rural Council have adopted a scheme for a water supply to six parishes. The cost, as estimated by Mr. Marsden, the surveyor, is 10,750/.

THE rateable value of Birmingham in 1892 was officially put at 2,040,808/.. According to tables just issued it is now 2,891,047/., which is an increase of over 40 per cent. More than half of this is due to building operations.

THE Prince of Wales, who is the owner of the Duchy of Cornwall estate in Kennington, is taking advantage of the falling in of the leases to demolish a number of dilapidated dwellings and to erect in their place model houses.

THE York City Council have accepted the following resolution:—"That the town clerk be instructed to obtain information and report to the Council as to what other corporations are doing to promote the commercial development of the towns and the establishment of new industries."

THE Local Government Board have notified certain distress committees outside London that they are prepared to consider applications from them in respect of the 200,000/.. voted by Parliament for contributions in aid of expenses under the Unemployed Workmen Act.

At a public meeting in the Mansion House, London, it was decided to erect a building to serve as the headquarters of the Young Men's Christian Association, as a memorial to the late Sir George Williams, its founder. The minimum estimated expenditure on the building is 85,000/.

MR. R. G. E. WEMYSS, of Wemyss Castle, Fife, has acquired the British rights of the Mercedes Motor Company, and intends erecting works on a field near Denbeath, Methil. Work will probably be begun with the buildings early in the spring.

THE market hall committee of the Coventry Corporation recommend the City Council to purchase the old Coventry post office for the sum of 3,500/., and to provide for three shops on the ground floor and a corn market and assembly room on the first floor, at the estimated cost of 3,500/.

ACCORDING to returns made by the Kensington rate collectors there are 2,290 empty houses and flats in that borough, an increase of nearly 400 compared with the previous half-year, which is said to be attributable to the

noise and dust occasioned by motor 'bus and other heavy motor traffic.

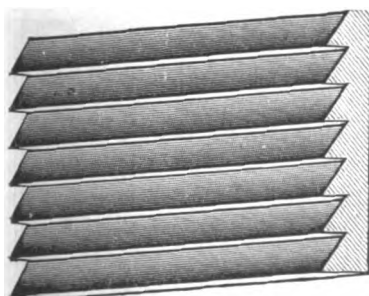
NEGOTIATIONS have been proceeding between the water committees of Coventry and Birmingham with reference to an application by the former for a supply of water from Shustoke reservoir. At a joint meeting of the two committees on Monday provisional terms were agreed upon, subject to confirmation by the Councils of the two cities and ratification by Parliament.

A SYNDICATE is being formed to proceed with a scheme for a "tube" railway under the Ribble from Hesketh Bank on the Southport side to Whanton Bank on the Lytham side, with connections between Wigan, Southport, Liverpool and Blackpool. Mr. A. E. Haigh, resident engineer to the Baker Street and Waterloo Railway, London, has been making an inspection of the Ribble, and taken borings of the strata beneath the river.

THE Glasgow Corporation adopted on the 13th inst. the following motion:—"That, having regard to the numerous fatal and other accidents in public works in the city caused by the non-inspection for long periods of cranes and such like appliances, it be remitted to the Parliamentary Bills committee to obtain from the chief constable a return showing the number of such accidents during the past three years."

THE Grangemouth docks of the Caledonian Railway Company, which have been under construction since 1898, and have cost one and a half millions sterling, have been formally opened. To secure an entrance from the Forth, and do away with two miles of tortuous course up the river Carron, the company acquired 500 acres and constructed a direct channel. The entrance-lock is 525 feet long by 80 feet wide, with a depth of 32 feet at high water. The area of the docks is 116 acres. Immediately inside is a basin of ten acres.

THE Coventry City Council have adjourned for three months the consideration of the proposal that the Coventry Brewery premises in Leicester Row and Leicester Street be purchased for 8,000/.. for the purposes of a refuse destructor and general depot. The recommendation in favour of proceeding with the erection of municipal offices and shops in Earl Street and St. Mary Street at an estimated



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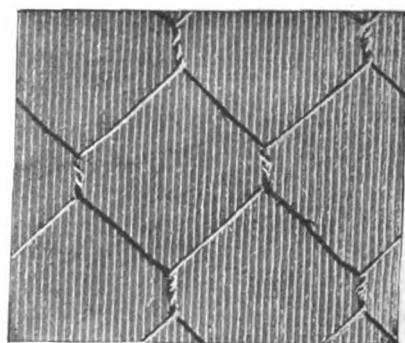
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cost—exclusive of site and furniture—not exceeding 30,000*l.* was adjourned till the next meeting.

THE Tyne Commission have made payment of a further sum of 5,000*l.* to Sir John Jackson, Ltd., on account of work executed up to September 30 in connection with the reconstruction of the North Pier, this bringing the amount sanctioned for payment up to date to 312,500*l.* The engineers reported that very good progress was being made with all sections of the work, more than three-quarters of the raised promenade having been completed.

A COMBINED effort is to be made by the principal high-way authorities in Worcestershire to press upon the County Council the justice of their claims for contributions from the county authority towards the expenses incurred in watering main roads. The County Council have hitherto declined to pay any part of the annual cost of street watering, contending that it does not form any part of "street maintenance."

THE Edmonton District Council have considered a resolution passed by the Ratepayers' Association and Municipal Alliance protesting against the Council adopting a scheme for workmen's dwellings, estimated to cost from 83,000*l.* to 100,000*l.*, when there are nearly 2,000 houses already empty in the parish. The Association will call the attention of the Local Government Board to the condition of the district. The scheme is to be limited to the erection of houses to let at 6*s.* 6*d.* a week.

THE Bradford City Council have adopted the water committee's minutes with reference to the report on afforestation of lands belonging to the water department, which contained a resolution stating that it was undesirable to appropriate any such lands for afforestation "in consequence of it being conclusively proved that there would be a financial loss." The water committee have been instructed to consider the best means of urging on the Government the desirability of a national afforestation scheme.

A LOCAL GOVERNMENT BOARD inquiry was held on the 16th inst. into an application by the Coventry Corporation for sanction to a loan of 4,100*l.* for the erection of eight cottages for labourers upon the farm (1,600*l.*), the provision of a Dutch barn and other buildings. The farm is the property of the Corporation, consists of 482 acres and was

acquired in 1897. Since that time two adjoining farms with acreages of 225 and 210 acres had been rented. It was found very difficult to rent cottages within a reasonable distance.

MR. F. H. TULLOCH, Local Government Board inspector, conducted an inquiry with regard to applications by the Birmingham City Council for sanction to borrow several sums of money, amounting to over 17,000*l.*, for various public improvements. The first application considered was for permission to borrow 12,992*l.* for purposes of street improvement in Alum Rock Road and Lower Loveday Street. Permission to raise 2,748*l.* was asked for the purchase of land in All Saints Ward for purposes of public walks and pleasure-grounds. The last item was for the erection of stables at a cost of 1,200*l.*

THE Middlesbrough Council have agreed (1) that a transporter bridge be erected over the river Tees, and that the Corporation land at each side of the river be utilised for the purpose. (2) That the town clerk be instructed to take all the necessary steps for the promotion of a Bill in Parliament for the purpose of obtaining the requisite powers therefor. (3) That the town clerk engage Parliamentary agents to act in conjunction with him. (4) That a meeting be held at an early date to consider the question of the appointment of an expert engineer.

THE Southend Town Council adopted on the 16th inst. a scheme of sewerage for the town to provide for a population of 100,000 at a cost of 95,000*l.*, including the provision of a covered tank at the eastern boundary of the borough, with a capacity of 1,200,000 gallons, and with an outfall sewer laid across the foreshore a distance of 3,000 yards. The Council deputed a committee to deal with the details. The scheme is the outcome of the adverse judgment in the recent action against the Corporation for the pollution of oysters on the foreshore, three miles west of the pier.

THE sea at Filey has worked the clay out under the foot of the apron in one part of the sea wall, and there is a fear of the damage extending. Mr. Mathews, the engineer to the Bridlington Corporation, in a report suggests that groynes should be run out for some 50 feet at intervals to break the force of the incoming waves. The committee suggest as an alternative that rough boulders and concrete

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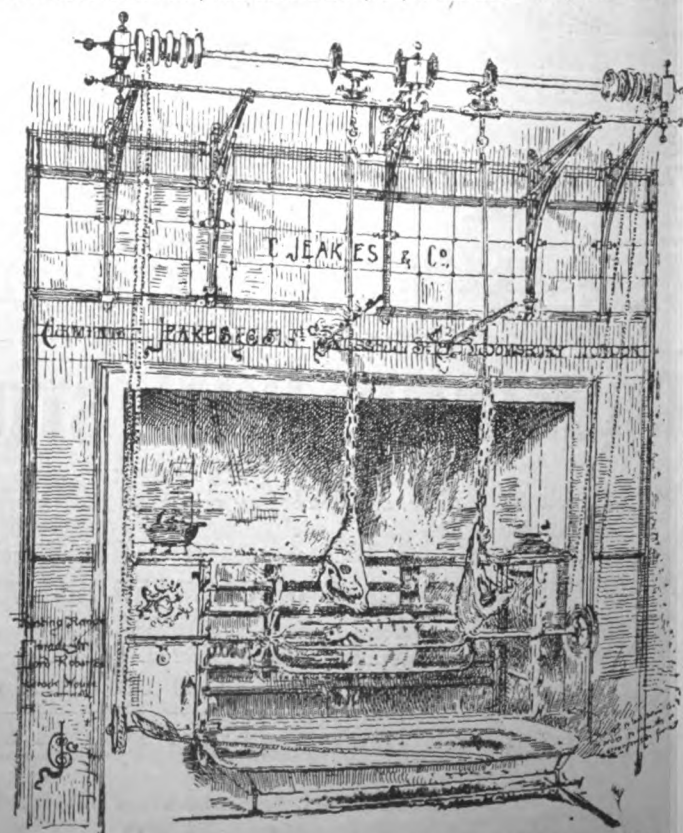
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blocks sunk deep immediately at the foot of the apron would prove equally as effective, it being held that the placing of groynes—after the manner adopted at Bridlington—detracts from the free sweep of the sands.

DURING the month of July 554 buildings or tenements including alterations and additions, were approved by the Johannesburg Town Council, as compared with 857 in the same month of the previous year. The estimated cost of erecting the buildings approved last month is 107,340*l.*, and the number of persons for whom accommodation will be provided in these buildings is: white, 850, and coloured, 1,668—estimated on floor space and sleeping accommodation at 50 square feet for each white and 36 square feet for each coloured person.

THE Cardiff Corporation general purposes committee on the 13th inst. unanimously agreed to refuse to purchase Lord Bute's interest in the Cardiff Docks and Railway Company for the purpose of forming a harbour trust. In a letter Lord Bute's agent said his lordship was far from being anxious to dispose of his dock interest, and had great hesitation in deciding to give the Cardiff Corporation an opportunity of considering the desirability or otherwise of acquiring the properties. The committee did not think it advisable to incur such a heavy financial responsibility.

THE Mersey Docks and Harbour Board have considered a letter from the Liverpool Trade Council requesting that, in view of the large number of men at present out of employment, prompt steps should be taken to begin the extension works at the Brocklebank Dock. These works have already received the sanction of Parliament, and are estimated to cost about 250,000*l.* The Board expressed the utmost sympathy with the request, and hoped that circumstances may before long be so favourable that the work may be taken in hand.

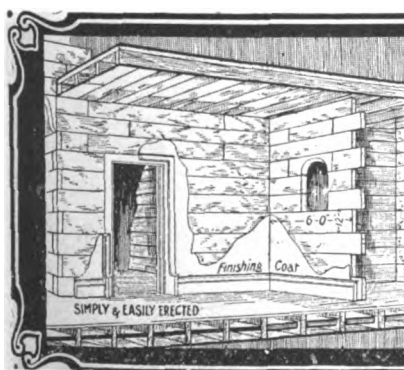
THE Isle of Capri is providing facilities for visitors. Work on the funicular railway, which will connect the landing-place at the Grande Marina with the Piazza, has been in progress for the last six months and is advancing rapidly. A company has been formed in Milan, with a capital of 20,000*l.*, to construct the funicular railway, to light the towns of Capri and Anacapri with electricity, and to pump Serino water for drinking purposes direct from tank-

boats to a reservoir above the Villa Behring. The contractors are under contract to complete the railway by the spring of 1907, and an easy and inexpensive communication will thus be provided from the boat-landing to the town of Capri.

THE Ellesmere Town Council recently offered a premium of 20*l.* for the best scheme of dealing with the sewage disposal. There were nineteen competitors, viz.:—Messrs. Berrington, Son & Martin, Wolverhampton; Mr. F. W. S. Stanton, Bristol; Messrs. Spinks & Pilling, Leeds; Mr. H. S. Watson, London; Mr. H. J. Weaver, Gloucester; Mr. W. M. Beckett, Manchester; Messrs. Callum & Wood, Manchester; Mr. E. V. Edmunds, Llangollen; Mr. A. H. Mountain, Manchester; Mr. C. Matthews, Nantwich; Mr. C. A. Atkinson, Liverpool; Mr. E. Garside, Ashton-under-Lyme; Mr. C. J. Lomax, Westminster; Messrs. Elliott & Brown, Nottingham; Messrs. Beesley, Son & Nichols, Westminster; Messrs. Newton, Son & Bayley, Manchester; Mr. C. Nicholson Lailey, Westminster; "Rate" and "Economy." A report will be presented later.

THE Aberdeen Town Council on Monday again had under consideration the question of the Aberdeen water-supply. The Council at a previous meeting decided by a majority of one vote to take steps to obtain powers from Parliament to take a fresh supply of water from the river Avon. The water committee were instructed on Monday to consider anew the whole question of the water-supply and employ further expert advice, and to obtain from the burgh surveyor a report as to the construction of filter beds at Invercarnie, with the view of putting a stop without delay to the existing contamination. The construction of filter beds as suggested is estimated to cost about 80,000*l.* The necessary power for the construction of these filter beds was obtained by the Town Council some years ago.

A NEW system of drainage, which has cost about 50,000*l.*, for the lower part of the area covered by the Esher and Ditton Urban District Council, has been inaugurated. The total length of concrete sewer constructed in tunnel was about 11,419 feet; the sewer was constructed *in situ*, and of the dimensions of 3 feet 9 inches and 3 feet 6 inches, egg-shaped. The maximum depth of the sewer was 62 feet, and the minimum, by Thames Ditton post-office, 33 feet.



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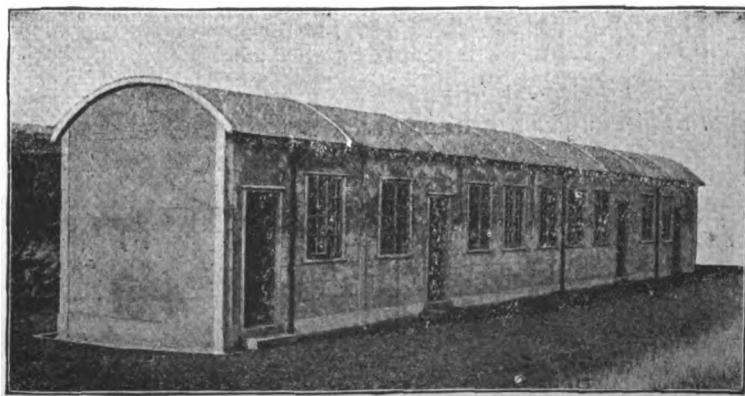


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The gradient was 1 in 1,000, and the discharging capacity per day of twenty-four hours, when running full, was equal to about  $9\frac{1}{2}$  million gallons. The gravitation scheme was prepared by Mr. A. J. Henderson, with Sir A. Binnie as consulting engineer. Messrs. Mowlem & Burt were the contractors.

THE Governors of the Glasgow and West of Scotland Technical College state in their annual report that a beginning had been made with the second section of the new buildings, which would form the centre block of the Andersonian wing, facing George Street. The foundation-work had been completed, and the main walls brought to ground level, but operations had been suspended for lack of funds. The Governors had determined that they would not place a load of debt upon the college, and they did not propose to enter into further contracts until additional subscriptions had been promised. The present position of the building and equipment fund is as follows:—Subscriptions, &c., 245,371*l.* 5*s.* 7*d.*; expenditure—site, 44,653*l.*; buildings, first section, 155,607*l.*; equipment, 22,272*l.*; foundations of second section, about 5,000*l.*; making a total of 227,532*l.*, leaving a balance available for second section of 17,839*l.* 5*s.* 7*d.* This balance included a grant of 10,000*l.* which the City Council had been good enough to promise from the Common Good, conditional upon a grant of at least an equal amount being received from the Education Department. The decision of the Education Department regarding the allocation of funds in their hands, out of which a grant to the building fund may be made, was not yet known, but it was believed that favourable consideration would be given to the application of the Governors. The buildings already erected, which are of the most substantial character and fireproof throughout, had cost not more than 7*½d.* per cubic foot.

#### ENGINEERING IN AMERICA.

THE number of engineers who are competent to carry out works of water-supply in America must be excessive to allow of the publication of the following advertisement:—Proposals will be received from engineers on October 9,

A.D. 1906, for making plans and specification of a reservoir for the improved water-supply of the city of Ada, Indian Territory, and for other improvements to the water system of said city. Each engineer will be required to submit complete plans and specifications for the work to be done, accompanied with their proposal to superintend the work, and their estimate in detail of the cost of the work; said estimate shall fully cover the cost of construction work and engineering services. Each engineer shall furnish evidence from some solvent surety company that in the event that contractors bidding on the work under his plans and specifications, shall result in no responsible bids for the construction of work at or below said estimated cost, that the bonding company will make bond for said engineer in the sum of not less than ten thousand (10,000) dols., guaranteeing the cost of said work shall not exceed the amount of said engineer's estimate. Engineers entering this competition shall so draw their plans and specifications that the city may purchase their material direct from the manufacturers, and that the contractor shall bid in the assembling and construction of those materials into the proposed work. Each competitive plans and specifications shall bear the approval of the Oklahoma Board of Fire Underwriters. The city will employ that engineer whose plans and specifications and proposal to do the work shall appear to be the most advantageous to the city of Ada, reserving the right to reject any and all proposals, it being distinctly understood that the city will not be indebted to any competing engineer except one who may be employed to superintend the work."

#### COST OF CONCRETE CONSTRUCTION.

CONCRETE construction in buildings in New York has been threatened with a serious handicap by an agreement recently made between the master masons and the bricklayers' union, under which all the work of placing concrete is to be done by bricklayers. One of the great merits of concrete-work about buildings has been that it was done by unskilled labour. The moulds had to be prepared and set by skilled men, but the concretework itself could be done by the most ignorant class of labourers, provided they worked under

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good supervision. Under the new agreement it will be necessary to pay at least 4.80 dols. per day per man for this simple work, and in consequence the cost of concrete construction in buildings will be materially increased. Fortunately the very conditions of the new agreement will doubtless lead in time to its abandonment as impracticable. The large amount of concrete in buildings will demand the services of more bricklayers than can be furnished by the union, yet it is safe to say that the skilled men now in that organisation will not admit to its ranks unskilled men for the purpose of furnishing men for concretework alone. The *Engineering Record* considers that this condition cannot last very long. Moreover, how far the affiliations between the unions in the building trades will go to help the bricklayers make a strong fight for the agreement is a little uncertain, because a concrete building gives employment to an usually large number of carpenters in making and setting forms, and any reduction in concrete construction accordingly affects adversely the carpenters of the city.

### LOANS FOR BUILDING.

DURING the year 1905-6 the Public Works Loan Board advanced the sum of 27,050*l.* for providing dwellings for the working classes on the security of property, viz.:—2,000*l.* to the Bedlinog Building Club towards cost of erecting twenty-three dwelling-houses in the parish of Gelligaer, in the county of Glamorgan, repayable in ten years with interest at 3½ per cent. per annum; 4,800*l.* to the Cieracca Building Club towards cost of erecting forty-eight dwelling-houses in Gwladys Street, Dowlais, Merthyr Tydfil, repayable in five years with interest at 3¼ per cent. per annum; 5,000*l.* to the East End Dwellings Company, Ltd., towards erecting dwellings for the working classes in the parish of St. Matthew, Bethnal Green, with a frontage to Old Ford Road, repayable in thirty years with interest at 3¼ per cent. per annum; 8,000*l.* to the Twyn Carno Building Club towards ninety-one dwelling-houses in the parish of Bedwellty, in the county of Monmouth, repayable in eight years with interest at 3½ per cent. per annum; 4,250*l.* to the Tonypany Building Club, being the first advance of a loan of 4,500*l.*, towards erecting thirty-six dwelling-houses in the

parish of Ystradfydwg, repayable in sixteen years with interest at 3½ per cent. per annum; 3,000*l.* to the Victoria Building Club (Rhymney) towards erecting twenty-nine dwelling-houses in the parish of Bedwellty, in the county of Monmouth, repayable in six years with interest at 3½ per cent. per annum.

There were also loans secured on rates—10,737*l.* to the Salford Corporation, repayable in ten years with interest at 3½ per cent. per annum; 454*l.* to the West Ham Corporation, repayable in 40 years with interest at 3½ per cent. per annum. By the Education (London) Act, 1903, the liability of the London School Board for the repayment of loans advanced by the Public Works Loan Commissioners was transferred to the London County Council. A large proportion of these loans bear the same rate of interest (viz. 3½ per cent. per annum), and were made repayable within periods which would expire at various dates between the years 1908 and 1929. The Public Works Loan Board arranged with the County Council to consolidate all the 3½ per cent. loans into one account, with an equated period for repayment, the dates of repayment to be March 31 and September 30 in each year, and the period to expire on March 31, 1926.

In the Report for 1899-1900 it was mentioned that the Public Works Loan Commissioners were in possession of Newlyn harbour as mortgagees, that the undertaking was being carried on by a committee of management appointed by them, and that all arrears in respect of the Public Works Loan Board's loans had been wiped off. Under the capable management of the local committee the affairs of the harbour have continued to prosper; the trade, chiefly fishing, has greatly increased, and with it, of course, the revenue, and but for the fact that the existing arrangement has been attended by results so satisfactory to the locality and the public, this Board would probably before this have relinquished possession. Circumstances have now arisen which, in this Board's opinion, point to the desirability of this course being now adopted. The existing facilities at the harbour for landing and handling fish and merchandise are no longer adequate to the increased trade, and this Board having satisfied themselves that urgent need exists for the provision of additional accommodation by means of somewhat extensive works, including new wharfage, a trawl-fish market, a jetty, &c., have promoted a provisional order

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under the General Pier and Harbour Acts, containing the necessary powers for the carrying out of the works, and constituting a new Board of Harbour Commissioners in place of the Commissioners constituted by the previous orders, who for some years past have ceased to be elected. This order now awaits confirmation by Parliament, and on this being done the Public Works Loan Board propose, in the absence of any unforeseen developments, to relinquish possession of the harbour.

### AUDITING OF BUILDING ACCOUNTS.

THE district auditor for metropolitan boroughs, in his report on the accounts of the Shoreditch Borough Council to March 1905, says:—"The long delay in the completion of the audit has arisen almost entirely from the failure to produce necessary vouchers for the payments made by the Council in settlement of contracts. In the case of the building of the Haggerston baths (65,924/.) and of the town hall extensions (23,473/.), and of the payments to the architects and quantity surveyors in regard thereto, the Council were not in a position to show that the sums paid were in accordance with the terms of the respective contracts. In one case the necessary vouchers were, after some correspondence, obtained by the town clerk; but in the other case, the town hall extensions, I was informed on April 19 last that, in view of the fact that the architect refused to supply the required vouchers without an undertaking to pay his charges, the Council had resolved that they could not obtain the papers, and left it to the auditor to exercise his statutory powers in regard to their production. The only voucher originally produced in support of the payment to the builder was a certificate signed by the architect. The contract itself contained numerous and elaborate provisions in regard to the manner in which this payment should be calculated, but there is no evidence that any information as to how the total was arrived at, beyond verbal explanations, was given to the Council or its committee at the time of payment. I was compelled to require the production by the architect of the papers relating to the settlement, and after considerable correspondence he eventually decided not to let the question of my right to do so be taken into Court,

and attended with a large amount of papers. A long time had elapsed since the settlement, and a number of papers were missing. It was only by the help of a rough pencil note that we could find out approximately how the total was arrived at, and several large items included in the calculation were entirely unsupported by detail, e.g. 'additions to tower, 2,620l. 7s. 5d.' It was impossible to verify the correctness of the settlement from this material, but I am of opinion that Mr. Hunt did all he could to explain the matter, and a careful examination of the papers produced left me with the impression that he had exercised more than ordinary care in adjusting the provisional sums. As to the correctness of the claim for commission upon extras and omissions, amounting to 14,651l. 5s. 9d., I have no means of judging, as neither the architect nor the quantity surveyors could show how the total had been arrived at. The charge has been passed upon a sworn declaration of its correctness recently made by the quantity surveyors. It is my duty to point out that the expenditure referred to above has not been duly vouched. It is, in my opinion, important that evidence should be submitted both to the Council and to the auditor sufficient to show that the terms of the contracts have been observed in calculating the payments. I would add that a considerable experience of the matter has proved to me that it is in the settlement of contracts more than anywhere else that loss will arise from a neglect of the regular system of supervising and checking the correctness of the charges."

### BUILDERS AND SURFACE DRAINS.

A CASE was decided on Monday by the stipendiary magistrate, Birmingham, which suggests the legal difficulties and offences which can arise out of the laying down of surface drains. Mr. Edward Airey, builder, was summoned for constructing a surface water sewer on the east side of a new road. The defendant at the outset pleaded guilty, but he was again summoned for constructing a similar sewer on the other side of the road.

Mr. Maddocks, barrister for the defendant, contended that, in the first place, the matter was *res judicata*, in the second there was no by-law relative to surface water, whilst

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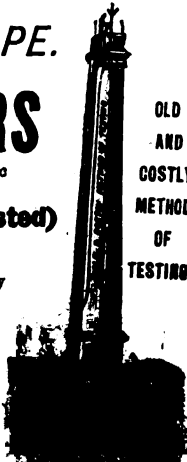
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thirdly it was not a continuing offence. Defendant adopted a drainage scheme of his own and that was an offence, but the adoption of that scheme and the carrying of it out was one offence. The second sewer was merely part of the whole scheme and was covered by the first summons, whereas the Corporation was asking that defendant should be punished twice for the one offence. Until 1903 the Birmingham Corporation had no power to make any provision for separate sewers. In 1903 they obtained power to acquire two separate sewers, one a sewage sewer and the other a surface water sewer, but when the by-laws under which the summons had been taken were made the Corporation had no control of surface water sewerage.

Mr. Prideaux, for the Corporation, said they had had control of surface water since 1848.

Mr. Maddocks went on further to contend that the by-laws as they stood were not applicable.

The stipendiary reserved his decision.

On Monday, according to the *Birmingham Daily Post*, the stipendiary, Mr. Morton Brown, explained that two summonses had been taken out under by-law 4 (e) of the building by-laws (according to the numbering of the by-laws in the small book in use in the trade) charging the defendant with carrying out works for the drainage of a new street off Warr Lane, Harborne, otherwise than in accordance with the requirements of the city surveyor, the fact being that he laid down a small drain on each side of the road, and connected the two for the purpose of draining the surface water into an open water-course behind the houses on the east side of the road. The first summons was heard on March 20 last, when the works were in progress on the east side of the road. The defendant then pleaded guilty, but at counsel's request the matter was adjourned in order that he might remove the cause of complaint, and so avoid a penalty. There had been many further adjournments from time to time in order that the defendant should put things right, but he had done nothing. On the contrary, it was found early in August last that he was carrying out similar works on the west side of the road. On August 17 the Corporation served the defendant with a notice that he was committing this further offence. The works, however, continued, and another summons was issued, being made returnable for September 29. The two

summonses were further adjourned until October 1 and then until October 8. No friendly conclusion being arrived at, the case was argued on that date, and he (the stipendiary) reserved his judgment. He pointed out that counsel had contended that the works on the west side were a part of the same scheme commenced on the east side, but he pointed out that the two works were carried out at distinct and different times, and although they might be part of the same idea defendant had in his mind he had carried them out within the meaning of the by-law on two separate occasions, and there were therefore two offences; secondly, the Corporation had asked for a continuing penalty from August 17, the date of the notice of the second offence. The by-law provided for the infliction of a continuing penalty of 40s. per day after receipt of a written notice from the Corporation. To this an objection was raised that the summons itself should have charged the defendant with committing the continuing offence. The stipendiary held that the principle laid down in the case of *James v. Wyvill* was good law, and overruled the objection. A further point raised on behalf of the defendant was that, as the Corporation was only given power in 1903 to insist upon a separate sewer for surface water, and as the by-laws were passed in 1876, they did not apply, and consequently there was no offence. He (Mr. Morton Brown) held that, having regard to the language of Section 65 (2) of the Corporation Act, 1903, he must overrule that objection. Apart from the section, it appeared to him that the city surveyor might possibly insist on two sewers in the road, as he was given a discretionary power in the by-laws to lay down the mode of drainage. In regard to the penalties, the stipendiary said he had to consider the behaviour of the defendant in the matter. The case had been adjourned from time to time to meet the defendant, and the Court and Corporation had shown him every possible leniency. The Corporation had met him and his surveyor more than once to explain matters, and had twice already reduced the depth at which it required the sewers to be laid. That prescribed was the minimum depth that could be permitted. The defendant had foolishly and obstinately refused to carry out the requirements of the Corporation. He (the stipendiary) must fine him the maximum amount of 5l. on the first summons and a similar amount on the second, in addition to 2l. per day for the

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period of fifty days since August 17. These fines would amount to 110*l*. He would also have to pay the Court costs.

Mr. Prideaux applied for professional costs, pointing out that the extra cost entailed in the case owing to the defendant's obstinacy ought not to fall upon the ratepayers.

The stipendiary granted 5*l*. 5*s*., which brought the total amount of fines and costs to 121*l*. 4*s*. A stay of distress was granted for eight days pending the defendant's decision as to whether he would ask for a case to be stated on the points of law raised.

### THE PAINTING TRADE.

At the Conference in Leeds of the National Association of Master Painters Mr. E. H. Matthey (Birmingham) read a paper on "The Present-day Conditions of the Painting Trade—Commercialism and Craftsmanship." Dividing his subject into four sections, he first touched upon the education of workmen. In no business, he said, was a working knowledge of the trade more necessary than among master painters, no trade where the personal factor was more needed. A master painter should be a draughtsman, colourist, naturalist, chemist, organiser, mathematician and a gentleman. Were not the workmen what commercialism had made them, and did not the employers too often regard them as "hands," and not men? True commercialism, he went on to say, would insist on the best production. Technical schools and schools of art had been provided by many municipalities, and would do good if rightly used. But he was convinced great sums of money were wasted, rates and taxes being paid away in a shoddy form of instruction, largely, if not entirely, because commercial men had not realised that they should interest themselves in the work carried on. Mr. Matthey went on to suggest the institution of local competitions and exhibitions of work, while local lectures might be given to masters, men and the public. They grumbled, he said, because in competitive work public bodies and private clients too often considered the cost first and the quality afterwards. Cheap labour was one cause of that state of affairs, and he held it should be the business of trade unions to see that capability should be a condition of membership. He held that they should demand of trade unions that they should give them

capable men. There was only one honest way of pricing work, which was that each job should pay its own way. There must be competition, but why should there be this game of beggar-my-neighbour? Mr. Matthey proceeded to speak of the quality of work, and urged that the public got better value out of an accomplished craftsman than out of a man whose chief asset was ignorance. Public authorities, he held, could do very much to prevent the present system of laying layer upon layer of paper on the walls of dwelling-houses and covering up the dirt and germs of disease. There was a tendency, too, in some quarters to use showy ready-made ornamentation, but he believed the average home was more artistic in its decoration than formerly. This necessitated on the part of the painter an increased knowledge of restraint, fitness, selection and method, because the simple work was often more difficult to perfect. Speaking with reference to the question of the status of the trade, Mr. Matthey remarked that perhaps they might have an uneasy feeling that they were a despised community, looked upon as a necessary evil, to be called upon to pursue the more arduous portions of spring cleaning. But they must be honest traders and show the possibilities of honest work. Theirs was a handicraft of great possibilities, not merely an occupation, and they must make their work express character, and thoroughness and honesty.

Mr. Johnson (Leicester) suggested that Mr. Matthey's paper should be printed and distributed to the members of the local associations, as it would do a great deal of good.

Mr. Harrison (Plymouth) said there would be no hope for the raising of the painting trade unless they faced some of the moral issues that lay before them. They were not so thwarted by untutored workmen as by immoral workmen. Some of the best craftsmen he had had for the duty of "captaining" had been men who had turned out most disappointing and the greatest failures, because they lacked moral principle. Every one of them as employers had a certain bias against trade unions. He was not an enemy of them, but he had a lurking fear of them, and believed that their salvation lay in a friendly acknowledgment of, and a real practical association with, trade unions.

Mr. Brown, of Newcastle, proposed a vote of thanks to Mr. Matthey for his paper.

This was seconded by Mr. Breakspeare and carried.

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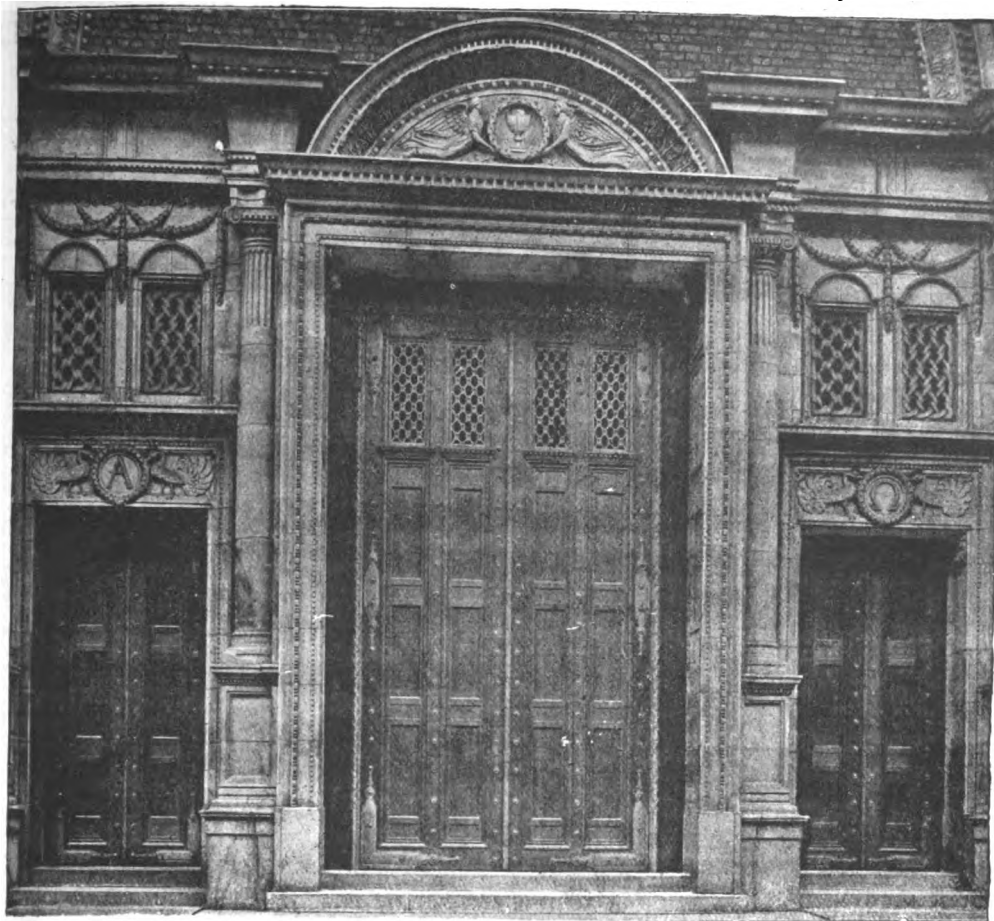
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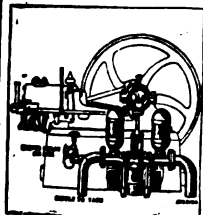
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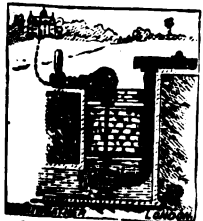
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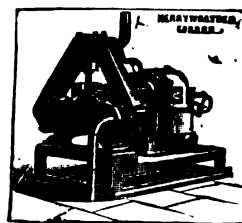
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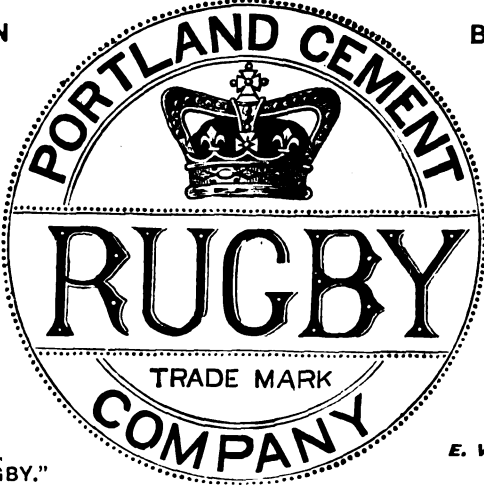
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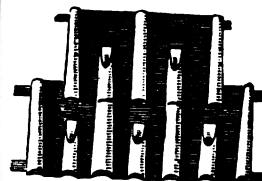


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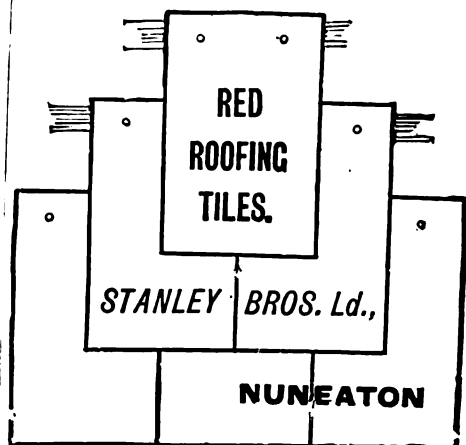
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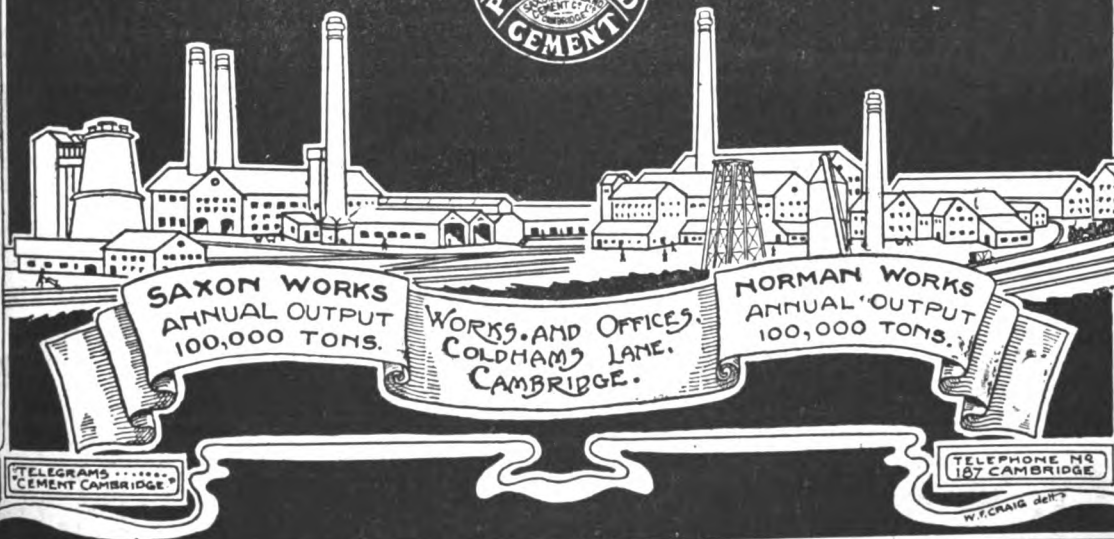
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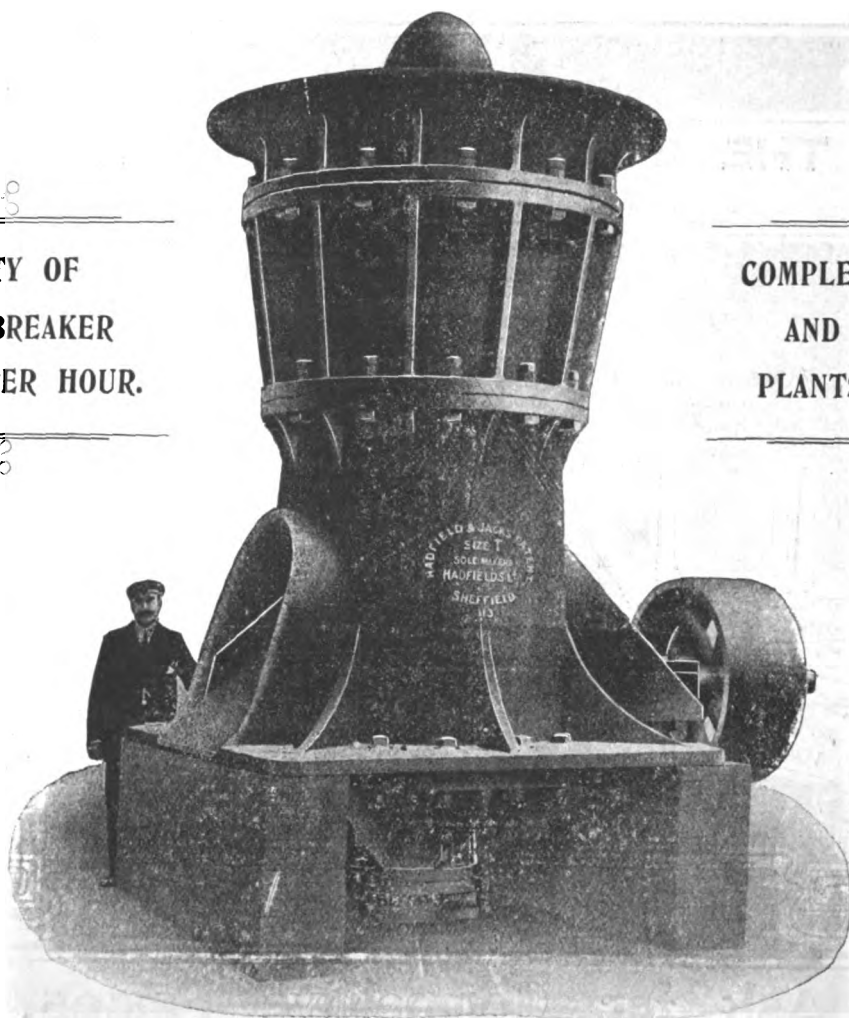
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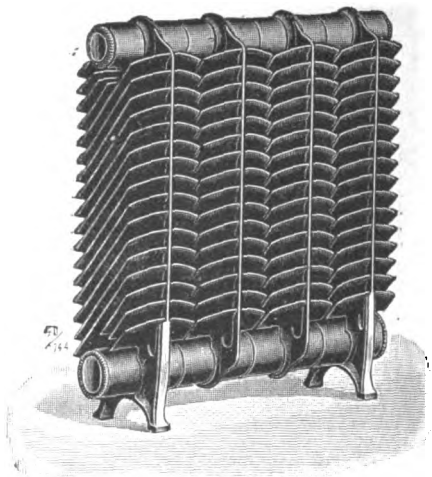
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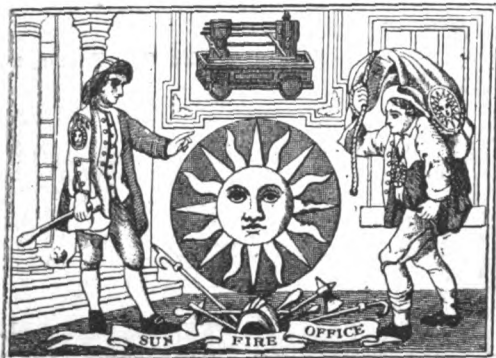
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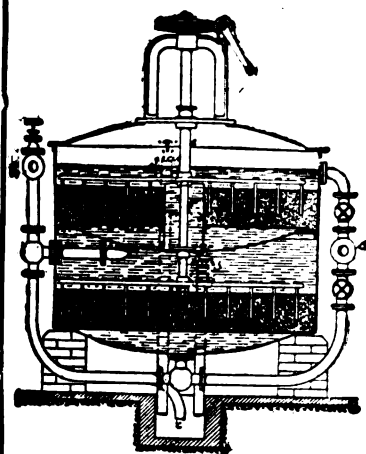
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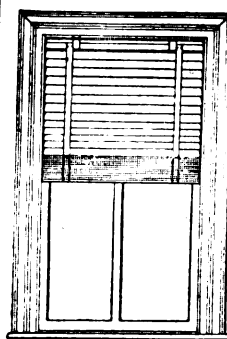
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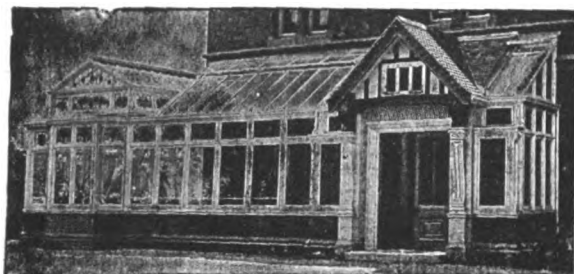
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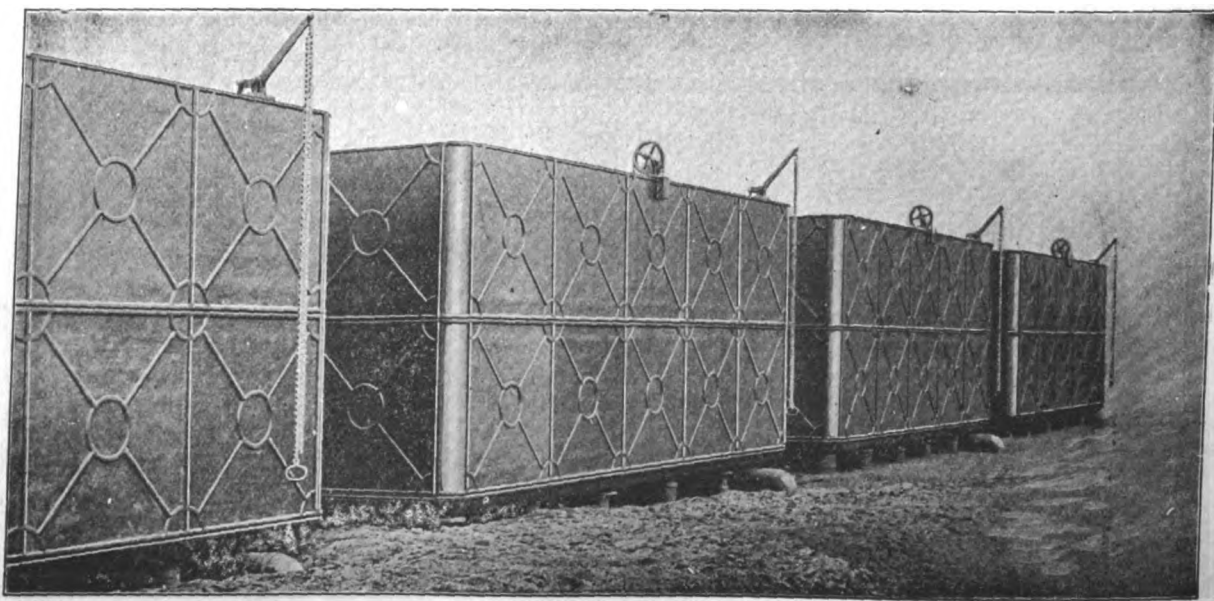
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THE  
**Architect and Contract Reporter.**

FRIDAY, OCTOBER 26, 1906.

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Architects and Civil Engineers of Westminster.**

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

**EDITORIAL NOTICES.**

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further

answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

**TENDERS, ETC.**

\* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

**COMPETITIONS OPEN.**

EARLESTOWN.—Nov. 30.—The Newton-in-Makerfield Urban District Council invite competitive plans for erection of a public library, the total cost, exclusive of site, not to exceed 4,000l. Mr. C. Cole, clerk, Town Hall, Earlestown, Lanes.

GLASGOW.—Dec. 12.—The Corporation of Glasgow invite competitive designs for laying-out the estate at Riddrie, by the erection thereon of small self-contained houses. Premiums of 75l., 50l. and 25l. will be awarded. Mr. A. W. Myles, town clerk, City Chambers, Glasgow.

GOOLE.—Dec. 31.—The Goole Joint Body of Governors invite competitive designs for erection of a dual secondary school, accommodating 200 students, with provision for the conduct of technical and evening classes. Premiums of 50l. and 25l. Deposit 2l. 2s. Mr. James Wm. Johnson, clerk to the Governors, Council Offices, Goole.

MONTEVIDEO.—Dec. 14.—La Comision Nacional de Caridad require competitive plans for new foundling hospital with approximate cost. Plans and report, under mottoes, and, in sealed envelope, name and address of competitor. The four selected plans will receive 212l. each, and will be asked to further compete. Further particulars from the Consulate-General for Uruguay, 5 and 6 Clement's Inn, Strand, W.C.

SHEFFIELD.—The Guardians of the Poor of the Sheffield Union invite plans from local architects for alterations to the union and vestry offices in Westbar. Premiums of 25l., 15l. and 10l. Mr. E. Holmes, assessor, 38 Church Street. Particulars from Mr. A. E. Booker, Union Offices, Westbar.

SUNDERLAND.—Feb. 1.—The committee of the Sunderland infirmary invite designs for a children's hospital. Premiums of 100l., 50l. and 25l. are offered. Deposit 1l. 1s. Mr. Thomas Robinson, secretary, Infirmary Offices, Bank Buildings, Sunderland.

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WOLVERHAMPTON.—Dec. 31.—The Board of Management of the Wolverhampton and Staffordshire general hospital, Wolverhampton, invite competitive designs for a nurses' home adjoining the hospital. Mr. J. Stephen Neil, house governor and secretary.

### CONTRACTS OPEN.

ALDERSHOT.—Oct. 31.—For the erection of the first portion of the Catholic Soldiers' Institute, South Camp. Deposit 1*l*. Mr. W. Bevan, architect, 90 Parliament Chambers, Great Smith Street, Westminster, London, S.W.

AMBLESIDE.—Nov. 1.—For carrying-out alterations and additions to the residence known as Brown Howe; also to lodge and outbuildings at Blawith, near Greenodd. Mr. W. L. Mason, architect, Ambleside.

ARMLEY.—Oct. 31.—For the erection of block at the workhouse, 3 Green Hill Road, Armley, near Leeds. Deposit 1*l*. 1*s*. Mr. C. Fredk. Wilkinson, architect, 35 Park Square, Leeds.

BALBY.—Oct. 30.—For alterations and repairs at Balby Mixed Provided school, near Doncaster. Mr. L. J. Blackburn, divisional clerk, 10 Priory Place, Doncaster.

BELFAST.—Oct. 29.—For slating the roof of the extension of their new motor-car shed at Belfast terminus for the Great Northern Railway Co. (Ireland). Deposit 1*s*. Mr. W. H. Mills, engineer-in-chief, Amiens Street Terminus, Dublin.

BELFAST.—Oct. 30.—For the building of school in connection with St. Clement's Church, Castlereagh Street. Messrs. C. W. Ashe & Son, civil engineers and architects, 7 Waring Street, Belfast.

BELFAST.—Nov. 12.—For the erection of shops and warehouse in Smithfield. Mr. Thomas Houston, architect and civil engineer, Kingscourt, Wellington Place, Belfast.

BELFAST.—Nov. 15.—For the construction of an underground convenience in Donegall Street North. Deposit 1*l*. 1*s*. The City Surveyor's Office, Belfast.

BIRKENHEAD.—Oct. 31.—For the erection and completion of eighteen tenement dwellings on the east side of Egerton Street. Deposit 3*l*. 3*s*. Mr. C. Brownridge, M.I.C.E., borough engineer, Town Hall, Birkenhead.

CLEVELEYS.—Nov. 20.—For the erection of a public elementary school at Cleveleys, near Fleetwood, Lancs, to accommodate 300 scholars. Deposit 2*l*. Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

COLCHESTER.—Nov. 6.—For the foundations of the main building at the Essex lunatic asylum at Mile End. Deposit 20*l*. The County Asylum Office, 4 Duke Street, Chelmsford.

ELSTEAD.—Nov. 5.—For the erection of sanitary outbuildings at Elstead schools, near Godalming. Messrs. F. A. & A. W. Mellersh, surveyors, Godalming.

EPSOM.—Nov. 12.—For the erection of two acute blocks and the rebuilding of a nurses' block at the Manor asylum, Epsom, Surrey, for the London County Council. Deposit 5*l*. The Clerk of the Asylums Committee, 6 Waterloo Place, London, S.W.

EXETER.—Oct. 30.—For the erection of offices at Exeter (St. David's) Station, for the Great Western Railway Co. The Engineer at Plymouth (North Road) Station.

FARNWORTH.—Nov. 3.—For the erection of a public elementary school in Plodder Lane. Deposit 1*l*. 1*s*. Mr. H. Rostron, secretary of education, Education Office, Darley Street, Farnworth, near Bolton.

GLASGOW.—Nov. 14.—For (1) the digger, mason and bricklayer's work; (2) the cast-iron and steelwork; (3) the fireproof floors; (4) the wrightwork; (5) the metal sashes; (6) the roof glazier's work; (7) the wood block floors; (8) the slater's work; (9) the plumber's work; and (10) the plasterer's work required in connection with the Mitchell library buildings to be erected in North Street. Deposit 5*l*. 5*s*. Mr. William B. Whitie, 219 St. Vincent Street, Glasgow.

GREAT BURSTEAD.—Oct. 27.—For structural alterations and additions to the Council school, Great Burstead, Essex. Mr. Frank Whitmore, architect, 73 Duke Street, Chelmsford.

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**HIGH SPEN.**—Nov. 1.—For the erection of thirty-nine cottages at High Spenn, for the Consett Iron Company. Mr. Chas. E. Oliver, architect, at the general offices of the company at Consett.

**HIPPERHOLME.**—Nov. 5.—For the mason, joiner, plasterer, roof-tiler and plumberwork required in the erection of a detached house. Messrs. J. F. Walsh & Graham Nicholas, architects, Museum Chambers, Halifax.

**HOLBECK.**—Oct. 29.—For all trades required in additions and alteration of works and offices. Deposit 1*l*. Names by October 22. Mr. James B. Fraser, architect, Leeds.

**ILFORD.**—Nov. 12.—For the roofing in with reinforced concrete of the septic tanks, &c., at the outfall works, Loxford Lane. Deposit 2*l*. 2*s*. Mr. H. Shaw, engineer and surveyor to the Council, Town Hall, Ilford.

**IRELAND.**—Oct. 30.—For the erection and completion of a parish church at Timoleague, co. Cork. Deposit 3*l*. 3*s*. Mr. M. A. Heunessy, architect, 74 South Mall, Cork.

**KENDAL.**—Nov. 1.—For additions and alterations to the Colin Croft brewery. Mr. John Stalker, architect, Kendal.

**LONDON.**—For the supply and erection of the steel skeleton framing of a proposed factory in London, 410 feet long, 86 feet wide and six storeys high. Deposit 2*l*. 2*s*. Mr. R. Anderson, architect, 39 Victoria Street, Westminster.

**LONDON.**—Oct. 31.—For alterations and additions at 96 King Street, Hammersmith, for the Borough Council. Mr. H. Mair, borough surveyor, Town Hall, Broadway, Hammersmith, W.

**MANCHESTER.**—Oct. 29.—For the taking-down and removal of certain buildings at the Rochdale Road gas-works. Mr. C. Nickson, superintendent, Gas Department, Town Hall, Manchester.

**MANCHESTER.**—Oct. 30.—For the erection of the Oswald Road Municipal school, Chorlton-cum-Hardy. Deposit 2*l*. 2*s*. The Education Offices, Deansgate, Manchester.

**NEWTON-IN-MAKERFIELD.**—Nov. 30.—For the erection of a public library at an inclusive cost of 4,000*l*. Mr. C. Cole, Clerk, Town Hall, Earlestown, Lancs.

**NORDELPH.**—Nov. 3.—For the following works at the Chapel farm, for the Norfolk County Council:—Conversion of house into two cottages, drainage and subdivision of

yard and buildings, fencing of grass land. Mr. E. C. Warner, Nordelph.

**NORTH SHIELDS.**—Nov. 14.—For proposed secondary school and pupil teachers' centre at Hawkey's Lane. Deposit 1*l*. 1*s*. Mr. J. C. Maxwell, architect, 25 Eldon Square, Newcastle-on-Tyne.

**ODIHAM.**—Nov. 5.—For alterations at the Odiham police station, Hants. Deposit 2*l*. 2*s*. Mr. W. J. Taylor, county surveyor, Winchester.

**ORMESBY.**—Nov. 2.—For the enlargement of the Ormesby school, Norfolk. Deposit 1*l*. 1*s*. Messrs. Olley & Haward, architects, 5 Queen Street, Great Yarmouth.

**OTLEY.**—Nov. 2.—For the erection of board-room, offices, &c., for the Guardians of Wharfedale Union. Messrs. Fairbank & Wall, architects, 3 Manor Square, Otley, Yorks.

**OUTLANE.**—Oct. 29.—For the erection of a boundary wall at the children's homes, Outlane, Huddersfield. Mr. E. A. Rigby, clerk, Union Offices, Ramsden Street.

**POOLE.**—Nov. 15.—For the erection of additional buildings and alterations to the schools at Hamworthy. Mr. H. F. J. Barnes, architect and surveyor, Towngate Street, Poole.

**PORTLAND.**—Nov. 1.—For the erection of a clock tower in Portland stone in Easton Square Gardens. Deposit 1*l*. 1*s*. Mr. R. Stevenson Henshaw, engineer and surveyor, Council Offices, New Road, Portland.

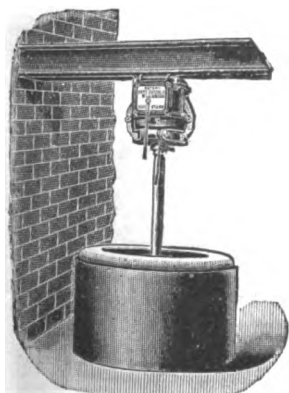
**RYE.**—Oct. 31.—For new grammar school. Mr. E. J. Cory, High Street, Rye, Sussex.

**ST. BLAZEY.**—Oct. 30.—For the erection and completion of shops, stores and other offices at Station Road, St. Blaze. Deposit 1*l*. 1*s*. Mr. F. C. Jury, architect, 1 Alma Villas, Tregonissey Road, St. Austell.

**SCOTLAND.**—Oct. 29.—For the mason, carpenter, plumber, plaster, painter and ironwork of shop front and alterations at 33 and 35 High Street, Elgin. Mr. John Wittet, architect, Elgin.

**SCOTLAND.**—Oct. 30.—For the mason, carpenter, slater, plasterer, plumber, painter and glazier's work of alterations and additions to existing police-station, 49 Castle Street, Fraserburgh. Messrs. Reid & McRobbie, architects, Saltoun Chambers, Scaforth Street, Fraserburgh.

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SCOTLAND.—Oct. 31.—For the mason, carpenter, plumber, slater, plasterer, painter and glazier's work of semi-detached houses to be erected in King Edward Street, Fraserburgh. Mr. Wm. S. F. Wilson, architect, Broad Street, Fraserburgh.

SCOTLAND.—Nov. 2.—For the masons' work of staircase to be erected in front of the old town hall, Linlithgow. Deposit 17. 1s. Mr. W. M. Scott, architect, Linlithgow.

SEATON.—Oct. 27.—For the erection and completion of a house in Station Lane. Mr. James Garry, architect, 47 Church Street, West Hartlepool.

SHOTLEY BRIDGE.—Oct. 26.—For building proposed motor-house for the Derwent Flour Mills Society. Mr. John J. Eltringham, architect and surveyor, Derwent Street, Blackhill.

SHOTLEY BRIDGE.—Oct. 29.—For additions and alterations to offices and house, Front Street. Mr. John J. Eltringham, architect and surveyor, Derwent Street, Blackhill.

SURBITON.—Nov. 1.—For the following works, for the Urban District Council:—(1) Erecting a dwarf boundary wall, about 80 feet in length, in front of the electricity station, Ewell Road, Surbiton; (2) providing and erecting 8 feet oak pale fence and gates, about 500 feet in length, on the east and north sides of the electricity station, Ewell Road, Surbiton. The Surveyor, District Council Offices, Surbiton.

WALES.—For building a detached house at Haverfordwest. Mr. C. W. Harvey, architect, 76 Rodney Street, Liverpool.

WALES.—Oct. 27.—For erecting eight semi-detached villas at Gorseinon, Swansea. Messrs. Williams & Henton, architects and surveyors, Bank Chambers, Heathfield Street, Swansea.

WALES.—Oct. 30.—For alterations and additions to the isolation hospital, Ystrad, Rhondda, including the erection of a pavilion, combined convalescent and discharging block,

and additions to the present administrative block, laundry and stable blocks, for the Rhondda Urban District Council. Deposit 27. 2s. Mr. W. D. Morgan, architect, Post Office Chambers, Pentre.

WALES.—Oct. 31.—For the erection of shop premises, coach-house and stables (with conveniences) in Plymouth Road, Merthyr. Deposit 17. 1s. Mr. T. Edmund Rees, architect, Gernant, Merthyr.

WALES.—Oct. 31.—For the erection of a laundry building on the corner of Pendryis Street and Mardy Street (off Clare Road), Cardiff. Deposit 27. 2s. Messrs. James & Morgan, architects, Charles Street Chambers, Cardiff.

WALES.—Nov. 8.—For the builder, painter, decorator and furnisher's work in connection with the conversion into offices of Bank House, Spilman Street, Carmarthen. County Surveyor, King Street, Carmarthen, or of the County Education Architect, Shire Hall, Carmarthen.

WALES.—Nov. 10.—For carrying-out extensive alterations to and the renovation of the Wesleyan chapel, Pontypool. Mr. Gath J. Fisher, architect, Club Chambers, Pontypool.

WALES.—Nov. 14.—For the erection of a school for the accommodation of 300 boys, 300 girls and 300 infants, together with cookery and manual instruction centres, Treforest, Pontypridd. Deposit 37. 3s. Mr. P. R. A. Willoughby, A.M.I.C.E., surveyor to the Council, Municipal Buildings, Pontypridd.

WALES.—Nov. 17.—For erection of a minister's house at Station Road, Ynyshir. Mr. E. Thomas, 16 South Street, Ynyshir, Rhondda.

WALES.—Nov. 28.—For erection of stone and steel bridge at Glanrafonddu, near Talley, Llandilo, Carmarthen-shire. Mr. Charles H. Mounsey, county engineer and surveyor, Carmarthen.

WALLSEND.—Nov. 2.—For the erection of municipal buildings. Deposit 37. 3s. Messrs. Liddle & Brown, architects, Prudential Buildings, Mosley Street, Newcastle-upon-Tyne.

WESTON-SUPER-MARE.—Oct. 29.—For the erection of an additional ward at the statutory hospital, Uphill Drive Road. Mr. Hugh Nettleton, surveyor, Town Hall.

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**WILLINGTON.**—Nov. 9.—For the erection of stone walls to enclose new cemetery ground at Willington, Durham. Mr. J. H. Gardner, surveyor, Oxford House, Willington, Durham.

**WIMBLEDON.**—Nov. 5.—For the carrying-out of the following works, for the education committee, viz.:—(1) Erection of two shelters in the playground of the special school and alterations of playgrounds at the Queen's Road school; (2) painting of railings round the Dundonald Road schools; and (3) painting of external wood and ironwork of the old portion of the Queen's Road school. Education Office, 12 Queen's Road, Wimbledon.

**WOOLWICH.**—Oct. 31.—For women's dining hall at the union house, High Street, Plumstead. Deposit 1*l.* 1*s.* Mr. J. O. Cook, architect, 1A Eleanor Road, Woolwich.

The Local Taxation Returns (Part V.), giving the accounts of borough councils, excluding London, was published as a Blue-book on the 15th inst. During 1903-4 a sum of 4,436,662*l.* was raised by loan by the councils of county and non-county boroughs acting as municipal authorities. This sum was divided as follows:—Tramways and light railways, 2,879,697*l.*; education (elementary), 595,470*l.*; education (higher), 117,252*l.*; lunatic asylums, 217,642*l.*; bridges and ferries, 59,448*l.*; police stations, 53,772*l.*; public libraries, museums and schools of science and art, 49,187*l.*; other purposes (exclusive of the advances mentioned below), 155,849*l.*; advances made to school boards (since dissolved) and to other local authorities out of loans raised by the town councils, 63,869*l.* Town councils acting otherwise than as municipal authorities raised loans amounting to 11,720,539*l.* The purposes and amounts of the various loans were as follows:—Electric lighting (including public electric lighting), 2,868,076*l.*; street improvements, 2,415,493*l.*; waterworks, 2,076,850*l.*; sewerage and sewage disposal works, 920,544*l.*; harbours, piers, docks, &c., 694,569*l.*; housing of the working classes, 685,231*l.*; gasworks, 587,533*l.*; other purposes, 1,475,565*l.* The total municipal debt is 219,000,000*l.*

## TENDERS.

### ASHORNE (LEAMINGTON).

For the pulling-down of existing premises and rebuilding the Cottage tavern at Ashorne, near Leamington, for Messrs. Lucas & Co., Ltd. Mr. C. M. C. ARMSTRONG, architect, Warwick.

|                                       |      |    |   |
|---------------------------------------|------|----|---|
| B. & F. Bradshaw . . . . .            | £996 | 12 | 0 |
| Bailey . . . . .                      | 879  | 0  | 0 |
| Smith & Son . . . . .                 | 866  | 0  | 0 |
| SHEASBY, Barfold (accepted) . . . . . | 838  | 9  | 4 |

### BADMINTON.

For works at Petty France. Mr. BASIL SLADE, architect, 27B Charles Street, Berkeley Square, London, W.

|                                      |        |   |   |
|--------------------------------------|--------|---|---|
| Estcourt & Sons . . . . .            | £2,700 | 0 | 0 |
| Stephens, Bastow & Co., Ltd. . . . . | 2,698  | 0 | 0 |
| Ford & Sons . . . . .                | 2,588  | 0 | 0 |
| Collins & Godfrey . . . . .          | 2,587  | 0 | 0 |
| Saunders & Sons . . . . .            | 2,530  | 0 | 0 |
| Orchard & Peer . . . . .             | 2,350  | 0 | 0 |

### CAERPHILLY.

For street works. Mr. A. O. HARPUR, surveyor. Accepted tenders.

|                                                     |      |    |    |
|-----------------------------------------------------|------|----|----|
| Rutter, Barry—Station Terrace, Senghenydd . . . . . | £359 | 15 | 6  |
| Rutter, Barry—Station Road, Senghenydd . . . . .    | 381  | 0  | 10 |
| Rutter, Barry—High Street, Abertridwr . . . . .     | 690  | 14 | 2  |
| Rutter, Barry—Main Road, Llanbradach . . . . .      | 715  | 11 | 11 |

### CHESTERFIELD.

For the construction of two small shops. Mr. V. SMITH, borough surveyor.

|                                               |      |    |    |
|-----------------------------------------------|------|----|----|
| Wright . . . . .                              | £327 | 10 | 0  |
| Collis & Sons . . . . .                       | 292  | 9  | 10 |
| LEE & KIRK, Chesterfield (accepted) . . . . . | 225  | 14 | 6  |

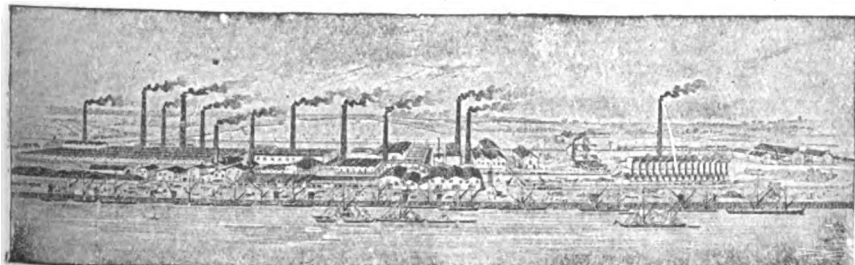
### CHILSWORTHY.

For the erection of Wesleyan church and schoolroom. Mr. F. J. WERDEN, architect, Okehampton.

|                                       |      |   |   |
|---------------------------------------|------|---|---|
| Martin . . . . .                      | £960 | 0 | 0 |
| Green, Son & Co. . . . .              | 885  | 0 | 0 |
| Kelly . . . . .                       | 876  | 0 | 0 |
| ROSHLY, Albaston (accepted) . . . . . | 849  | 0 | 0 |

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## CROYDON.

For the erection of school in Davidson Road. Mr. H. CARTER PEGG, architect, Thornton Heath.

|                                          |         |   |   |
|------------------------------------------|---------|---|---|
| Davies                                   | £19,800 | o | o |
| Kerridge & Shaw                          | 18,530  | o | o |
| Marriott & Salter                        | 18,298  | o | o |
| Grace & Marsh                            | 18,140  | o | o |
| Blay                                     | 18,106  | o | o |
| Patman & Fotheringham                    | 18,000  | o | o |
| Johnson & Co.                            | 17,966  | o | o |
| Foster & Dicksee                         | 17,920  | o | o |
| Potter Bros.                             | 17,870  | o | o |
| Willcock & Co.                           | 17,850  | o | o |
| Bulled & Co.                             | 17,800  | o | o |
| Akers & Co.                              | 17,691  | o | o |
| Singleton                                | 17,635  | o | o |
| Oak Building Co.                         | 17,550  | o | o |
| Barker                                   | 17,495  | o | o |
| Perry & Co.                              | 17,466  | o | o |
| Drowley & Co.                            | 17,400  | o | o |
| J. & M. Patrick                          | 17,289  | o | o |
| Saunders                                 | 17,285  | o | o |
| Johnson & Son                            | 17,280  | o | o |
| Bowen & Sons                             | 17,250  | o | o |
| Lascelles & Co.                          | 17,250  | o | o |
| Nightingale                              | 16,999  | o | o |
| Smith & Sons                             | 16,985  | o | o |
| Faulks                                   | 16,890  | o | o |
| Everitt                                  | 16,840  | o | o |
| Spencer, Santo & Co.                     | 16,800  | o | o |
| Smith & Sons                             | 16,786  | o | o |
| Minter                                   | 16,779  | o | o |
| Holloway                                 | 16,762  | o | o |
| Barker & Co.                             | 16,697  | o | o |
| Wallace & Sons                           | 16,430  | o | o |
| Chessum & Sons                           | 16,415  | o | o |
| Moss & Sons                              | 16,340  | o | o |
| Lawrence & Son                           | 16,239  | o | o |
| APPLEBY & SONS, Lambeth, S.E. (accepted) | 15,900  | o | o |

## DEWSBURY.

For works required in extension of the workhouse infirmary. Messrs. HOLTON & Fox, architects, Dewsbury.

## Accepted tenders.

|                                           |        |    |    |
|-------------------------------------------|--------|----|----|
| J. & B. Allat, Heckmondwike, mason        | £3,926 | o  | o  |
| Wilson Bros., Dewsbury, joiner            | 1,250  | o  | o  |
| Newsome, Dewsbury, plumber                | 624    | 10 | o  |
| McFarlane, Leeds, concreter               | 309    | 6  | 11 |
| A. & F. Hodgson, Dewsbury, plasterer      | 252    | 14 | o  |
| Brear & Son, Dewsbury, slater             | 169    | o  | o  |
| Wallis & Watson, Leeds, electric lighting | 158    | 10 | o  |
| Firth, Dewsbury, ironfounder              | 112    | 10 | o  |
| Jackson, Dewsbury, painter                | 94     | o  | o  |

For works required in erection and completion of branch store, house, &c., for the Dewsbury Pioneers' Industrial Society. Messrs. HOLTON & Fox, architects, Dewsbury.

## Accepted tenders.

|                                      |      |    |   |
|--------------------------------------|------|----|---|
| Whitehead & Son, Ravensthorpe, mason | £480 | o  | o |
| Smith & Son, Batley Carr, joiner     | 312  | o  | o |
| Newsome, Dewsbury, plumber           | 87   | 15 | o |
| Firth, Dewsbury, ironwork            | 82   | 12 | 6 |
| Bullock, Batley Carr, flour bins     | 46   | 10 | 6 |
| Fawcett, Dewsbury, slater            | 27   | 10 | o |
| Jackson, Dewsbury, painter           | 24   | 15 | o |
| A. & F. Hodgson, Dewsbury, plasterer | 23   | 9  | 6 |

## EARLS BARTON.

For the erection of central hall and additions at Council schools. Mr. SHARMAN, architect.

|                             |        |   |   |
|-----------------------------|--------|---|---|
| Bayes & Son                 | £1,675 | o | o |
| Packwood                    | 1,632  | o | o |
| Brown & Son                 | 1,598  | o | o |
| Gent & Middleton            | 1,593  | o | o |
| Stephens                    | 1,549  | o | o |
| Haxley Bros.                | 1,519  | o | o |
| Harris Bros.                | 1,510  | o | o |
| Goodman & Murkit            | 1,495  | o | o |
| SHARP & ROBINSON (accepted) | 1,420  | o | o |

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|                                                                                 |            |
|---------------------------------------------------------------------------------|------------|
| For erecting a school and out-offices. Mr. W. H. SIMPSON, architect, Leicester. |            |
| Johnson & Son                                                                   | £4,190 0 0 |
| Exors. of Moss                                                                  | 4,110 0 0  |
| J. & J. Warner                                                                  | 4,085 0 0  |
| Weston & Son                                                                    | 4,052 18 6 |
| Orton & Son                                                                     | 3,834 0 0  |
| Moss & Sons                                                                     | 3,800 0 0  |
| Griffin Bros., Hugglescote (accepted)                                           | 3,800 0 0  |

**HANDSWORTH.**

|                                                                        |          |
|------------------------------------------------------------------------|----------|
| For improvement works in Wellington Road. Mr. H. RICHARDSON, surveyor. |          |
| Currall, Lewis & Martin, Birmingham (accepted)                         | £286 0 0 |

**KIRTLINGTON (OXFORD).**

|                                                                                                                               |          |
|-------------------------------------------------------------------------------------------------------------------------------|----------|
| For the conversion of building into estate office, for Sir George Dashwood, Bart. Mr. C. M. C. ARMSTRONG, architect, Warwick. |          |
| Wyatt & Son                                                                                                                   | £160 0 0 |
| Steele                                                                                                                        | 146 0 0  |
| GRIMSLEY & SON, Bicester (accepted)                                                                                           | 138 0 0  |

**KINGSWINFORD.**

|                                                                                                                                                                 |             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| For supply and delivery of about 715 tons of cast-iron pipes, varying in size from 16 inches to 27 inches diameter. Mr. WILLIAM FIDDIAN, engineer, Stourbridge. |             |
| Holwell Iron Co.                                                                                                                                                | £3,748 11 6 |
| Jarrow & Co.                                                                                                                                                    | 3,683 1 9   |
| Sheepbridge Ironworks                                                                                                                                           | 3,580 9 10  |
| Alfreton Ironworks                                                                                                                                              | 3,437 6 7   |
| Parsons, Ltd.                                                                                                                                                   | 3,430 19 5  |
| COCHRANE & Co., Woodside (accepted)                                                                                                                             | 3,239 5 0   |
| Stanton Ironworks                                                                                                                                               | 3,151 17 10 |

**LONDON.**

|                                                                                                                                            |          |
|--------------------------------------------------------------------------------------------------------------------------------------------|----------|
| For fire mains, &c., new addition buildings at St. John's Road workhouse. Mr. WILLIAM SMITH, A.R.I.B.A., architect, 65 Chancery Lane, W.C. |          |
| Inns                                                                                                                                       | £353 0 0 |
| Cannon & Son                                                                                                                               | 341 15 0 |
| Barker & Co.                                                                                                                               | 315 10 0 |

**LONDON—continued.**

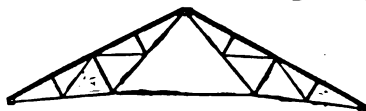
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|-----------------------------------------------------------------------------------------------------------------------------------------|----------|
| Vaughan, Brown & Cook                                                                                                                   | £309 0 0 |
| Johnson & Son                                                                                                                           | 298 2 0  |
| Merryweather.                                                                                                                           | 295 0 0  |
| Keith, Blackman & Co.                                                                                                                   | 290 0 0  |
| Dargue, Griffith & Co.                                                                                                                  | 289 0 0  |
| Moorwood, Sons & Co.                                                                                                                    | 286 0 0  |
| Pemberton, Arber & Co.                                                                                                                  | 279 15 0 |
| Fryer & Co.                                                                                                                             | 269 16 0 |
| J. & F. May                                                                                                                             | 260 0 0  |
| Mellows & Co.                                                                                                                           | 253 0 0  |
| Shand, Mason & Co.                                                                                                                      | 252 0 0  |
| Watford Engineering Co.                                                                                                                 | 246 0 0  |
| Stubbs, Son & Hall                                                                                                                      | 245 0 0  |
| Berry & Son                                                                                                                             | 234 0 0  |
| Cannon & Hefford.                                                                                                                       | 229 0 0  |
| Harding.                                                                                                                                | 226 0 0  |
| BIRD & Co., 11 Great Castle Street, W. (accepted).                                                                                      | 224 0 0  |
| For heating, &c., new addition buildings at St. John's Road workhouse. Mr. WILLIAM SMITH, A.R.I.B.A., architect, 65 Chancery Lane, W.C. |          |
| Dargue, Griffith & Co., Ltd.                                                                                                            | £552 0 0 |
| Johnson & Son                                                                                                                           | 452 2 0  |
| J. & F. May                                                                                                                             | 445 0 0  |
| Vaughan, Brown & Cook                                                                                                                   | 423 0 0  |
| Keith, Blackman & Co.                                                                                                                   | 400 0 0  |
| Grundy                                                                                                                                  | 397 0 0  |
| Taylor & Fraser                                                                                                                         | 395 0 0  |
| Pemberton, Arber & Co.                                                                                                                  | 380 10 0 |
| Cannon & Sons                                                                                                                           | 377 13 0 |
| Berry & Sons                                                                                                                            | 377 0 0  |
| Hulett & Co., Ltd.                                                                                                                      | 361 15 0 |
| Barker & Co., Ltd.                                                                                                                      | 353 15 0 |
| Cannon & Hefford                                                                                                                        | 349 0 0  |
| Harding                                                                                                                                 | 330 10 0 |
| Fryer & Co.                                                                                                                             | 321 0 0  |
| Brighthouse Foundry and Engineering Co.                                                                                                 | 304 0 0  |
| Bushby & Co.                                                                                                                            | 295 0 0  |
| Watford Engineering Co.                                                                                                                 | 260 0 0  |
| Stubbs, Son & Hall                                                                                                                      | 258 10 0 |
| MELLOWS & Co., 28 Victoria Street, Westminster (accepted)                                                                               | 217 0 0  |

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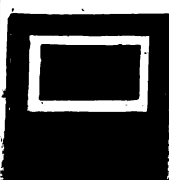
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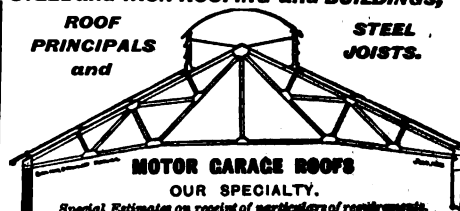


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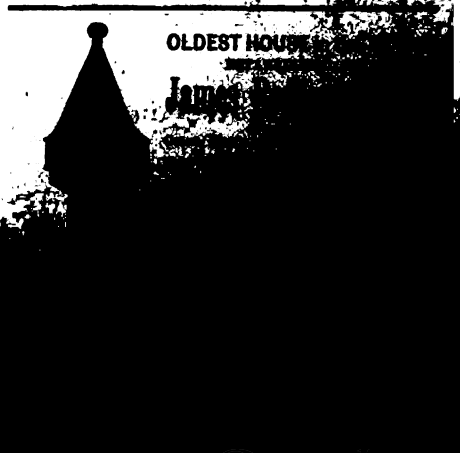
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## LONDON—continued.

For gas fittings, &c., to new addition buildings at St. John's Road workhouse. Mr. WILLIAM SMITH, A.R.I.B.A., architect, 65 Chancery Lane, W.C.

|                                                           |      |    |   |
|-----------------------------------------------------------|------|----|---|
| Inns                                                      | £178 | 0  | 0 |
| Berry & Sons                                              | 167  | 0  | 0 |
| Keith, Blackman & Co.                                     | 145  | 0  | 0 |
| Moorwood, Sons & Co., Ltd.                                | 133  | 0  | 0 |
| J. & F. May                                               | 125  | 0  | 0 |
| Cannon & Sons, Ltd.                                       | 114  | 15 | 0 |
| Pemberton, Arber & Co.                                    | 113  | 10 | 0 |
| Vaughan, Brown & Cook                                     | 113  | 0  | 0 |
| Pontifex & Co.                                            | 112  | 10 | 0 |
| Fernhead                                                  | 111  | 10 | 0 |
| Johnson & Son                                             | 107  | 12 | 0 |
| Mellows & Co.                                             | 107  | 0  | 0 |
| Barker & Co.                                              | 105  | 5  | 0 |
| Weekes                                                    | 100  | 6  | 2 |
| Fryer & Co.                                               | 98   | 0  | 0 |
| Hulett & Co., Ltd.                                        | 93   | 0  | 0 |
| Cannon & Hefford                                          | 89   | 10 | 0 |
| Watford Engineering Co.                                   | 87   | 10 | 0 |
| Harding                                                   | 82   | 0  | 0 |
| STUBBS, SON & HALL, 26 Herbert Road, Wimbledon (accepted) | 75   | 0  | 0 |

For laying pipes from Child's Hill to Cranley Gardens, for the Metropolitan Board.

|                                    |         |    |    |
|------------------------------------|---------|----|----|
| Docwra & Sons                      | £42,267 | 18 | 3  |
| Mowlem & Co.                       | 42,115  | 0  | 0  |
| Aird & Sons                        | 38,548  | 15 | 11 |
| Kellett, Ltd.                      | 38,024  | 4  | 7  |
| Nunn                               | 37,851  | 13 | 10 |
| Bell & Sons                        | 35,216  | 17 | 8  |
| Dobson                             | 34,617  | 3  | 8  |
| Crawford                           | 34,064  | 5  | 2  |
| McAlpine & Sons                    | 33,336  | 18 | 2  |
| Muirhead & Co.                     | 32,464  | 9  | 6  |
| Moran & Son                        | 29,786  | 8  | 9  |
| Egan & Sons                        | 28,697  | 2  | 4  |
| Zadig & Co.                        | 26,612  | 8  | 2  |
| Davies, Ball & Co.                 | 24,954  | 1  | 0  |
| WRIGHT & Co., Leicester (accepted) | 22,666  | 2  | 10 |

## LONDON—continued.

For construction of filters, &c., at Barn Elms, &c., for the Metropolitan Water Board.

|                                  |         |    |    |
|----------------------------------|---------|----|----|
| Wimpey & Co.                     | £46,660 | 0  | 0  |
| Docwra & Son                     | 42,539  | 9  | 4  |
| Aird & Sons                      | 39,852  | 17 | 4  |
| Mowlem & Co.                     | 36,252  | 0  | 0  |
| Perry & Co.                      | 32,787  | 0  | 0  |
| Manders                          | 27,925  | 17 | 8  |
| Pedrette & Co.                   | 27,673  | 13 | 5  |
| Muirhead & Co.                   | 27,265  | 9  | 10 |
| Adams                            | 25,026  | 18 | 0  |
| Nunn                             | 24,396  | 10 | 3  |
| Pethick Bros.                    | 23,810  | 0  | 0  |
| Neal, Ltd.                       | 22,346  | 18 | 6  |
| Hill & Co.                       | 21,700  | 0  | 0  |
| Wall, Ltd.                       | 19,800  | 0  | 0  |
| Kirk & Randall                   | 19,348  | 0  | 0  |
| Moss & Sons                      | 18,923  | 3  | 6  |
| Moran & Son                      | 18,846  | 1  | 11 |
| Smith & Co.                      | 17,935  | 8  | 5  |
| Braithwaite & Co.                | 17,336  | 15 | 1  |
| Hay & Co.                        | 17,329  | 8  | 8  |
| Davies, Ball & Co.               | 17,122  | 13 | 6  |
| Kellett, Ltd.                    | 16,843  | 9  | 0  |
| HOLLIDAY & GREENWOOD (accepted)* | 15,749  | 13 | 3  |

\* Plus £450 should a jetty be required.

## Castings.

|                              |       |    |   |
|------------------------------|-------|----|---|
| Cochrane & Co.               | 1,505 | 7  | 6 |
| Oakes & Co.                  | 1,493 | 16 | 8 |
| Holwell Iron Co.             | 1,481 | 7  | 6 |
| Staveley Coal and Iron Co.   | 1,476 | 1  | 0 |
| STANTON IRONWORKS (accepted) | 1,455 | 4  | 2 |

For painting, &c., at pumping station, Green Lanes, for the Metropolitan Water Board.

|                             |        |   |   |
|-----------------------------|--------|---|---|
| Godson & Sons               | £1,103 | 0 | 0 |
| Patman & Fotheringham       | 818    | 0 | 0 |
| Webb & Son                  | 664    | 0 | 0 |
| Grove & Son                 | 587    | 0 | 0 |
| TROLLOPE & COLLS (accepted) | 540    | 0 | 0 |



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HODDESDON, HERTS.

Contractor to H.M. Government.  
India Office, &c.

English and Swedish Designs.  
Gymnastic Section Book 2, Information and Plans Gratis.

LONDON—continued.

For providing and fixing an additional vertical steam boiler altering the existing heating apparatus, and executing the necessary builder's work at the Upton House truant school, South Hackney.

|                                         |      |    |   |
|-----------------------------------------|------|----|---|
| Wippell Bros. & Row                     | £574 | 15 | 3 |
| Stevens & Sons                          | 550  | 0  | 0 |
| Esson & Son                             | 480  | 0  | 0 |
| Defries & Sons                          | 369  | 15 | 0 |
| Palowkar & Sons                         | 369  | 0  | 0 |
| G. & E. Bradley                         | 335  | 10 | 0 |
| J. & F. May                             | 330  | 0  | 0 |
| Yetton & Co.                            | 316  | 5  | 0 |
| Brightside Foundry and Engineering Co.  | 299  | 10 | 0 |
| Grundy, 30 Duncan Terrace (recommended) | 287  | 0  | 0 |
| Architect's estimate                    | 275  | 0  | 0 |

For adapting No. 50 Halstow Road for the accommodation of the schoolkeeper of the Halstow Road school, Greenwich, and for the rooms now in his occupation over the laundry centre to be adapted for the purposes of a housewifery centre.

|                                                      |      |   |   |
|------------------------------------------------------|------|---|---|
| Leng                                                 | £223 | 0 | 0 |
| Smith & Sons                                         | 212  | 0 | 0 |
| Akers & Co.                                          | 204  | 0 | 0 |
| Grace & Marsh                                        | 199  | 0 | 0 |
| J. & C. Bowyer                                       | 186  | 0 | 0 |
| Groves, 16 Stockwell Street, Greenwich (recommended) | 167  | 0 | 0 |
| Architect's estimate                                 | 250  | 0 | 0 |

For demolition of keeper's lodge and the erection of a new one at Wormwood Scrubs.

|                                         |      |    |   |
|-----------------------------------------|------|----|---|
| Richards & Son                          | £725 | 0  | 0 |
| Clayton                                 | 500  | 0  | 0 |
| W. & T. Bain                            | 494  | 10 | 0 |
| F. & G. Foster                          | 494  | 0  | 0 |
| Colwell & Edgar                         | 480  | 0  | 0 |
| Richardson                              | 443  | 10 | 0 |
| Martin, Wells & Co.                     | 405  | 10 | 0 |
| Christie                                | 388  | 5  | 0 |
| Abbot & Charlton                        | 384  | 10 | 0 |
| BARKER & Co., Kensington, W. (accepted) | 382  | 0  | 0 |

LONDON—continued.

For adaptation for park purposes of the mansion in the Island Gardens, Poplar.

|                     |      |    |   |
|---------------------|------|----|---|
| Richards & Son      | £592 | 10 | 0 |
| Howie               | 547  | 0  | 0 |
| Abbot & Charlton    | 536  | 10 | 0 |
| Clemens             | 443  | 19 | 6 |
| Newell & Lusty      | 425  | 0  | 0 |
| Martin, Wells & Co. | 422  | 0  | 0 |
| Mills               | 414  | 0  | 0 |
| F. & T. Thorne      | 407  | 0  | 0 |
| Sustins             | 396  | 0  | 0 |
| Stewart             | 374  | 0  | 0 |
| Woollaston & Co.    | 366  | 0  | 0 |
| Lously & Salmon     | 359  | 0  | 0 |
| Harding & Son       | 345  | 10 | 0 |
| Western             | 300  | 0  | 0 |

GRIGGS & SONS, 71 Manchester Road (accepted).

Architect's estimate 268 0 0

For adapting No. 91 East Lane for the accommodation of the schoolkeeper of the East Lane school (Rotherhithe), and for fitting-up the premises occupied by him as a housewifery centre.

|                                    |      |   |   |
|------------------------------------|------|---|---|
| Appleby & Sons                     | £456 | 0 | 0 |
| Downs                              | 435  | 0 | 0 |
| Goad                               | 430  | 0 | 0 |
| Galbraith Bros.                    | 425  | 0 | 0 |
| Leng                               | 419  | 0 | 0 |
| Chalkley                           | 415  | 0 | 0 |
| Marsland & Sons                    | 410  | 0 | 0 |
| Groves                             | 385  | 0 | 0 |
| Lapthorne & Co.                    | 379  | 0 | 0 |
| Line, 81 Peckham Rye (recommended) | 333  | 0 | 0 |
| Architect's estimate               | 250  | 0 | 0 |

For alterations to engines at Park pumping station, Tottenham, for the Metropolitan Water Board.

|                          |      |    |   |
|--------------------------|------|----|---|
| Hayward, Tyler & Co.     | £313 | 18 | 0 |
| Simpson & Co.            | 249  | 0  | 0 |
| Hunter & English         | 220  | 0  | 0 |
| Yates & Thom             | 220  | 0  | 0 |
| LILLESALL Co. (accepted) | 189  | 15 | 0 |

C. B. N. SNEWIN & SONS, LTD.

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**MANCHESTER**

TRAFFORD PARK.

SUMMER DRIED SEASONED BATH STONE FOR WINTER USE.



## LONDON—continued.

For cleaning and painting at the Northern hospital, for the Metropolitan Asylums Board.

|                                                  |        |    |   |
|--------------------------------------------------|--------|----|---|
| Wagstaff & Sons . . . . .                        | £3,835 | 0  | 0 |
| Ridgway . . . . .                                | 3,107  | 9  | 3 |
| Skevington Bros. . . . .                         | 2,654  | 12 | 6 |
| Gavin Bros. . . . .                              | 2,428  | 18 | 9 |
| Turnpenny . . . . .                              | 2,370  | 12 | 0 |
| Christie . . . . .                               | 2,324  | 2  | 5 |
| Carr . . . . .                                   | 2,165  | 0  | 0 |
| Dudley . . . . .                                 | 2,098  | 8  | 5 |
| Nightingale . . . . .                            | 2,060  | 0  | 0 |
| Smith & Co. . . . .                              | 1,854  | 19 | 1 |
| Burnell & Sons . . . . .                         | 1,829  | 10 | 7 |
| Mills . . . . .                                  | 1,770  | 0  | 0 |
| Proctor & Son . . . . .                          | 1,760  | 0  | 0 |
| Broadbank . . . . .                              | 1,662  | 14 | 9 |
| McCarthy . . . . .                               | 1,397  | 0  | 0 |
| Simms & Sons, Nottingham (recommended) . . . . . | 1,394  | 19 | 0 |
| Wright & Co. . . . .                             | 1,288  | 8  | 6 |
| Engineer's estimate . . . . .                    | 1,350  | 0  | 0 |

For providing and fixing new boiler at the Waldron Road school, Wandsworth.

|                                                                 |      |    |   |
|-----------------------------------------------------------------|------|----|---|
| Defries & Sons . . . . .                                        | £127 | 10 | 0 |
| Davis . . . . .                                                 | 120  | 0  | 0 |
| Kite & Co. . . . .                                              | 115  | 0  | 0 |
| G. & E. Bradley . . . . .                                       | 109  | 10 | 0 |
| Stevens & Sons . . . . .                                        | 99   | 10 | 0 |
| Cannon & Heford, Stanbury Road, Peckham (recommended) . . . . . | 85   | 0  | 0 |
| Architect's estimate . . . . .                                  | 85   | 0  | 0 |

For widening south-western approach to Putney bridge.

|                                                       |        |    |    |
|-------------------------------------------------------|--------|----|----|
| Greig & Matthews . . . . .                            | £5,705 | 13 | 11 |
| Parry & Co. . . . .                                   | 5,656  | 7  | 6  |
| Cochrane & Sons . . . . .                             | 5,550  | 7  | 6  |
| Perry & Co. . . . .                                   | 5,453  | 0  | 0  |
| Hay & Co. . . . .                                     | 5,233  | 12 | 4  |
| Muirhead & Co. . . . .                                | 5,102  | 16 | 0  |
| Ewart, Old Queen Street, S.W. (recommended) . . . . . | 4,926  | 9  | 5  |
| Zadig & Co. . . . .                                   | 4,533  | 11 | 8  |
| Chief engineer's estimate . . . . .                   | 5,287  | 16 | 6  |

## LONDON—continued.

For roadwork in Royal Oak Place.

|                                                        |      |    |   |
|--------------------------------------------------------|------|----|---|
| Rogers & Co. . . . .                                   | £341 | 18 | 0 |
| Jackson . . . . .                                      | 289  | 18 | 2 |
| Mowlem & Co. . . . .                                   | 284  | 10 | 0 |
| James & Co. . . . .                                    | 281  | 19 | 9 |
| E. & E. Iles . . . . .                                 | 273  | 17 | 8 |
| Adams . . . . .                                        | 264  | 10 | 3 |
| Fry Bros. . . . .                                      | 259  | 1  | 1 |
| Wheeler . . . . .                                      | 247  | 9  | 3 |
| Edge & Co. . . . .                                     | 242  | 7  | 6 |
| J. & E. Etheridge . . . . .                            | 239  | 12 | 7 |
| Killingback & Co. . . . .                              | 237  | 4  | 0 |
| Woodham & Son . . . . .                                | 236  | 14 | 3 |
| Prentis . . . . .                                      | 230  | 15 | 8 |
| Anderson . . . . .                                     | 228  | 5  | 9 |
| Pearce . . . . .                                       | 221  | 14 | 8 |
| Hobman & Co., South Bermondsey (recommended) . . . . . | 212  | 5  | 3 |

For the kerbing, channelling, paving, making-up, &c., of Fletching Road (Clapton) and Thornby Road (Clapton), for the Hackney Borough Council. Mr. NORMAN SCORGIE, borough engineer and surveyor.

|                                                    | Fletching Road. | Thornby Road. |
|----------------------------------------------------|-----------------|---------------|
| Bloomfield . . . . .                               | £845            | 0 0           |
| Griffiths & Co. . . . .                            | 830             | 5 4           |
| Adams . . . . .                                    | 809             | 4 0           |
| Anderson . . . . .                                 | 801             | 13 11         |
| Catley . . . . .                                   | 798             | 0 0           |
| PORTER, 2 Arthur Street, N.E. (accepted) . . . . . | 763             | 13 3          |
|                                                    |                 | 796 19 10     |

For supply of about 4,250 stopcock boxes, for the Metropolitan Water Board.

|                                    |        |    |   |
|------------------------------------|--------|----|---|
| Globe Foundry Co. . . . .          | £1,008 | 2  | 6 |
| MacFarlane & Co. . . . .           | 699    | 0  | 0 |
| Stone & Co. . . . .                | 484    | 10 | 0 |
| Carron Co. (recommended) . . . . . | 460    | 0  | 0 |

For steel tubes over Great Western Railway bridge, Scrubs Lane, Willesden, for the Metropolitan Water Board.

|                                    |      |    |   |
|------------------------------------|------|----|---|
| Mechan & Co. . . . .               | £548 | 10 | 0 |
| PIGGOTT & Co. (accepted) . . . . . | 547  | 10 | 0 |

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NEW OFFICES FOR "THE MORNING POST," STRAND.

MARISCHAL COLLEGE, ABERDEEN: THE COURT-ROOM.

## LONDON—continued.

For supply of valves, for the Metropolitan Water Board.

|                                |      |   |   |
|--------------------------------|------|---|---|
| Simpson & Co.                  | £385 | 0 | 0 |
| Blakeborough & Sons            | 350  | 0 | 0 |
| Hunter & English               | 325  | 0 | 0 |
| GLENFIELD & KENNEDY (accepted) | 276  | 0 | 0 |
| Do., if scraped                | 300  | 0 | 0 |

For supply of cast-iron notice plates, boundary posts and  
plates for the Metropolitan Water Board.

|                          |      |    |   |
|--------------------------|------|----|---|
| Durham Bros.             | £254 | 16 | 6 |
| Ham, Baker & Co.         | 212  | 17 | 0 |
| Stewart & Sons           | 211  | 19 | 6 |
| GLOBE FOUNDRY (accepted) | 186  | 7  | 6 |

For the erection of a disinfecter shed at workhouse, St.  
Leonard Street, E.

|                                                          |      |    |   |
|----------------------------------------------------------|------|----|---|
| William & Whitrick                                       | £160 | 0  | 0 |
| Franks & Simons                                          | 155  | 0  | 0 |
| Fenn                                                     | 139  | 15 | 0 |
| Selby                                                    | 136  | 0  | 0 |
| Loasby & Salmon                                          | 124  | 15 | 0 |
| F. & A. Willmott                                         | 123  | 10 | 0 |
| Stuttle & Son                                            | 123  | 8  | 6 |
| STEDMAN & Co., 1 and 3 Shrewsbury Road,<br>E. (accepted) | 122  | 10 | 0 |

For repair of camp sheeting at Kew Bridge, for the Metro-  
politan Water Board.

|                         |      |   |   |
|-------------------------|------|---|---|
| Aird & Son              | £218 | 0 | 0 |
| MOWLEM & Co. (accepted) | 192  | 0 | 0 |

## LONDON—continued.

For a Cornish boiler at Hammersmith technical insti-  
tute, section "A" (art block).

|                                       |      |   |   |
|---------------------------------------|------|---|---|
| Galloways, Ltd.                       | £645 | 0 | 0 |
| Adamson & Co.                         | 564  | 0 | 0 |
| Spurr, Inman & Co.                    | 556  | 0 | 0 |
| Thompson, Wolverhampton (recommended) | 450  | 0 | 0 |

For new boiler of an independent type at Brockley Road  
school, Lewisham.

|                                                           |      |    |   |
|-----------------------------------------------------------|------|----|---|
| Esson & Son                                               | £220 | 10 | 0 |
| Defries & Sons                                            | 201  | 5  | 0 |
| Davis                                                     | 196  | 0  | 0 |
| Price, Lea & Co.                                          | 187  | 0  | 0 |
| Cannon & Hefford, Stanbury Road, Peckham<br>(recommended) | 153  | 0  | 0 |
| Architect's estimate                                      | 158  | 0  | 0 |

For paving Church Street, Stoke Newington.

The Improved Wood Pavement Co., Ltd. (accepted), with  
wood, at 6s. 1d. per yard super for 3-inch by 8-inch by  
4-inch creosoted red deal blocks. Other firms who  
tendered were the Acme Flooring and Paving Co., Ltd.,  
Griffiths & Co., Ltd., and Mowlem & Co., Ltd.

## MARKET BOSWORTH.

For sewerage work at Markfield.

|                                   |      |   |   |
|-----------------------------------|------|---|---|
| HOLME & Sox, Leicester (accepted) | £331 | 7 | 0 |
| Shipman                           | 326  | 6 |   |

## MORETON-IN-THE-MARSH.

For sewerage and disposal works, Contract No. 1, Messrs.  
WILLCOX & RAIKES, engineers, Birmingham.

OWENS, Wolverhampton (accepted) . . . £3,661 12 0

For works of water supply, Contract No. 1, Messrs. WILLCOX  
& RAIKES, engineers, Birmingham.

OWENS, Wolverhampton (accepted) . . . £4,429 3 3

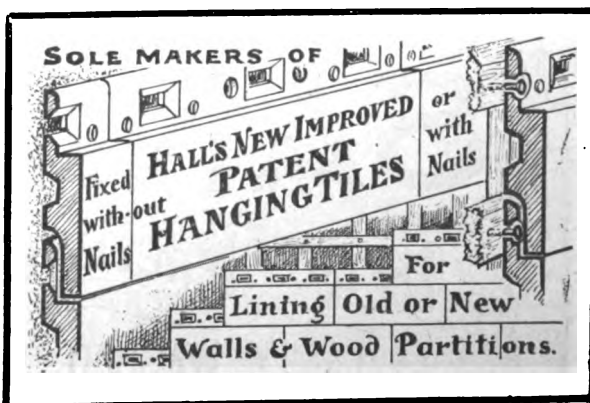
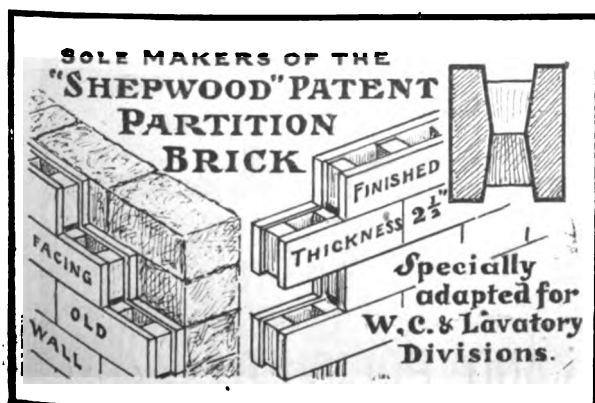
## NEWPORT (STAFFS).

For the erection of an infirmary at the workhouse.

MUIRHEAD, LTD., Newport (accepted) . . . £3,100 0 0

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**ROMFORD.**

For hot-water apparatus at public baths. Mr. J. TURVEY, surveyor.

|                                                  |      |    |   |
|--------------------------------------------------|------|----|---|
| Tilley Bros. . . . .                             | £153 | 0  | 0 |
| Moorwood, Sons & Co. . . . .                     | 142  | 0  | 0 |
| Parsons & Wills . . . . .                        | 109  | 17 | 6 |
| Cannon & Sons . . . . .                          | 105  | 0  | 0 |
| Evans & Whiteley . . . . .                       | 102  | 12 | 0 |
| Stubbs, Son & Hall . . . . .                     | 102  | 7  | 0 |
| MARSHALL & Co., Leytonstone (accepted) . . . . . | 68   | 10 | 0 |

**RYE HOUSE.**

For the erection of bridge over New River, for the Metropolitan Water Board.

| <i>Foundations.</i>                     |      |    |   |
|-----------------------------------------|------|----|---|
| Hay & Co. . . . .                       | £550 | 0  | 0 |
| Griffiths & Co. . . . .                 | 375  | 0  | 0 |
| Mowlem & Co. . . . .                    | 319  | 0  | 0 |
| Aird & Sons . . . . .                   | 282  | 0  | 0 |
| Docwra & Son . . . . .                  | 257  | 19 | 7 |
| NUNN (accepted) . . . . .               | 170  | 0  | 0 |
| <i>Superstructure.</i>                  |      |    |   |
| Piggott & Co. . . . .                   | 367  | 10 | 0 |
| Fraser & Son . . . . .                  | 348  | 0  | 0 |
| Phoenix Foundry Co. . . . .             | 292  | 10 | 0 |
| Head, Wrightson & Co. . . . .           | 276  | 5  | 0 |
| Handyside & Co. . . . .                 | 273  | 10 | 0 |
| DORMAN, LONG & Co. (accepted) . . . . . | 252  | 0  | 0 |

**SHANGHAI.**

For the erection of residence in the Avenue Paul Brunat, for Mr. G. Nielsen. Mr. W. M. DOWDALL, architect.

|                                    |              |
|------------------------------------|--------------|
| Pow Zine . . . . .                 | Taels 29,550 |
| Zee Kuen Kee . . . . .             | 29,500       |
| Yah Chong . . . . .                | 25,928       |
| Sun Dah Kee . . . . .              | 25,370       |
| Dong Yun Kee . . . . .             | 24,960       |
| China Commercial Company . . . . . | 24,930       |

All of Shanghai.

NOTE.—“Kee” is the equivalent of “& Co.” All are native firms except the last. The present value of the tael is 3s.

**ST. MARGARET'S BAY.**

For proposed bungalow, for Mr. C. H. Dudley Ward. Messrs. THOMAS DINWIDDY & SONS, architects, 54 Parliament Street, S.W., and Greenwich.

|                                        | House. | Garden and Fencing. |
|----------------------------------------|--------|---------------------|
| Turner & Watts . . . . .               | £1,458 | £196                |
| Adcock . . . . .                       | 1,300  | 220                 |
| Denne . . . . .                        | 1,260  | 235                 |
| DENNE & SON, Deal (accepted) . . . . . | 1,208  | 280                 |

**WANSTEAD.**

For the erection of school, manual training centre, cottage, &c., Ingatestone Road. Mr. C. H. BRESSEY, architect, 70 and 71 Bishopsgate Street Within, E.C.

|                                                        |         |   |   |
|--------------------------------------------------------|---------|---|---|
| Robins . . . . .                                       | £16,150 | 0 | 0 |
| Davey, Ltd. . . . .                                    | 13,787  | 0 | 0 |
| Yelf . . . . .                                         | 13,700  | 0 | 0 |
| Foster & Son . . . . .                                 | 13,537  | 0 | 0 |
| Faulks . . . . .                                       | 13,370  | 0 | 0 |
| Monk . . . . .                                         | 13,185  | 0 | 0 |
| Westgate . . . . .                                     | 13,115  | 0 | 0 |
| Sands & Burley . . . . .                               | 13,033  | 0 | 0 |
| Knight & Son . . . . .                                 | 12,983  | 0 | 0 |
| Symes . . . . .                                        | 12,936  | 0 | 0 |
| McKay . . . . .                                        | 12,898  | 0 | 0 |
| Mattock & Parsons . . . . .                            | 12,891  | 0 | 0 |
| Hawkins & Co. . . . .                                  | 12,881  | 0 | 0 |
| Wall, Ltd. . . . .                                     | 12,836  | 0 | 0 |
| Lawrence & Son . . . . .                               | 12,744  | 0 | 0 |
| Oak Building Co. . . . .                               | 12,632  | 0 | 0 |
| Coxhead . . . . .                                      | 12,631  | 0 | 0 |
| Hammond & Son . . . . .                                | 12,598  | 0 | 0 |
| Clark & Sons . . . . .                                 | 12,370  | 0 | 0 |
| Moss & Co. . . . .                                     | 12,350  | 0 | 0 |
| Fairhead & Son . . . . .                               | 12,197  | 0 | 0 |
| F. & A. Willmott . . . . .                             | 12,166  | 0 | 0 |
| Moss & Sons . . . . .                                  | 12,097  | 0 | 0 |
| J. & M. PATRICK, Wandsworth, S.W. (accepted) . . . . . | 11,847  | 0 | 0 |

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*(Received too late for classification.)***DURHAM.**

For the construction of new sewer from Lowes Barn to Stone Bridge sewage works, for the Durham Rural District Council.

|                              |      |    |   |
|------------------------------|------|----|---|
| Bradley . . . . .            | £178 | 0  | 0 |
| Meredith . . . . .           | 175  | 2  | 9 |
| Oliver . . . . .             | 170  | 0  | 0 |
| CARRICK (accepted) . . . . . | 167  | 13 | 9 |

**LEVENSHULME.**

For the erection of a Council school.

|                                    |        |   |   |
|------------------------------------|--------|---|---|
| TINLINE, Bury (accepted) . . . . . | £3,870 | 0 | 0 |
|------------------------------------|--------|---|---|

**LONDON.**

For the erection of stabling at Bermondsey, S.E. Mr. HERBERT RICHES, architect, 3 Crooked Lane, King William Street, London, E.C.

|                                           |        |    |   |
|-------------------------------------------|--------|----|---|
| Clemens Bros. . . . .                     | £1,750 | 10 | 0 |
| T. & T. Thorne . . . . .                  | 1,627  | 0  | 0 |
| Downs . . . . .                           | 1,588  | 0  | 0 |
| Josolyne & Young . . . . .                | 1,544  | 0  | 0 |
| COURTNEY & FAIRBAIRN (accepted) . . . . . | 1,525  | 0  | 0 |

For the erection of stabling at West Green, Tottenham, N. Mr. HERBERT RICHES, architect, 3 Crooked Lane, King William Street, London, E.C.

|                                   |      |   |   |
|-----------------------------------|------|---|---|
| Green & Smith . . . . .           | £430 | 0 | 0 |
| Irwin . . . . .                   | 422  | 0 | 0 |
| Sheffield Bros. . . . .           | 395  | 0 | 0 |
| ROWLEY BROS. (accepted) . . . . . | 356  | 0 | 0 |

**SCOTLAND.**

For carrying-out a water-supply scheme for Buckie Town Council. Sir W. R. COPLAND, engineer, Glasgow.

|                                            |         |   |   |
|--------------------------------------------|---------|---|---|
| PIRIE & SON, Aberdeen (accepted) . . . . . | £11,620 | 0 | 0 |
|--------------------------------------------|---------|---|---|

There were twenty tenders.

**TRADE NOTES.**

We have much pleasure in announcing that Mr. T. H. Batstone has joined the firm of Aldam Heaton & Co., Ltd., the well-known ecclesiastical decorators of 28 and 29 Baker Street, Portman Square, London, W.

MESSRS. HOMAN & RODGERS have supplied the ironwork and carried out the fireproof construction for the extension of the Rotunda Hospital, Dublin.

MESSRS. WARING & GILLOW have been awarded a grand prix and gold medal at the Milan Exhibition for high-class furniture and decorative work.

THE Bostwick Gate and Shutter Company, Ltd., have furnished the Ritz hotel with polished Delta collapsible gates. The new patent lattice gates are fixed to entrances. The company have also supplied collapsible gates to the left entrance.

A LARGE clock with chimes, showing time on two large dials, has just been erected on the tower of the church, Irthlingborough, Northamptonshire. It is fitted with all the latest improvements. The whole of the work has been carried out by Messrs. John Smith & Sons, Derby.

MESSRS. J. B. JOYCE & Co., Whitchurch, Salop, have just shipped a large quarter clock with four dials to India for the St. Andrew's Colonial Homes, Kalimpong, and also two similar ones to the colonies. Amongst numerous important clocks they have at present in hand is a large quarter clock with three dials 5 feet 6 inches diameter for Allendale Church, Northumberland.

MESSRS. SMITH & STEVENS have been entrusted with the order for two controllers for a pair of 30-ton waggon lifts to be erected by Messrs. Craven Bros. in the new North-Eastern Railway goods warehouse at Newcastle. These controllers will be of 100 horse-power each, constructed under Stevens & Major's patents, and will rank with the largest automatic machines yet produced. Together with the winding engines they will be actuated automatically by electrical relays from three distant points.

THE Birmingham Photographic Society wish to extend the illustrations pertaining to the survey of Warwickshire, in connection with which it has contributed 4,000 platinum, bromide and carbon prints to the reference library of the city. Most of the places of interest, buildings, &c., have been photographed. But there are still subjects which it is necessary should be added to the contributions.

# THE "DRAWWELL" GRATE

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## First in the Final Tests

at the recent test with Firegrates at the New Government Offices in Whitehall, under the direction of a sub-committee of the Coal Smoke Abatement Society, in conjunction with Sir Henry Tanner and a committee of experts, for smoke abatement, heating power, fuel economy, and suitability for public and private buildings.

**N.B.—All Grates bear the Trade Mark and Name of "Drawwell" on firebrick to insure against imitation.**

This Grate can only be supplied through Builders' Merchants, Ironmongers, &c., but Drawings and Particulars can be obtained from



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GENERAL IRONFOUNDERS, Ferham Works, ROTHERHAM.

London Showrooms, Saracen's Head Buildings, Snow Hill, City,

W. B. CLARKE, Agent.  
where the "Drawwell" can be seen in action.

**ELECTRIC NOTES.**

THE North British Railway Company having applied for a large additional supply of electric current for lighting and power purposes, the electricity committee of Glasgow Corporation recommend that a special agreement be entered into with the applicants under which they shall pay for the current taken by them for lighting up to 750,000 units per annum at the rate of 1½d. per unit, for any quantity to be taken by them during such period in excess of 750,000 units at the rate of 1d. per unit, and for the current taken by them for power purposes at the ordinary rates for supplies for power.

MR. H. R. HOOPER held an inquiry at Croydon into a proposal to spend 22,830l. for the purpose of electric light extensions. The loans of the Corporation exceed two millions, and there was much opposition to the proposed expenditure. The town clerk admitted that 4,830l. of the money asked for had been already expended. The inspector called for certain details which were not forthcoming, and he said he could not go on unless the facts and figures were before him, and he should adjourn the inquiry for their production.

A SPECIAL meeting of the Oxford City Council was held for the purpose of affixing the seal of the Corporation to a contract with the National Electric Construction Company, Ltd., for the leasing, reconstruction, extension and electrical equipment of the existing horse tramways. There were forty-two members present, and after a few questions had been asked and answered the Council unanimously decided to affix the seal to the Dotter contract. Two members abstained from voting.

THE directors of the Co-operative Wholesale Society, on the advice of their engineer, Mr. W. Fletcher, have substituted electric power for steam for driving purposes at their flour mills at Dunston-on-Tyne. The horse-power represented is 2,000. The steam generating and driving plant which has been discarded was modern and in good working order, but the directors were assured that the change to electric power would be cheaper and lead to still greater efficiency in the receiving, cleaning and milling of the wheat. A sub-station has been built on the premises, into

which are led the high-tension mains of the Durham County Electrical Power Distribution Company. The manager states that he is highly satisfied with the result. There is now more space available, and the cost is believed to be less.

**BUILDING AND BUILDERS.**

THE Northampton Builders' Association at their annual dinner had the names of twenty-nine speakers on their toast list.

THE Manchester Central Hall committee have under consideration the building of another hall in Peter Street, in connection with the Free Trade Hall Sunday services. Land has already been secured. It is intended to erect premises on an extensive scale, the cost of which will be, including the land, somewhere about 50,000l.

THE opening of the Forest Gate United Methodist Free church and schools took place on the 25th inst. The scheme has been carried out for 7,328l. by Mr. H. J. Carter, of Grays, Essex. The church accommodates 1,300 persons. The facings are in red brick. Messrs. G. Baines & Son, 5 Clement's Inn, W.C., are the architects.

THE management committee of the General Federation of Trade Unions, in its quarterly report, deprecates the present system of continuing full-time employment, and even overtime, when work is scarce, thus necessitating discharges, when a more general distribution of work would largely reduce the numbers of the unemployed. The committee is "strongly of opinion that the object should not be to keep working hours at the normal, irrespective of the numbers employed, but to keep on shortening hours as the demand slackens, the object being to keep all employed. The committee recommends that the Government be urged to regulate the distribution of work under its jurisdiction, so that the necessity to discharge workmen will be obviated; that the Government urge on all public bodies and recommend private firms to regulate the distribution of work; and that the practice of overtime be condemned. The committee also considers that such work of public utility as it has previously suggested might well be proceeded with."

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At a meeting of the Association of Municipal Corporations on the 19th inst. in London, the borough treasurer of Accrington called attention to the stringent building regulations recently issued by the Board of Education, which required that no single department of an elementary school should accommodate more than 400 or 500 children, thereby involving education authorities in unnecessary capital expenditure on new schools, and increasing the cost of maintenance. He moved that strong representations should be made to the Board of Education with a view to securing the modification of such regulations. After some discussion the subject was referred to the education committee. At the same meeting the town clerk of Newport (Mon) moved that in order to secure greater regularity in the construction of streets, local authorities should be empowered to alter the proposed position or direction of any intended new street on a building estate for the purpose of causing it to communicate in a direct line with any other street, without liability to pay compensation, unless such power is exercised in an arbitrary or vexatious manner. The town clerk of Walsall seconded. On the motion of the town clerk of Wolverhampton, the reference to compensation was omitted, and, thus amended, the resolution was adopted.

CONSUL RUFUS FLEMING, of Edinburgh, has reported to the United States concerning opportunities for American merchants and manufacturers to extend their trade, particularly in that part of Scotland in which Leith, the seaport of Edinburgh, is located. A moderate quantity of American paint, he says, comes to this district. For two or three years there has been a good demand for an American copper paint. Its success has induced paint manufacturers on this side to imitate it, and now similar paints made in Norway and in England are competing strongly with the American article. Structural steel has never been freely employed in the building trade in Edinburgh, except as a support for floors, partition walls, &c. A large warehouse now in course of construction will have a complete framework of steel on the American plan, around which the structure of stone will be erected. It is expected that this departure from the old method of building will lead to the more general adoption of steel frames for business houses of extraordinary size.

## VARIETIES.

THE Acton District Council have decided to purchase for the purpose of a destructor  $3\frac{1}{2}$  acres of land from the Willesden Brick Company, Ltd., for the sum of 6,500/.

THE Tottenham District Council are considering the proposal that artificial stone slabs should be manufactured at the refuse destructor works.

MR. P. J. WALDRAM will read a paper on November 1, before the Civil and Mechanical Engineers' Society at the Caxton Hall, dealing with "Bridge Work Design."

THE Dorking Urban District Council have approved a recommendation that a dust destructor should be provided. The estimated cost is 2,600/. Further inquiries will be made.

MR. H. R. HOOPER, inspector for the Local Government Board, has held an inquiry at Bedford regarding an application for a loan of 24,000/ for the extension and improvement of the Bedford waterworks.

MR. A. A. G. MALET, a Local Government Board inspector, has inquired into an application by the Ilford Council for leave to borrow 25,000/, 11,000/ of which was required for sewage-disposal works. There was much opposition from Barking.

A SCHEME is under consideration at Leigh, Essex, for the reclamation of about a mile of the foreshore, the provision of a lake and the construction of a channel, so that fishing smacks and yachts may anchor at the town at any state of the tide.

THE South Shields Board of Guardians will oppose the decision of the South Shields municipal authority to build a fever hospital near the land upon which the Guardians had to erect cottage homes for workhouse children at a cost of 15,000/.

A RETURN has been issued giving an approximate estimate of expenditure under the Military Works Acts of 1897, 1899, 1901 and 1903. The total of the sums provided under the Acts is 20,810,000/, but it has been decided not to expend up to the full extent of the amounts provided. The actual expenditure up to March 31, 1905, was 13,322,969/, while the estimated expenditure in 1905-6 was 1,300,000/ and that for 1906-7 is 90,000/.

# The DEVON FIRE

Reg. No. 15730.

## FIRST PLACE in TESTS

**The DEVON FIRE.**

Report in "Lancet," May 19, 1906:—

"As a final result of the whole of the tests, the examiners find that of the grates submitted, those of Messrs. Candy & Co. and two other firms are the best, showing practically equal results."

"The amount of coal consumed by these grates was found to be moderate in comparative proportion with temperature obtained; the fires were bright and clear."

P.N.B.—Thirty-seven grates were tested, including nearly all the best known modern types.

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|-------------------|------------|
| .....             | 27'92 lbs. |
| The "DEVON" Fire. |            |
| .....             | 20'43 lbs. |

Saving 7'49 lbs., or more than 25%.

**2.—Heat.**  
Thirty-six Competing Grates.

|                  |          |
|------------------|----------|
| .....            | 7'13° F. |
| The "DEVON" Fire |          |
| .....            | 7'4° F.  |

Increase 27° F., or nearly 4%.

**3.—Smoke Produced.**  
Thirty-six Competing Grates.

|                   |      |
|-------------------|------|
| .....             | 1'09 |
| The "DEVON" Fire. |      |
| .....             | .79  |

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THE Huddersfield Town Council have been informed that the Butterfield reservoir has been made watertight. Remedial works to stop the leakage have involved an expenditure of 70,000*l.* The leakage was discovered at a height of 36 feet, but water had been in to the height of 55 feet without any defect being discovered, and it was now 38 feet high.

THE Bourneville Tenants, Ltd., have obtained twenty-five acres from the Bourneville Trust for the erection of workmen's dwellings. The management of the estate will be in the hands of shareholders and elected representatives of the tenants. The surplus will be divided among the tenants in shares. Mr. George Cadbury has offered to take 7,000 shares.

SWANSEA harbour trustees considered the further extension of the new King's Dock at Swansea at a cost of about 100,000*l.* It was recently decided to increase the siding accommodation by 25 per cent. Other improvements on the eastern side of the dock, involving some 30,000*l.*, were practically, though not definitely, agreed on.

PLANS are being prepared by the St. Pancras Borough Council for the provision on the cleared Brantome Place (Euston Road) site of forty-eight three-room tenements to be let at 3*s.* 4*d.* each room per week and thirty-six two-room tenements at a rental of 3*s.* 6*d.* per room. The estimated cost of the buildings is 20,869*l.* With the exception of the land forming the roadway, all the interests in the Prospect Terrace (Gray's Inn Road) area have been acquired, and the St. Pancras Borough Council hope to begin building workmen's dwellings thereon shortly.

THE Runcorn Urban District Council decided to convert the market hall into a public swimming-bath. It is proposed to put a new roof over the market hall and to use the old roof for covering the space below the market. The swimming-bath will be 75 feet long and 33 feet wide, and the estimated cost is 2,000*l.*, made up as follows:—Providing bath, 1,450*l.*; providing open-air market, 170*l.*; and new roof for bath, 380*l.* The water will be obtained from the Sprinch well, which is at present running to waste.

THE Argentine Government have purchased the proposals, plans and surveys of M. Offermann, engineer, for the construction of a navigable canal between the ports of

La Plata and Buenos Ayres, and for the enlargement of the latter port. It is thought that this purchase will have an important effect in furthering a definite plan for this proposed canal, which has been under the consideration of the Ministry of Public Works for some months, and that the Chambers will be asked to give their sanction to it during the 1907 session.

THE Penrith Urban Council have adopted a proposal by Mr. Baldwin Latham for a supply of water from Hayeswater. The report gave details of two schemes, A and B. The scheme marked A was an estimate for the works on the eastern and south side of Ullswater, and the estimate B was for conveying the water on the north and west side of Ullswater. The cost of A scheme was estimated at 24,630*l.*, and of B scheme 38,580*l.*, both estimates including 10 per cent. for contingencies. After discussing the matter for over three hours the Council decided to adopt the A scheme.

At a meeting of the Lerwick Town Council the committee appointed to consider the question of providing workmen's dwellings reported that they had been unable to devise a workable scheme. Plans were prepared and estimates obtained, but it was found that the houses could not be made self-supporting and there was no power to come on the rates for a deficit. The matter has now been taken up by the County Council, who are to make application to the Congested Districts Board to build houses outside the burgh similar to those recently constructed at Stornoway.

THE Garden City Association have obtained the option of purchase for six months of the Alkington estate of 712 acres about four miles to the north-east of Manchester and a mile from Oldham. The Association will not develop the land itself, but will leave that part of the work to a local garden city company. The decision is that, subject to careful consideration of the questions of price, nature of soil and other conditions, it was desirable to preserve the estate to be developed upon the lines advocated by the Association. The prospecting committee are to take steps to ascertain whether the scheme would be supported locally.

A DRAINAGE scheme for Galashiels, N.B., was explained by the Provost to a public meeting of ratepayers on the



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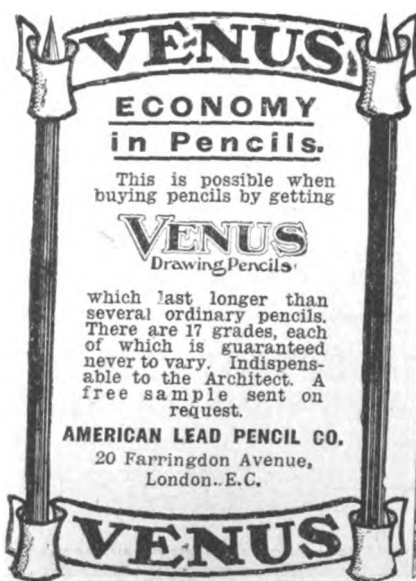
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**For Index of Advertisers, see page x.**

19th inst. The proposed scheme provides for the laying-down of 15 miles of pipes throughout the town on the separate system, at a cost of 16,000*l.*; the provision of septic tanks and bacteria beds at Galafoot, estimated to cost 31,000*l.*; 4,500*l.* for filtration beds, 1,800*l.* for water-power, 5,000*l.* for land and wayleaves, and 6,700*l.* for contingencies, making a grand total of 65,000*l.* The effect of this scheme, spread over fifty years, on the rates would mean on the new valuation of the burgh a rise from 2*s.* 11*d.* to 3*s.* 2½*d.* on occupiers, and 8*d.* to 1*s.* 2½*d.* on owners.

At Manchester there was recently offered for sale a valuable plot of land, containing 624 square yards, fronting to old Millgate, Cateaton Street and Cannon Street, Manchester. A portion of the land is vacant, and on the remainder are the premises occupied by Mr. Goulburn and Messrs. J. Needham & Sons. The lot is freehold and free from chief rent. The Manchester Corporation have agreed to take 33 square yards of the site at 70*l.* a yard, and the purchaser will be entitled to the benefit of the contract. In spite of this inducement, the bidding only reached 30,000*l.*, at which price the lot was withdrawn.

The Eastwood, Greasley and Brinsley joint committee, after visiting various sewage works and having tried many forms of revolving sprinklers at their outfall works, placed orders with Messrs. George Jennings, Ltd., hydraulic engineers, London, for the entire apparatus required. This comprises new improved patent revolving sprinklers, 60 feet diameter, with dosing gear, the construction of which shows a distinct departure from other methods. The apparatus superseded was condemned owing to its joint or seal leaking, whereas this firm's machines have neither joints nor seals to become leaky, the only wearing parts being so designed as to permanently maintain their efficiency in use.

The Camberwell borough engineer, Mr. W. Oxtoby, has prepared a return showing the cost of cleaning the streets of Camberwell as compared with that in other boroughs. There are about 2,050 miles of streets in the metropolitan area, and the cost per mile works out at 330*l.* odd. The cost per mile in Camberwell is 265*l.*, which is 65*l.* below the average. There are nineteen boroughs with a higher cost and eight lower. The average is cast from figures ranging from 722*l.* (highest) to 152*l.* (lowest). The engineer states that the outlay varies each year and is affected by

weather conditions, varying traffic and the general state of repair of the highways. The present cost per mile in Camberwell for sweeping alone is 105*l.*

MESSRS. CADBURY have presented to the city of Birmingham as a memorial of the family connection with the city about 34 acres of land at Rednal, which includes the top of the Beacon Hill. This hill is about 1,000 feet above sea-level, and is the highest of the Lickeys, and indeed the highest land (with the exception of the Clent hills) in the immediate neighbourhood of Birmingham. The desire is expressed that this land should be held by the Corporation of Birmingham for use as an open space in conjunction with the adjoining Rednal and Bilberry hills.

The Local Government Board, in the course of the 35th annual report, say with regard to main roads:—"The total length of the main roads in England and Wales maintained by local authorities during the year ended March 31, 1905, was 27,380 miles, of which county councils repaired 16,970 miles, 16,467 miles being situated in rural districts. The amount expended by the county councils, otherwise than out of loans, during the year on the maintenance, repair and improvement of these roads was 1,225,697*l.* The total length of the main roads situated in urban districts was 4,057 miles, and of those situated in rural districts 23,323 miles."

COLONEL A. G. DURNFORD, R.E., Local Government Board inspector, opened an inquiry on Thursday at the town hall into an application by the Sheffield Corporation for power to borrow various sums of money for municipal work. They are asking for 18,139*l.* for a site in Bernard Road; 1,844*l.* for the new road across Primrose Meadows; 6,632*l.* for works of construction and sewerage in connection with the Crofts Area No. 2; 2,730*l.* for the Church Street improvement and for laying out the churchyard; 1,649*l.* for the continuation of Wincobank Avenue and the widening of Wincobank Road; and 45,650*l.* for various works of sewerage and street improvements.

The city of Liverpool is at present lighted by means of 18,765 lamps, made up as follows:—Electric arc 188, ditto incandescent 82, four and three-light incandescent gas 69, two-light ditto 1,989, one-light ditto (full time) 7,749, one-light ditto (extinguished at midnight) 4,122, court and passage lamps—4-foot lamps 1,623, 2-foot lamps 2,943. To

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deal with the lighting of these lamps 182 men had been employed under the supervision of 14 foremen, while the entire work of maintenance of the columns and lamps had been carried out by 77 inspectors, mechanics, &c. The necessary provisional order for the erection of gasworks for supplying the township of Fazakerley with gas had been obtained, and the necessary land for the site of the works purchased, and Mr. Isaac Carr, engineer to the Widnes Corporation Gas and Water Works, had been instructed to prepare plans and specifications for the building, plant, &c.

An application was made some time ago on behalf of the Birmingham Corporation workmen for an increase of wages of 2s. per week. The minimum amount paid is 23s. A joint committee which considered the question recommends an advance of 1s. per week, not merely on the minimum rate, but on the general scale. The chief labour-employing committees are the public works, health, gas, water, baths and parks, trams and electric supply, and some of these have decided to accept the recommendation and will act upon it at once. When all the committees have adopted the new scale, it is said that it will involve the Corporation in an annual additional expenditure of between 4,000l. and 5,000l.

THE Walton-on-Naze and Frinton Urban District Councils have received an official notification that the Crown claims the whole of the foreshore rights within the respective districts, but that the Board of Trade is authorised to grant the local authorities a lease of those rights at a nominal rent—1l. a year. The Frinton authority has decided to apply for a lease, but the Walton Council maintains that it holds the rights of such parts of the beach and cliffs as have been purchased by it, and with regard to the other portion some of the members have demurred to exercising any powers which the Board of Trade might grant unless the Council be indemnified against the payment of costs incidental to any litigation that might be promoted by the lord of the manor.

DR. HOPE, the medical officer of health for Liverpool, in the course of his report to the Liverpool housing committee in regard to insanitary houses, shows that there existed in January 826 courts, containing 4,787 houses. Of these, 44 courts, with 201 houses, had been dealt with by closing orders. The number of cases in which arrangements had

been made with owners for demolition and improvements was 39 courts, containing 231 houses, leaving altogether for future consideration 682 courts, having 3,936 houses. In nearly every instance there were two houses contiguous to each court, but facing the main street. If these were included it would be necessary to add 1,364 to get the total number of houses which, in their present condition, were without sufficient lighting, ventilation and general sanitary accommodation. A report in regard to the Burlington Street and Brassey Street improvement scheme has been presented by the town clerk to the housing committee. The areas affected by the scheme comprise a total of 10,317 square yards. The number of persons of the working class who will be displaced is estimated at about 725. It is intended to provide accommodation for such persons of the working class who will be displaced as may be required.

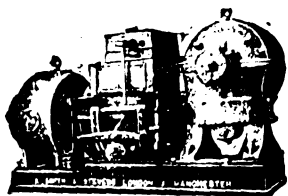
A MEETING of citizens was held on Monday at St. George's Hall, Liverpool, to consider the deplorable condition of certain districts of Liverpool, and the urgency of applying all possible remedial measures thereto. The first resolution to be adopted was as follows:—"That this meeting of citizens, whilst gratefully recognising what has already been accomplished by the Corporation, is profoundly impressed with the fact that there yet remain about 7,518 houses in congested areas, occupied by the poor of Liverpool, which are officially declared to be 'unfit for human habitation,' and urgently calls upon the City Council to remedy, in a bold and drastic way, this condition of things, the continuance of which is a grave discredit to the community, and constitutes a constant menace to its health and well-being. The meeting considers that, at almost any cost, the work of clearing the slums and rehousing the people should be actively proceeded with, costly improvement and other municipal schemes, which are less urgent in character, being, so far as necessary, postponed for the time being." It was further agreed:—"That this meeting is also of opinion that, in addition to enforcing the by-laws against overcrowding, to provide for the excess of population in the congested parts of the city, the Corporation would be wise in building on the outskirts, and that to prevent the overcrowding of dwellings the Corporation should seek powers enabling it to control the laying out and planning of the growth of the city."

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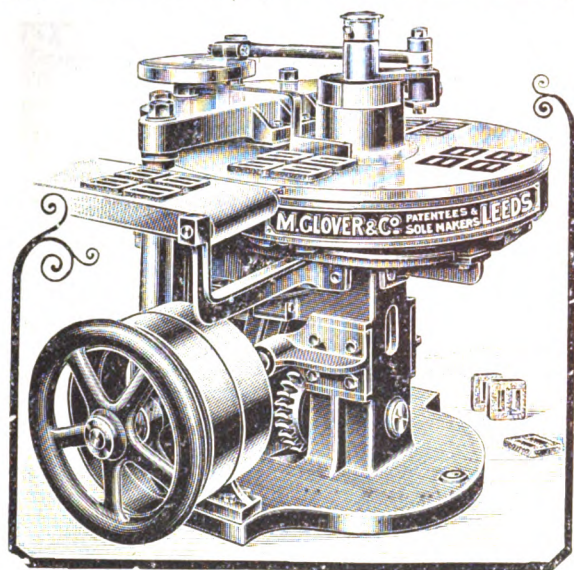
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to  
the  
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The Architect & Contract Reporter,  
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**SAWDUST FIRELIGHTERS.**

M. GLOVER & Co., of Holbeck Lane, Leeds, makers of fire-wood splitting and bundling machinery, are now placing on the market a patented machine for making firelighters from compressed sawdust, the installation of which might enable many firms to find a profitable use for their waste. The product of the machine is a neat, solid-looking briquette, to be known as the "Bon," which will burn nineteen minutes, and is capable of lighting a fire without the assistance of paper or wood. As the lighters leave the machine they are



ready to be parcelled up. No timber being used in the composition of these lighters, no sawing, wiring or nailing is required, nor do they need dipping. The article is composed of sawdust or other workshop waste and a certain cheap chemical ingredient. The material being taken in hand by the machine, it is fed into moulds carried in a heavy table, which is made to revolve intermittently round

a vertical shaft as centre upon ball-bearings. When the moulds are filled they are carried to powerful compressors, and are then ejected by cams, after which the lighters are scraped off the table by a reciprocating arm on to a shoot, or, if preferred, to a belt which conveys them through a single opening into the packing-room. The capacity of the machine is said to be from 20,000 to 22,000 lighters in a working day of ten hours.

**NEW CATALOGUE.**

The open fire has been so long identified with English life that fireplaces which do not sufficiently honour the idea are considered instinctively to be unsuitable. On that account much attention was given at all times to the designing of fireplaces among us, although unfortunately many English people believed it was necessary to have recourse to foreign sculptors to produce so essential a part of every English room. The new catalogue by Messrs. Carter & Co., of Poole, presents a large number of pleasing designs for fireplaces. As everybody knows, they produce beautiful tiles and other work in faience. But they do not in all cases act on the principle that tiles and faience alone should be employed. It is possible to obtain Carter fireplaces which depend for effect on faience, glazed briquettes and tiles, but in most instances they are combined with chimneypieces of pine or oak. The result is that a charming variety is produced. Whatever material is employed it is in a position that is suitable. Chimney-pieces are, however, only one of the specialties of Messrs. Carter & Co.

**APPRENTICESHIP AND INDUSTRIAL EDUCATION.**

At a meeting of the Bradford District Council for the national registration of plumbers, held at the Technical College, Mr. F. W. Jowett, M.P., gave an interesting résumé of the proceedings of the committee on industrial education since its appointment by the conference of representatives of municipal, educational and labour interests, held at the Guildhall, London, in February last, under the presidency of ex-Speaker Viscount Selby.

Mr. Jowett pointed out at the outset that the work of the

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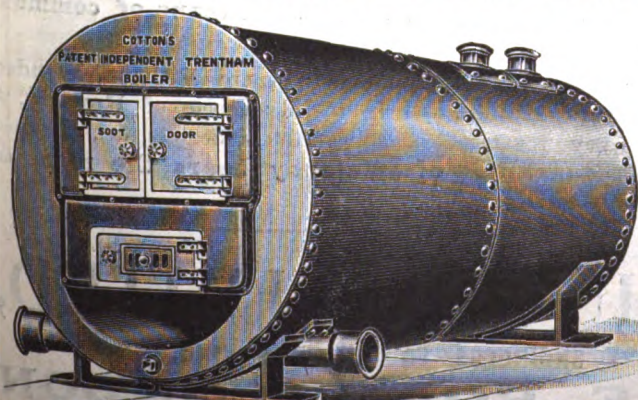
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committee had been conducted on the plan of receiving reports from the various members on the different questions involved, and also making further arrangements whereby the members could obtain more information on the subjects of particular importance. They had thus obtained some very valuable information, and many of the reports were specially interesting.

The question of apprenticeships had had special consideration, and the information they had received upon the subject would prove to be of great value. There was, he said, a general opinion amongst the various members in the committee in favour of the development of maintenance scholarships, and Mr. Jowett drew special attention to a report of the London County Council in which the extension of such scholarships was specially mentioned and favoured. The same Council had made a suggestion that all education authorities should make inquiries with regard to the employment of each child after leaving school, and Mr. Jowett was of opinion that if that could only be done some of the most valuable information they had ever had would be obtained.

Referring especially to the training part in the apprenticeship question, Mr. Jowett asked how it could be done? Although in many trades machinery had caused a smaller demand for skilled labour than before, that was not the case in every department of work. There were a number of trades in which combination amongst workmen had maintained the system of apprentices. In the technical education of apprentices something should be done to regulate their numbers. Many employers did not take sufficient trouble with their apprentices, and they never dreamt of providing them with opportunities of becoming first-class workmen. In one country legislation had enacted that if an employer did not do everything in his power for the good of his apprentice he would forfeit the right to have one.

Mr. Jowett, in answer to Mr. Hallam, who took exception to the remarks made with regard to the master and the apprentice, said that if a master provided facilities for his apprentice to get good all round instruction, he had nothing to fear. To keep a young lad at one particular thing, month in and month out, was not making proper provision for him, and the outcome of such procedure would be a half-trained workman.

### DALY COLLEGE, INDORE.

ARRANGEMENTS are now in train for starting this work almost immediately. The design for the college buildings has been prepared, says *Indian Engineering*, by Sir Swinton Jacob, and the style of architecture is Indo-Saracenic, a style in which Sir Swinton simply excels. The main building will be faced with Jaipur marble and all projections, such as windows, domes, &c., will also be of marble. The boarding-houses and other subsidiary buildings will be constructed of light coloured brick and will not be plastered. The main building alone is estimated to cost 5½ lacs, the houses for the principal and other masters will cost a lac, and the laying out of the grounds, the construction of a small hospital and the provision of furniture another 1½ lacs. The Government of India will probably make a substantial contribution towards the cost of these buildings. The boarding-houses, pavilion, temple, masjid, stables, &c., will be constructed entirely from the funds subscribed by the chiefs at a cost of over 3½ lacs. The chiefs have in addition subscribed a further sum of 8 lacs, the greater portion of which will be invested to form an endowment fund. At the head of the list of subscribers stands the Maharajah Scindia of Gwalior with a munificent donation of 5 lacs; next comes the Indore Durbar with 2 lacs, third the Maharajah of Rewa with 1½ lacs. The remaining subscriptions range from 40,000 rs. to 50 rs.

A BLOCK of fifteen shops, to be called "The Market," is about to be erected at Chiswick, having a total frontage to Turnham Green Terrace of 254 feet. Messrs. Palgrave & Co. are the architects and Messrs. R. Ward & Son the contractors. The contract has been signed and the work is to proceed immediately.

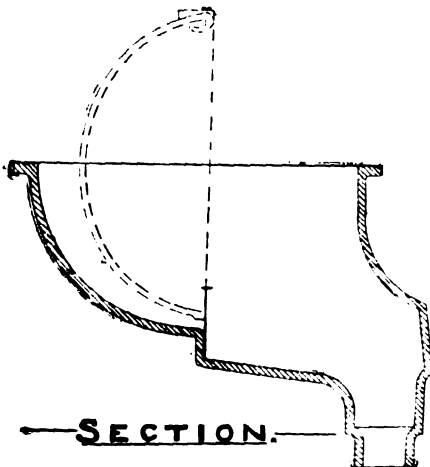
An imposing building, to be called "Green Court," is to be erected on a site having a frontage to Shepherd's Bush Green of 225 feet. The building is to contain 156 self-contained residential flats of from three to five rooms each, and will be built in three sections, of fireproof construction, seven storeys high. Each block will have electric lifts approached from spacious lounge hall. The grounds will be laid out with garden courts, two playing fountains, &c. Messrs. Palgrave & Co. are the architects.

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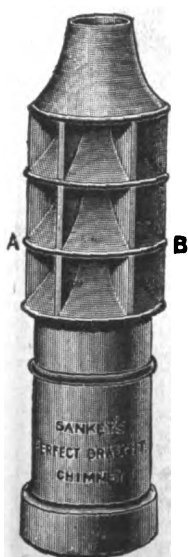
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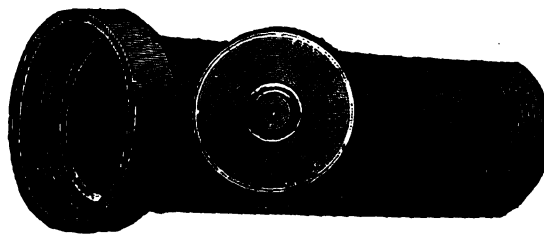
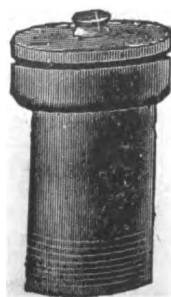
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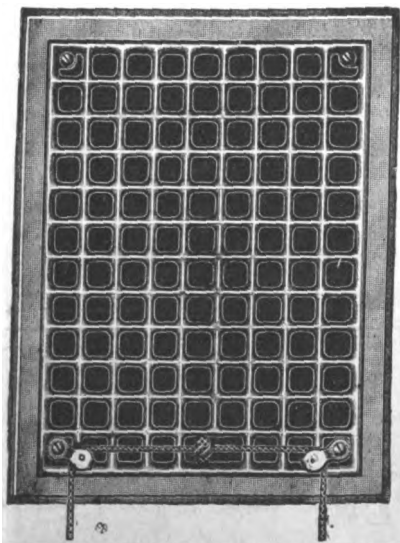
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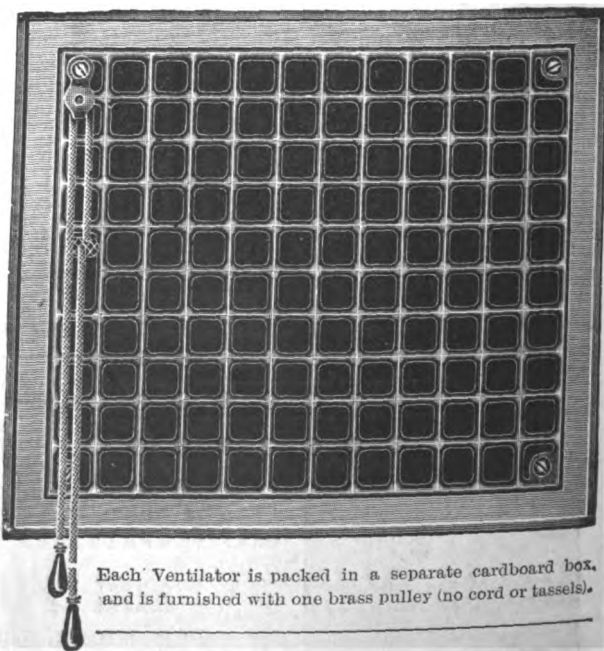
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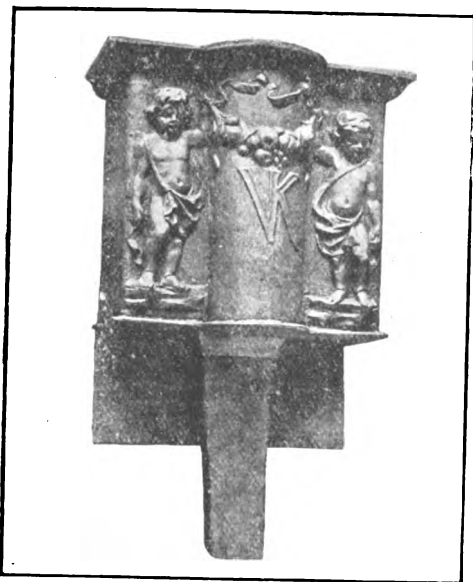
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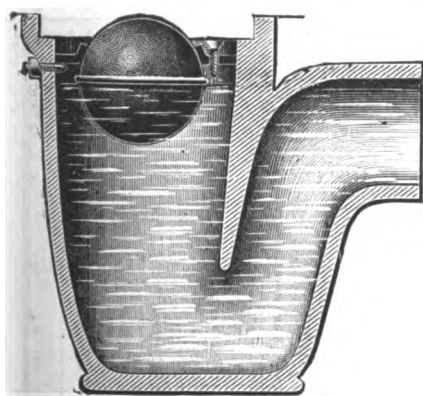
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answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

**TENDERS, ETC.**

\*\* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

**COMPETITIONS OPEN.**

EARLESTOWN. — Nov. 30. — The Newton-in-Makerfield Urban District Council invite competitive plans for erection of a public library, the total cost, exclusive of site, not to exceed 4,000l. Mr. C. Cole, clerk, Town Hall, Earlestown, Lancs.

GLASGOW. — Dec. 12. — The Corporation of Glasgow invite competitive designs for laying-out the estate at Riddrie, by the erection thereon of small self-contained houses. Premiums of 75l., 50l. and 25l. will be awarded. Mr. A. W. Myles, town clerk, City Chambers, Glasgow.

GOOLE. — Dec. 31. — The Goole Joint Body of Governors invite competitive designs for erection of a dual secondary school, accommodating 200 students, with provision for the conduct of technical and evening classes. Premiums of 50l. and 25l. Deposit 2l. 2s. Mr. James Wm. Johnson, clerk to the Governors, Council Offices, Goole.

MONTVIDEO. — Dec. 14. — La Comision Nacional de Caridad require competitive plans for new founding hospital with approximate cost. Plans and report, under mottoes, and, in sealed envelope, name and address of competitor. The four selected plans will receive 212l. each, and will be asked to further compete. Further particulars from the Consulate-General for Uruguay, 5 and 6 Clement's Inn, Strand, W.C.

SUNDERLAND. — Feb. 1. — The committee of the Sunderland infirmary invite designs for a children's hospital. Premiums of 100l., 50l. and 25l. are offered. Deposit 1l. 1s. Mr. Thomas Robinson, secretary, Infirmary Offices, Bank Buildings, Sunderland.

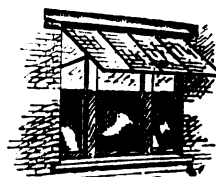
WOLVERHAMPTON. — Dec. 31. — The Board of Management of the Wolverhampton and Staffordshire general hospital, Wolverhampton, invite competitive designs for a nurses' home adjoining the hospital. Mr. J. Stephen Neil, house governor and secretary.

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**CONTRACTS OPEN.**

**ALDBOROUGH.**—Nov. 23.—For the erection of Aldborough proposed school, for the Norfolk education committee. Deposit 1*l.* 1*s.* Send names by November 5 to Mr. C. J. Brown, architect, Cathedral Close, Norwich.

**BELFAST.**—Nov. 12.—For the erection of shops and warehouse in Smithfield. Mr. Thomas Houston, architect and civil engineer, Kingscourt, Wellington Place, Belfast.

**BELFAST.**—Nov. 15.—For the construction of an underground convenience in Donegall Street North. Deposit 1*l.* 1*s.* The City Surveyor's Office, Belfast.

**CLEVELEYS.**—Nov. 20.—For the erection of a public elementary school at Cleveleys, near Fleetwood, Lancs, to accommodate 300 scholars. Deposit 2*l.* Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

**COLCHESTER.**—Nov. 6.—For the foundations of the main building at the Essex lunatic asylum at Mile End. Deposit 20*l.* The County Asylum Office, 4 Duke Street, Chelmsford.

**CORNFORTH.**—Nov. 8.—For the erection of butchering premises, stabling, &c., at Old Cornforth, Durham. Deposit 1*l.* Mr. H. T. Gradon, architect, Market Place, Durham.

**ELSTEAD.**—Nov. 5.—For the erection of sanitary out-buildings at Elstead schools, near Godalming. Messrs. F. A. & A. W. Mellersh, surveyors, Godalming.

**EPSOM.**—Nov. 12.—For the erection of two acute blocks and the rebuilding of a nurses' block at the Manor asylum, Epsom, Surrey, for the London County Council. Deposit 5*l.* The Clerk of the Asylums Committee, 6 Waterloo Place, London, S.W.

**FARNWORTH.**—Nov. 3.—For the erection of a public elementary school in Plodder Lane. Deposit 1*l.* 1*s.* Mr. H. Rostron, secretary of education, Education Office, Darley Street, Farnworth, near Bolton.

**FERRYHILL.**—For the rebuilding of business premises at Ferryhill, Durham. Mr. T. H. Murray, architect and surveyor, Consett.

**FULWOOD.**—Nov. 27.—For the erection of a public elementary school to accommodate 162 children at Fulwood, near Preston, Lancashire. Deposit 2*l.* Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

**GERRANS.**—Nov. 10.—For renovating the Wesleyan chapel, Gerrans, Cornwall. Mr. Barnett, chapel keeper, Gerrans.

**GLASGOW.**—Nov. 14.—For (1) the digger, mason and bricklayer's work; (2) the cast-iron and steelwork; (3) the fireproof floors; (4) the wrightwork; (5) the metal sashes; (6) the roof glazier's work; (7) the wood block floors; (8) the slater's work; (9) the plumber's work; and (10) the plasterer's work required in connection with the Mitchell library buildings to be erected in North Street. Deposit 5*l.* 5*s.* Mr. William B. Whitie, 219 St. Vincent Street, Glasgow.

**HIPPERHOLME.**—Nov. 5.—For the mason, joiner, plasterer, roof-tiler and plumberwork required in the erection of a detached house. Messrs. J. F. Walsh & Graham Nicholas, architects, Museum Chambers, Halifax.

**HUNCOAT.**—Nov. 27.—For the erection of a public elementary school to accommodate three hundred children at Huncoat, near Accrington, Lancashire. Deposit 2*l.* Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

**ILFORD.**—Nov. 12.—For the roofing in with reinforced concrete of the septic tanks, &c., at the outfall works, Loxford Lane. Deposit 2*l.* 2*s.* Mr. H. Shaw, engineer and surveyor to the Council, Town Hall, Ilford.

**IRELAND.**—Dec. 1.—For the following works in connection with the erection of a new bacon factory at Roscrea, co. Tipperary:—(1) Excavations, foundations, concrete floors and walls. (2) Corrugated iron buildings, or alternatively buildings with Belfast felt roofing. Deposit 2*l.* The Secretary, Roscrea Bacon Factory, Roscrea.

**KENDAL.**—Nov. 15.—For the erection of a residence at Helsington Laithes. Mr. John F. Curwen, architect, 26 Highgate, Kendal.

**LICHFIELD.**—Nov. 9.—For the following work, for the estates committee:—(1) Papering and colouring, &c., and providing and laying quarry floor tiles to fourteen cottages in Upper St. John Street; (2) taking down and re-erecting chimneys to two cottages at the rear of the magistrates' room, Wade Street; (3) outside painting, &c., of cottages, numbered 15 to 33 inclusive, in Levett's Fields. The City Surveyor's Office, Stowe Street.

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LONDON.—Nov. 6.—For alterations and additions to porter's lodge of the home for aged poor, Elder Road, West Norwood, for the Lambeth Board of Guardians. Deposit 2*l*. Mr. E. C. Beaumont, architect, 78 Fleet Street, E.C.

LONDON.—Nov. 13.—For the reconstruction of the bridge carrying Hampstead Road over the London and North-Western Railway, near Euston station, in the borough of St. Pancras. Deposit 3*l*. Mr. Maurice Fitzmaurice, chief engineer, County Hall, Spring Gardens, S.W.

MIDDLEWICH.—Nov. 21.—For the centrifugal pumping plant and erection of pumping station and caretaker's house on the sewage disposal works. Mr. Frederick W. Stocks, engineer, Town Hall, Middlewich.

NEWTON-IN-MAKERFIELD.—Nov. 30.—For the erection of a public library at an inclusive cost of 4,000*l*. Mr. C. Cole, Clerk, Town Hall, Earlestown, Lancs.

NORDELPH.—Nov. 3.—For the following works at the Chapel farm, for the Norfolk County Council:—Conversion of house into two cottages, drainage and subdivision of yard and buildings, fencing of grass land. Mr. E. C. Warner, Nordelph.

NORTH SHIELDS.—Nov. 14.—For proposed secondary school and pupil teachers' centre at Hawkey's Lane. Deposit 1*l*. 1*s*. Mr. J. C. Maxwell, architect, 25 Eldon Square, Newcastle-on-Tyne.

ODIHAM.—Nov. 5.—For alterations at the Odiham police station, Hants. Deposit 2*l*. 2*s*. Mr. W. J. Taylor, county surveyor, Winchester.

PENZANCE.—Nov. 10.—For the erection of a wing and other additions and alterations to the Riviera Palace hotel. Mr. Oliver Caldwell, architect, Victoria Square, Penzance.

POOLE.—Nov. 15.—For the erection of additional buildings and alterations to the schools at Hamworthy. Mr. H. F. J. Barnes, architect and surveyor, Towngate Street, Poole.

SCOTLAND.—Nov. 3.—For the mason, carpenter and slater's work of additions to premises in Albert Street, Fraserburgh. Messrs. Reid & McRobbie, architects, Saltoun Chambers, Seaforth Street, Fraserburgh.

SCOTLAND.—Nov. 5.—For the mason, carpenter, slater, plasterer, plumber and painter and glazier's work of alterations on farmhouse and new offices at Oldmill, Aberdeen.

Messrs. Brown & Watt, architects, 17 Union Terrace, Aberdeen.

SCOTLAND.—Nov. 5.—For mason, carpenter, plumber and painter's work on the Palace hotel, Elgin. Mr. R. B. Pratt, architect, Town and County Bank Buildings, Elgin.

SOUTHAMPTON.—Nov. 13.—For the erection of an inland revenue office. Deposit 1*l*. 1*s*. H.M. Office of Works, &c., Storey's Gate, S.W.

SOUTHOWRAM.—Nov. 5.—For the mason, carpenter, joiner, plumber, glazier, plasterer and slater's work in erection of three houses at Bank Top, Southowram, Yorks. Mr. H. Thompson, architect, Southgate Chambers, Elland.

TILBURY.—Nov. 15.—For the erection of a police station at Tilbury, Essex. Deposit 5*l*. Names by November 5 to Mr. F. Whitmore, county architect, Duke Street, Chelmsford.

WALES.—Nov. 8.—For the builder, painter, decorator and furnisher's work in connection with the conversion into offices of Bank House, Spilman Street, Carmarthen. County Surveyor, King Street, Carmarthen, or of the County Education Architect, Shire Hall, Carmarthen.

WALES.—Nov. 10.—For carrying-out extensive alterations to and the renovation of the Wesleyan chapel, Pontypool. Mr. Gath J. Fisher, architect, Club Chambers, Pontypool.

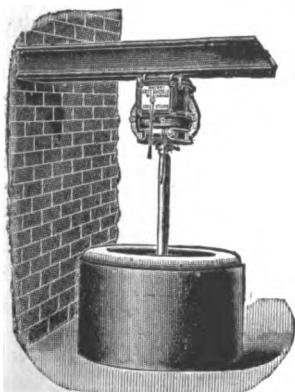
WALES.—Nov. 14.—For the erection of a school for the accommodation of 300 boys, 300 girls and 300 infants, together with cookery and manual instruction centres, Treforest, Pontypriid. Deposit 3*l*. 3*s*. Mr. P. R. A. Willoughby, A.M.I.C.E., surveyor to the Council, Municipal Buildings, Pontypriid.

WALES.—Nov. 17.—For erection of a minister's house at Station Road, Ynyshir. Mr. E. Thomas, 16 South Street, Ynyshir, Rhondda.

WALES.—Nov. 28.—For erection of stone and steel bridge at Glanyrafonddu, near Talley, Llandilo, Carmarthenshire. Mr. Charles H. Mounsey, county engineer and surveyor, Carmarthen.

WESTHAM.—Nov. 12.—For the erection of a public elementary school for infants at Westham, East Sussex. Names to Mr. F. J. Wood, county surveyor, County Hall, Lewes.

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**WILLINGTON.**—Nov. 9.—For the erection of stone walls to enclose new cemetery ground at Willington, Durham. Mr. J. H. Gardner, surveyor, Oxford House, Willington, Durham.

**WIMBLEDON.**—Nov. 5.—For the carrying-out of the following works, for the education committee, viz.:—(1) Erection of two shelters in the playground of the special school and alterations of playgrounds at the Queen's Road school; (2) painting of railings round the Dundonald Road schools; and (3) painting of external wood and ironwork of the old portion of the Queen's Road school. Education Office, 12 Queen's Road, Wimbledon.

### PRESERVATION OF TIMBER.

THE strength of cross-tie woods has been investigated by the United States Forest Service at its testing stations at the St. Louis Exposition and Purdue University. A report has been prepared by Professor W. K. Hatt, of the United States Forest Service, with the following conclusions:—(1) A high degree of steaming is injurious to wood. The degree of steaming at which pronounced harm results will depend upon the quality of the wood and its degree of seasoning and upon the pressure (temperature) of steam and the duration of its application. For loblolly pine the limit of safety is certainly 30 lbs. for four hours, or 20 lbs. for six hours. (2) The presence of zinc chloride will not weaken wood under static loading, although the indications are that the wood becomes brittle under impact. (3) The presence of creosote will not weaken wood of itself. Since apparently it is present only in the openings of the cells and does not get into the cell walls, its action can only be to retard the seasoning of the wood.

A DEPUTATION of prominent Malvern tradesmen has been appointed to approach the lord of the manor, Sir Henry Grey, with reference to a proposal for a funicular railway up the Malvern Hills. A similar scheme, estimated to cost 3,000%, was mooted many years ago.

### TENDERS.

#### BARNSELEY.

For erection of mortuary at Beckett hospital, Barnsley. Mr. HAROLD TAYLOR, architect, Barnsley.

#### Accepted tenders.

|                                    |      |    |   |
|------------------------------------|------|----|---|
| J. & C. D. Potter, Barnsley, mason | £390 | 0  | 0 |
| Robinson & Son, Barnsley, joiner   | 119  | 15 | 6 |
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| Fleming, Barnsley, plasterer       | 24   | 7  | 6 |
| Robinson & Son, slater             | 20   | 2  | 6 |
| Stephenson & Sons, painter         | 14   | 0  | 0 |

#### BRIGHTON.

For the erection of residence. Mr. W. C. F. GILLAM, architect. Quantities by Messrs. MATTHEWS & COLMAN.

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|----------------------------------|--------|---|---|
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| Brown & Sons                     | 2,898  | 0 | 0 |
| Wallis & Sons                    | 2,894  | 0 | 0 |
| Penfold                          | 2,857  | 0 | 0 |
| Field & Co., Brighton (accepted) | 2,779  | 0 | 0 |

#### CHADWELL HEATH.

For enlargement of infants' school and erection of mixed school to accommodate 300 children. Mr. JAMES KENNEDY, architect, 25 Bedford Row, London, W.C.

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SOUTHCORBE, architect, Barnstaple.  
Darch . . . . . £534 12 0  
Upton . . . . . 503 0 0  
Sanders & Son . . . . . 492 10 0  
Sillifant & Son . . . . . 448 0 0  
Brown & Norman . . . . . 422 0 0  
Pickett . . . . . 406 2 8  
Slee . . . . . 394 17 0  
COOKE & SONS, Barnstaple (accepted) . . . . . 386 0 0

**DARTFORD.**

For repair, painting and dry-docking of pontoon at Long  
Reach, for the Metropolitan Asylums Board.  
Loasby & Salmon . . . . . £1,230 0 0  
Glengall Ironworks . . . . . 620 0 0  
Reeder & Co. (recommended) . . . . . 297 0 0

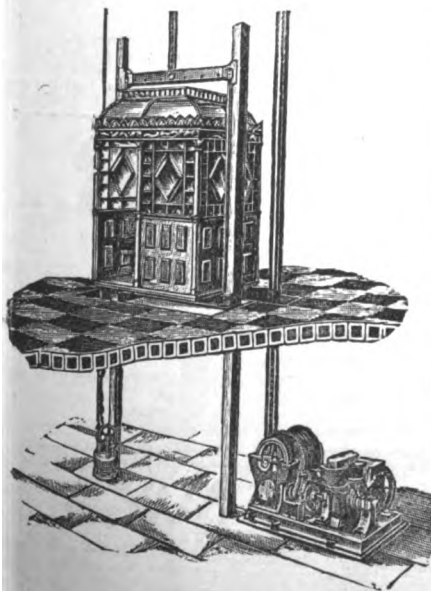
**GILLINGHAM.**

For the erection of a pair of cottages at Twydale Lane.  
Hammond . . . . . £535 0 0  
Phillips . . . . . 469 0 0  
Foster . . . . . 450 0 0  
Gates . . . . . 439 0 0  
Candler . . . . . 420 0 0  
Richardson . . . . . 385 0 0  
Harris . . . . . 369 0 0  
Snow . . . . . 358 0 0  
KEMP BROS., Rainham (accepted) . . . . . 347 0 0

**HOVE.**

For alterations and improvements to premises, Brunswick  
Road. Mr. W. C. F. GILLAM, architect.  
Parsons & Sons . . . . . £358 0 0  
Diplock . . . . . 357 0 0  
Lockyer . . . . . 357 0 0  
Brown & Sons . . . . . 347 0 0  
TITCOMBE & SON, Brighton (accepted) . . . . . 343 0 0

# LIFTS



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**LETCHWORTH.**

For bungalow residence for the Rev. C. Platts, M.A. Messrs. STONEBRIDGE & FOLL, architects, Woburn Sands.

|                  |      |    |   |
|------------------|------|----|---|
| Seymour & Son    | £930 | 0  | 0 |
| Beckley & Tarpie | 913  | 0  | 0 |
| Raban & Son      | 839  | 0  | 0 |
| Newton           | 808  | 0  | 0 |
| Jeff & Edwards   | 788  | 10 | 0 |
| Foster & Co.     | 760  | 0  | 0 |

**LIVERSEDGE (YORKS).**

For forming, levelling, kerbing, channelling, paving, metal-  
ling and making good of Dymond Road. Mr. FRANK  
LANGLEY, engineer.

|                                            |      |    |    |
|--------------------------------------------|------|----|----|
| Jowett                                     | £552 | 3  | 5  |
| Graham & Co.                               | 549  | 10 | 0  |
| Totty                                      | 535  | 10 | 0  |
| Drake                                      | 519  | 10 | 0  |
| Horsfall & Son                             | 512  | 5  | 5  |
| Naylor & Sons                              | 496  | 8  | 3  |
| SIDEBOTTOM & BROWN, Cleckheaton (accepted) | 480  | 17 | 10 |

**LONDON.**

For the erection of detached residence, Dollis Avenue,  
Finchley. Mr. A. W. HUDSON, architect, 87 Finsbury  
Pavement, E.C.

|                                     |        |   |   |
|-------------------------------------|--------|---|---|
| Spiers & Son                        | £1,658 | 0 | 0 |
| W. & T. Inkpen                      | 1,600  | 0 | 0 |
| Mattock Bros.                       | 1,273  | 0 | 0 |
| Lawrence & Son                      | 1,192  | 0 | 0 |
| Sheffield Bros.                     | 1,192  | 0 | 0 |
| SILK & SON, Homerton, N. (accepted) | 1,147  | 0 | 0 |

For painting the exterior of casual wards, boiler-house and  
other buildings at Gainsborough Road, N.E.

|                   |      |    |   |
|-------------------|------|----|---|
| Greaves           | £297 | 0  | 0 |
| Monk              | 295  | 0  | 0 |
| Beaumont & Sons   | 254  | 0  | 0 |
| Sparrow & Son     | 246  | 10 | 0 |
| Jolly             | 224  | 0  | 0 |
| Willmott          | 215  | 0  | 0 |
| Collins           | 207  | 0  | 0 |
| Inkpen            | 202  | 0  | 0 |
| Dryden            | 197  | 0  | 0 |
| Markham & Markham | 187  | 0  | 0 |

**LONDON—continued.**

|                 |      |    |    |
|-----------------|------|----|----|
| Rogers          | £185 | 0  | 0  |
| Neal & Son      | 180  | 10 | 0  |
| Ashby Bros.     | 175  | 0  | 0  |
| Phillips        | 169  | 0  | 0  |
| Ridgway         | 165  | 0  | 0  |
| Hawtreys & Son  | 165  | 0  | 0  |
| Silk & Son      | 165  | 0  | 0  |
| Jarvis & Co.    | 160  | 0  | 0  |
| Keetch          | 158  | 0  | 0  |
| Wood Bros.      | 156  | 0  | 0  |
| Robinson        | 153  | 0  | 0  |
| Sabey & Son     | 152  | 0  | 0  |
| Sands & Burley  | 152  | 0  | 0  |
| Hayworth & Sons | 152  | 0  | 0  |
| Stewart         | 149  | 0  | 0  |
| Butters         | 148  | 0  | 0  |
| Wouter & Co.    | 147  | 0  | 0  |
| King            | 147  | 0  | 0  |
| Dearsley & Son  | 139  | 10 | 0  |
| Bishop          | 137  | 0  | 0  |
| Loasby & Salmon | 129  | 0  | 0  |
| Brown Bros.     | 125  | 0  | 0  |
| Smith & Co.     | 119  | 15 | 0  |
| Langdon & Co.   | 115  | 0  | 0  |
| Chudleigh Bros. | 114  | 6  | 0  |
| Broadbank       | 114  | 0  | 0  |
| Heriter & Co.   | 112  | 16 | 0  |
| Wales           | 109  | 0  | 0  |
| Barrett & Power | 102  | 0  | 0  |
| Power           | 99   | 0  | 0  |
| Richards & Sons | 82   | 13 | 10 |

For the erection of detached house, Stormont Road, High-  
gate. Mr. A. W. FIELD, architect, Norfolk House.  
Quantities by Mr. A. C. KENNETT.

|                                                        |        |   |   |
|--------------------------------------------------------|--------|---|---|
| Kerry & Son                                            | £2,186 | 0 | 0 |
| Tucker                                                 | 2,160  | 0 | 0 |
| Parfitt & Co.                                          | 2,027  | 0 | 0 |
| Knight & Son                                           | 1,793  | 0 | 0 |
| Lawrence & Son                                         | 1,779  | 0 | 0 |
| MATTOCK & PARSONS, Gray's Inn Road, W.C.<br>(accepted) | 1,771  | 0 | 0 |

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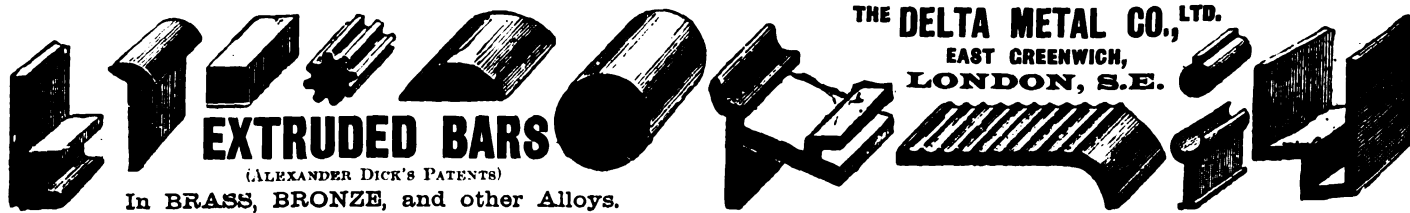
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## LONDON—continued.

For additions and alterations to the electricity works  
Osborn Street, Whitechapel.

|                                     |        |   |   |
|-------------------------------------|--------|---|---|
| Coles . . . . .                     | £1,567 | 0 | 0 |
| Stedman & Co. . . . .               | 1,380  | 0 | 0 |
| Thomas & Edge . . . . .             | 1,273  | 0 | 0 |
| Holliday & Greenwood . . . . .      | 1,259  | 0 | 0 |
| F. & T. Thorne . . . . .            | 1,247  | 0 | 0 |
| Symes . . . . .                     | 1,245  | 0 | 0 |
| F. & F. J. Wood . . . . .           | 1,238  | 0 | 0 |
| Perry & Co. . . . .                 | 1,224  | 0 | 0 |
| Calcutt . . . . .                   | 1,220  | 0 | 0 |
| Spencer, Santo & Co. . . . .        | 1,200  | 0 | 0 |
| Barker . . . . .                    | 1,195  | 0 | 0 |
| Patman & Fotheringham . . . . .     | 1,172  | 0 | 0 |
| F. & E. Davey . . . . .             | 1,120  | 0 | 0 |
| McLaughlin & Harvey . . . . .       | 1,093  | 0 | 0 |
| Nightingale (recommended) . . . . . | 1,066  | 0 | 0 |

For extensions and alterations of baths and wash-houses,  
Kennington Road. Mr. H. C. J. EDWARDS, borough  
engineer.

|                                                  |        |   |   |
|--------------------------------------------------|--------|---|---|
| F. & G. Foster . . . . .                         | £2,222 | 0 | 0 |
| Bragg & Sons . . . . .                           | 2,212  | 0 | 0 |
| Mitchell & Son . . . . .                         | 2,101  | 0 | 0 |
| Minter . . . . .                                 | 2,078  | 0 | 0 |
| Johnson & Co. . . . .                            | 2,075  | 0 | 0 |
| Smith & Son . . . . .                            | 2,025  | 0 | 0 |
| Spencer, Santo & Co. . . . .                     | 1,973  | 0 | 0 |
| Coles . . . . .                                  | 1,938  | 0 | 0 |
| Johnson & Son . . . . .                          | 1,870  | 0 | 0 |
| Hyde & Co. . . . .                               | 1,847  | 0 | 0 |
| Martin, Wells & Co. . . . .                      | 1,829  | 0 | 0 |
| Bendon . . . . .                                 | 1,828  | 0 | 0 |
| Sharpington . . . . .                            | 1,828  | 0 | 0 |
| Lawrence & Son . . . . .                         | 1,824  | 0 | 0 |
| Edwards & Medway . . . . .                       | 1,721  | 0 | 0 |
| Nightingale . . . . .                            | 1,690  | 0 | 0 |
| Deacon & Son . . . . .                           | 1,673  | 0 | 0 |
| MILLS, Westcombe Park, S.E. (accepted) . . . . . | 1,584  | 0 | 0 |

## LONDON—continued.

For erecting a gymnasium in connection with the Wood  
Street school, Woolwich.

|                                                                         |        |    |   |
|-------------------------------------------------------------------------|--------|----|---|
| W. & B. H. Davey . . . . .                                              | £1,044 | 2  | 5 |
| Stevens & Sons . . . . .                                                | 823    | 0  | 0 |
| Harris . . . . .                                                        | 812    | 0  | 0 |
| Everitt . . . . .                                                       | 773    | 11 | 0 |
| Holloway . . . . .                                                      | 759    | 0  | 0 |
| Bulled & Co. . . . .                                                    | 746    | 3  | 2 |
| Smith & Sons, Ltd. . . . .                                              | 705    | 0  | 0 |
| Kirk & Randall . . . . .                                                | 699    | 0  | 0 |
| Thomas & Edge . . . . .                                                 | 683    | 0  | 0 |
| Leng . . . . .                                                          | 675    | 0  | 0 |
| J. & C. Bowyer, Westow Street, Upper<br>Norwood (recommended) . . . . . | 659    | 0  | 0 |
| Architect's estimate . . . . .                                          | 768    | 0  | 0 |

For the erection of a residence on the Beech Hill Park  
estate, Hadley Wood, for Dr. Frank Pershouse. Mr.  
ALBERT E. KINGWELL, architect, 103 and 104 Cheap-  
side, London, E.C. Quantities by Mr. H. F. WILLIAMS.

|                                              |        |    |   |
|----------------------------------------------|--------|----|---|
| Spencer, Santo . . . . .                     | £2,680 | 0  | 0 |
| Parnell & Son . . . . .                      | 2,677  | 0  | 0 |
| Kingerlee & Son . . . . .                    | 2,667  | 0  | 0 |
| Peattie . . . . .                            | 2,600  | 0  | 0 |
| Foster & Dicksee . . . . .                   | 2,589  | 0  | 0 |
| Newton . . . . .                             | 2,588  | 0  | 0 |
| Leslie & Co. . . . .                         | 2,577  | 0  | 0 |
| Warboys . . . . .                            | 2,527  | 10 | 0 |
| Soole & Son . . . . .                        | 2,500  | 0  | 0 |
| Bloxham . . . . .                            | 2,480  | 0  | 0 |
| Hill . . . . .                               | 2,470  | 0  | 0 |
| Dunn . . . . .                               | 2,337  | 0  | 0 |
| FAIRHEAD & SON, Enfield (accepted) . . . . . | 2,247  | 0  | 0 |

## REDDITCH.

For erection of engine-house, for the Royal Enfield Cycle  
Co. Mr. BERNARD PERRINS, architect.

|                              |        |    |   |
|------------------------------|--------|----|---|
| Newbould . . . . .           | £1,149 | 0  | 0 |
| G. Huins & Son . . . . .     | 920    | 15 | 0 |
| C. G. Huins & Sons . . . . . | 794    | 5  | 7 |

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**SALISBURY.**

For improvement of St. Mark's Avenue. Messrs. CLUTTON, surveyors, Westminster. Messrs. LEMON & BLIZARD, engineers, Salisbury.

|                                 |        |    |    |
|---------------------------------|--------|----|----|
| Napier & Sons                   | £3,692 | 0  | 0  |
| Trimm                           | 3,569  | 0  | 0  |
| Crockerell                      | 3,420  | 14 | 0  |
| Osenton                         | 3,278  | 0  | 0  |
| Wort & Way                      | 3,199  | 0  | 0  |
| Budden                          | 3,195  | 0  | 0  |
| Ireland                         | 3,100  | 0  | 0  |
| Free & Sons                     | 2,997  | 10 | 0  |
| Osman                           | 2,948  | 0  | 0  |
| Cook & Co.                      | 2,930  | 0  | 0  |
| Trueman                         | 2,929  | 0  | 0  |
| Riley                           | 2,881  | 11 | 10 |
| Butt                            | 2,852  | 19 | 11 |
| Shaddock                        | 2,843  | 14 | 3  |
| Grounds & Newton                | 2,828  | 11 | 6  |
| Coston & Co.                    | 2,821  | 0  | 0  |
| Macdonald                       | 2,769  | 0  | 0  |
| DOUGLAS, Southampton (accepted) | 2,700  | 0  | 0  |
| Hewett & Sons                   | 2,685  | 1  | 10 |
| Tryhorn & Son                   | 2,464  | 10 | 0  |

**TODDINGTON (BEDS).**

For re-erection of farm buildings and cow-houses. Messrs. STONEBRIDGE & FOLL, architects, Woburn Sands, R.S.O. Quantities by Mr. H. H. TURNER.

|                                                   |      |    |   |
|---------------------------------------------------|------|----|---|
| Sinfield                                          | £607 | 0  | 0 |
| F. & T. Gregory                                   | 595  | 0  | 0 |
| Muckleston                                        | 514  | 12 | 0 |
| Sharpe                                            | 509  | 6  | 0 |
| AYRE & SON, Hockliffe (accepted)                  | 503  | 17 | 0 |
| <i>Remodelling homestead and repairs, &amp;c.</i> |      |    |   |
| Sinfield                                          | 323  | 0  | 0 |
| Botsford                                          | 279  | 19 | 0 |
| Sharpe                                            | 273  | 10 | 0 |
| Ayre & Son                                        | 265  | 8  | 6 |
| Harris                                            | 225  | 0  | 0 |
| MUCKLESTONE, Toddington (accepted)                | 205  | 10 | 9 |

**TODDINGTON (BEDS).—continued.**

*Galvanised hay-barn.*

|                          |     |    |   |
|--------------------------|-----|----|---|
| Bacchus                  | £92 | 18 | 0 |
| Hill & Smith             | 78  | 0  | 0 |
| Croggins, Ltd.           | 68  | 10 | 0 |
| MAIN, Glasgow (accepted) | 61  | 0  | 0 |

**TRADE NOTES.**

MESSRS. DOULTON & Co., LTD., have been awarded a diploma of honour and the grand prix at the Milan exhibition, in the hygienic section, for sanitary appliances.

MESSRS. WARING are to carry out the reconstruction of the Pump Room hotel, Bath. At least 70,000*l.* will be expended upon the structural alterations.

MR. ROBERT STEVENSON, of 11 Queen Victoria Street, London, E.C., has been appointed agent for the Glazed Faience and Brick Co., of Selby, Yorks.

MESSRS. J. B. JOYCE & Co., Whitchurch, Salop, have been favoured with the order for a large clock and bells for Adelaide memorial church, Myshall, Ireland. It will contain all the best and latest improvements, and generally to the designs of the late Lord Grimthorpe, for whom this firm had the honour of making a large clock for his own residence. They have also one in hand for New York, and are now fixing a large clock and bells at Shrewsbury schools and another at Claverdon Church, Warwick.

A new hour-striking clock from the designs and plans of Lord Grimthorpe has just been fixed in the new tower of High Cross parish church, near Ware, Herts, by Messrs. Wm. Potts & Sons, clock manufacturers, of Leeds and Newcastle-on-Tyne. All the wheels are of gun-metal, cut on the engine from the solid, and pinions of cast-steel cut on engine and hardened and tempered. Lord Grimthorpe's double three-legged gravity escapement and compensation pendulum for variation of temperatures, with a 2 cwt. cylindrical-shaped bob. The outside dial is 5 feet in diameter, with dark background and gilt figures, hands and minutes.

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DRY BOARDS.  
**TEAK LOGS & PLANKS.**

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FOR CATALOGUE.

**BUILDING AND BUILDERS.**

MESSRS. G. & R. COUSIN, of Edinburgh and Alloa, have obtained the contract for erecting the Queen Victoria Memorial school in Scotland.

THE men employed in the building trade at Melbourne demand a forty-four hours week, and declare that they will strike if their request is not considered.

MR. CHARLES HENRY NORMANTON, Ashley Heath, Hale, Cheshire, builder and contractor, of Manchester, has left net personality of 76,162*l*.

THE Bengal Government have under consideration a proposal to appoint a whole-time Government plumber to take charge of all the plumbingwork in Government buildings in Calcutta, whether of the nature of original works or repairs.

THE Crompton District Council have made arrangements to connect untrapped sewers with mill chimneys. The experiment is new, and its effect will be noted with interest. It is thought if there were inlets to mill chimney galleries they would be the means of clearing the sewers of gas.

MR. J. HOWARD COLLS attributes the present depressed condition of the building trade in the Metropolis to the attitude assumed by the London County Council. "A man who wants to rebuild his premises nowadays is so hampered," he says, "by regulations and rules that he is absolutely frightened to do the work, and rather than rebuild he will patch up the premises and keep them in that state."

A STATEMENT of the work done in Greenock Dean of Guild Court during the past twelve months shows there had been 724 cases considered, as against 629 in the previous year, and the estimated cost of the buildings and alterations had amounted to 173,600*l*., an increase of 82,900*l*. This was the highest value in one year during the past two decades, and 85,200*l*. more than the average for the last ten years.

THE Birmingham education committee have approved sketch plans of the proposed Council school in Leigh Road, Washwood Road. The plans are arranged for a one-storey building, with two large central halls. The mixed department will accommodate 700 children in fourteen classrooms,

and the infants' department 300 children in six classrooms. The approximate estimate of the cost is 16,500*l*., but this sum does not include any exceptional work to the foundations.

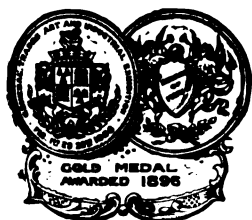
THE Lancashire Asylums Board on Monday sanctioned plans for the erection of a new asylum at Whalley to accommodate 2,000 patients. Hospital accommodation will be provided for 340 patients, and the architect stated that the plans had been prepared on the most economical lines possible compatible with reasonable requirements. The cost will be less than that at Winwick. At present, however, any estimate of the probable expense would only be the merest guess.

A BUILDER of Letchworth, who appeared at the Luton Bankruptcy Court for public examination, assigned as one of the causes of his failure losses on cottages erected for the Garden City exhibition. He explained that the cottages were to cost 180*l*. each, and were exhibited as having cost that sum of money, but he actually spent 230*l*. on the work. Incidental expenses, he claimed, swallowed up a large part of the extra cost. He still asserted that the cottages could be built for 180*l*., but, pressed by the official receiver, said he knew of no case in which a cottage had been disposed of for less than 200*l*.

THE new municipal buildings at Cardiff were opened on Monday. The buildings have cost 226,288*l*.—129,705*l*. for the town hall and 96,583*l*. for the law courts. Added to this is the purchase of the Cathays Park, 150,000*l*., and the expenditure on laying it out, about 40,000*l*. The superficial area covered by the new buildings is 16,183 square yards, of which the city hall absorbs 9,343 square yards. Eleven million bricks were used in the structures, and these, if placed end to end, would extend a distance of 1,560 miles. The weight of the stone used is 15,700 tons. There are about twenty-five miles of heating and hot-water pipes, and for the electric lighting there are 120 miles of wiring, 100 distributing boards and three main switch controlling boards. There are about a hundred telephones in the various departments. The clock tower on the city hall is 200 feet from the bottom of the foundations, and the two towers of the law courts are 125 feet high. The designs for the municipal buildings and law courts were thrown

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open to competition, the assessor being the late Alfred Waterhouse, R.A., his selection being the design of Messrs. Lanchester, Seward & Rickards, London.

### ELECTRIC NOTES.

THE number of consumers of electricity at Accrington has more than doubled during the past few years, and the Corporation are now seeking borrowing powers to enlarge their electrical department at a cost of about 14,000*l*.

THE Bury Town Council have adopted the recommendation of the tramways committee that the extension of the Bolton Road section of the tramways in the direction of Bolton, including the laying of the permanent way, &c., should be carried out under the direction of the Corporation officials, and they have instructed the officials to obtain tenders for the supply of materials and additional cars, and also to make preparations for the execution of the works.

THE report of the Board of Trade on the proceedings under the Tramways Act, 1870, during the session of 1906, states that the number of applications made in December 1905 for provisional orders under the Tramways Act, 1870, was seven. Four of the applications included power to construct new or extension tramways, the remaining three being to revive and extend powers which had expired. Except in two cases, viz. Edinburgh and Queensferry, and Portobello and Musselburgh, the applications were by local authorities. The aggregate length of the proposed tramways was 5 miles 37 chains of double line and 10 miles 61 chains of single line, and the estimated cost was 177,323*l*.

THE engineer and manager of the Brighton electricity undertaking in a report to the Town Council says he advertised the six Lancashire boilers for sale, and in reply received eight offers, ranging from 50*l*. to 210*l*. each. The first three boilers were included in one main contract, and he estimates their value at the time of the purchase at 1,800*l*. The second three boilers, by Messrs. Danks, cost 1,600*l*., making a total of 3,400*l*. The highest offer was that of Messrs. Thomson & Son, of Millwall, of 1,260*l*. The boilers will not be required any further for the generation of electricity, and as the price offered is said to be an

excellent one, it is recommended that the boilers be disposed of to the highest bidder. Prices were received for the removal of the chimney-shaft. The lowest is from Messrs. J. Barnes & Sons, of 99 North Street, who would carry out the work for a payment of 39*l*. 10*s*. The chimney was erected under a main contract, and it is therefore difficult to estimate the cost. It is said to have been 1,750*l*.

MR. BUCHMANN, the British Consul at Munich, reports that various schemes have of late been put forward to obtain water-power from the Bavarian Highlands, which would provide motive-power, officially estimated at 300,000 horse-power, not only to the State railways throughout Upper Bavaria, but also to private industrial enterprises. The Bavarian Government, however, has up till now not departed from an attitude of reserve towards these schemes, the Minister of Communications having expressed the hope, in a speech recently delivered on the subject in the Lower Chamber, that the electrification of the Bavarian State railways was only a question of time, but that the construction of electric railways in the Highlands would certainly be left to private initiative. By a water-power Bill which, at the date of Mr. Buchmann's report, was before the Bavarian Chambers, the Government will be able to acquire the power of expropriating vested rights in certain rivers and streams, the State being thus enabled to develop the water-power of the country for industrial purposes. The area of Bavaria is over 29,000 square miles, of which some 97 square miles are lakes; the length of the rivers is 44,285 miles.

THE Office of Woods has offered to hand over the suspension bridge over the Menai Straits to the County Councils of Anglesey and Carnarvonshire on the following terms:—The structure to be transferred free of charge or of any liability for past debts; the Councils to have power to reduce or abolish tolls; and the transfer to carry with it liability on the part of the Councils for the future maintenance of the bridge in perpetuity. It was decided to decline the offer, one member pointing out that the bridge was eighty years old, and that the foundation on the Carnarvonshire side was artificial, no rock having been found.

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## VARIETIES.

MR. W. N. COLAM, Edinburgh, has taken over the business of Mr. James More, jun., recently practising in Edinburgh as a tramway expert.

A DEPARTMENTAL committee is about to be appointed to inquire into and report upon the system of house-letting in Glasgow and other centres in Scotland.

THE Bilston Urban District Council have resolved to carry out the work recommended by Messrs. Bailey & McConnal for securing the stability of the town hall at an estimated cost of 300*l.*, necessary through local subsidences.

THE Manchester sanitary committee have decided to seek borrowing powers for 7,500*l.* to enable them to proceed with the first part of their scheme for the erection of tenement dwellings on the Barrack Street site, Hulme.

IN Glasgow a man was sent to prison for sixty days for the theft of 90 feet of gas-piping from the attic of a house at Jamieson Street, Govanhill. The property was wound round his body.

THE construction of the new branch of the Great Western Railway from Wynhoe, near Banbury, to Ushenden, Bucks, will be proceeded with at once. Messrs. Walter Scott & Middleton, of Westminster, are the contractors. The cost of the new line is 500,000*l.* and the length about eighteen miles.

THE plans and works committee of Edinburgh Town Council have approved sketch plans of the public wash-houses which it is proposed to erect in Paul Street, at a probable cost of 5,000*l.* It was agreed to recommend the Council to give instructions for working plans and estimates to be obtained.

A COMPANY, entitled "The Kingsway Exchange, Ltd.," has been registered for the purpose of promoting a company to build and equip a commercial exchange in the Kingsway, London. The object of the undertaking is to provide a business and social centre for commercial men in London and from the provinces, the Colonies and foreign countries.

THE directors of the Channel Tunnel Company have decided that plans and sections shall be at once deposited in the Private Bill Office of the House of Commons, with a view to the promotion next session of a private Bill authorising the construction of a tunnel between Dover and the French coast.

THE works and stores committee of the Metropolitan Water Board recommend that steps be taken for the construction of one of the storage reservoirs in the Lee Valley authorised by the East London Waterworks Act, 1900. The new reservoir will hold approximately 3,000 million gallons, and the estimated cost is 550,000*l.*

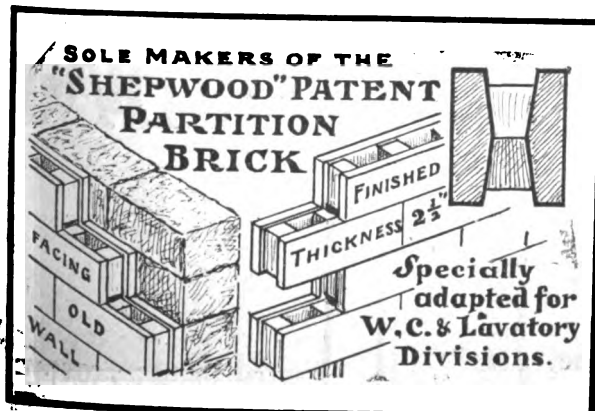
THE Birmingham city engineer and surveyor in his annual report states that 14,255 trenches for various purposes were opened in the streets, as compared with 11,466 in the previous year. To the end of last March there were 271 miles 155 yards of declared highways in the city, being about 2 miles more than in the previous year. Of these 215 miles were of macadam and 13½ of wood.

MR. LYNDEN MACASSEY sat as arbitrator on Monday between the Southern United Tramways Company and the London County Council with reference to the acquisition by the Council of the company's tramways from Vauxhall to Herne Hill and West Norwood. The company claimed a total of 82,962*l.*, and evidence was heard in support of this computation.

AT an inquest held by the Liverpool City Coroner on the bodies of a man and a boy, it was found that death was due to gas poisoning caused by defective fittings. The Coroner thought there should be some authority for

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periodically inspecting gas-fittings in houses, and he suggested that it would be a good thing if the gas company, in sending out the demand notes, would point out the dangers that were likely to result from having loose gas taps on the premises.

THE Newcastle-upon-Tyne City Council have adopted a scheme of street improvements in the centre of the town estimated to cost 372,135/. It is the continuation of a scheme commenced several years ago by running Market Street through to New Bridge Street at a cost of 183,000/. The Council expected to make a profit of 127,000/. on the resale of the surplus property.

A PERFORMANCE of selections from Handel's "Messiah" took place on Wednesday evening, the 24th ult., under the auspices of the Southwark Borough Council, at Newington Public Hall, with a band and chorus numbering upwards of 200. The audience was a large and appreciative one, and at the conclusion a hearty vote of thanks was accorded to the conductor, Mr. H. J. B. Dart, for his successful rendering of the great masterpiece which afforded so much delight.

THE Carmarthenshire County Council have granted the wish of a deputation representing various local district councils, which appealed to them to advance the Llandilo and Lampeter Light Railway Company 28,500/. towards the promotion of a light railway in the districts. Cardiganshire had voted 20,000/. and their district councils 10,000/. in respect of twenty miles of the railway, the estimated cost being 139,000/.

THE parishioners of Horsington applied to the Horn-castle Guardians for permission to pull down a dilapidated cottage and sell the materials. This was given, but the Local Government Board, on being asked for its sanction, directed a further parish meeting to be held to give its consent to the sale. This meeting was held and a poll of the parish demanded. The materials of the old cottage are estimated to realise 17. clear, but the cost of the poll will be 34., to say nothing of the delay and official correspondence over this trivial matter.

At the Rhyl Court Leet the attention of the Crown Agent was drawn to the fact that a portion of the Rhyl and North Wales Railway was in danger of being inundated unless the

necessary steps were taken. During the last few years about 100 feet width of the coast has gone, and but a small strip of sand is between the eastern boundary of Rhyl and the sea. The Court Leet decided to ask that defence works be carried out at the expense of the national exchequer, and that the Royal Commission on Coast Erosion should visit Rhyl at once.

As a result of the recent revision of the scale of wages and conditions of employment in the various departments of the Corporation of Blackburn workmen receive in actual wages advances amounting to 3,000/. per annum. A considerable reduction in working hours is also made, rendering the employment of more men necessary. This represents a further 2,000/. per annum, so that the reorganisation scheme has resulted in the expenditure of an additional 5,000/. a year in workmen's wages.

THE erection of the new magnetic observatory and relative buildings by the Government at Eskdalemuir, Dumfriesshire, has been proceeding apace this year, but, says a correspondent of the *Manchester Guardian*, a hitch has now occurred, and the erection of the observatory proper, which is underground, is stopped. This is owing to the suspicion that there is iron in the stone used, which is a blue whinstone found in the neighbourhood. The observation of earth tremors, &c., would be interfered with if iron is present. The other buildings are being proceeded with, the stone being admirably adapted for them.

THE Local Government Board called the attention of the Selby Rural District Council to the medical officer's annual report, in which he stated that the water-supply of Cawood and several villages was bad, most of the inhabitants of the latter place drinking filtered water from the river Ouse. The Board asked if the Rural Council had had the question under consideration, and, if so, with what result. At the meeting of the Council the clerk said the people liked the river water, and declared it was sweeter than other water. He added that the sewage of Selby passed into the river. The Council took no action in the matter.

A MEETING of local authorities at Newport have considered a great scheme for supplying Monmouthshire with water. It is intended to dam the waters of Grwyne Vawr, a tributary of the Usk, near Abergavenny. There is not a

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For Index of Advertisers, see page x.

single house on the gathering ground, and the water is so pure that it will not need filtering. Three reservoirs, capable of holding 800,000,000 gallons in all, are proposed to be constructed at a cost of 730,000*l.*, and this will provide a supply of 4,000,000 gallons. The water would supply the whole county by gravitation, as this supply does not affect the sources of the great Welsh rivers. Further consideration of the scheme was deferred.

A SPECIAL conference of the newly-constituted Metal Workers' Federation of Great Britain was held at Birmingham on Saturday. Over sixty delegates were present, representing 120 metal trade unions with a membership of about 400,000. The object of the Federation is to unite the various organisations of metal workers and group them according to their respective branches and localities with a view to increased efficiency, and by the establishment of a monthly newspaper to educate the workers in regard to all political and other questions affecting their interests as trade unionists. The Federation is of non-party political character. Mr. Hodge, M.P., of the Steel Smelters' Association, London, was appointed president, and Mr. C. Hobson, of Sheffield, secretary.

A REPORT of a special committee of Tipton District Council dealing with the local sewage disposal was issued on Monday. It states that, according to the engineer's report, the estimated cost of the outfall works as required by the Local Government Board for a population of 35,000 would be 28,599*l.*, exclusive of commission and other contingencies, whereas if the scheme was worked out on a basis of the present population the estimated cost would be 25,992*l.* Practically the whole of the sewage would gravitate to the existing outfall works. The surveyor had roughly estimated the cost of laying down the sewers and connecting therewith at a sum of 25,000*l.* The whole cost would work as follows:—Messrs. Dodd & Dodd's estimate, 28,000*l.*; surveyor's estimate, 25,000*l.*; surveyor's increase of salary, 500*l.*; purchase of land, 1,500*l.*; total, 54,555*l.* A loan of this sum spread over a period of thirty years would mean a rate increase of 10*d.* in the pound. The committee recommend that application be made to the Local Government Board for sanction to borrow the sum required to complete the scheme.

MR. ALDERMAN R. D. BATCHELOR, J.P., of Darland House, Chatham, the well-known artesian and consulting well engineer and head of the firm of Messrs. R. D. Batchelor, of 73 Queen Victoria Street, London, and Artois Works, Chatham, has been unanimously chosen mayor-elect for his native borough of Chatham for the year ensuing. As a well engineer Mr. Batchelor has carried out some of the largest, deepest and most successful water supplies in this country. In addition to his large artesian well engineering business, Mr. Batchelor is the largest brick manufacturer in the neighbourhood of Chatham, and the owner of a large estate consisting of hop and arable farms, forming the watershed from which the towns of Chatham, Gillingham and Rochester derive their principal water supply. He has been a county justice of the peace for many years, and was high constable of Gillingham in 1896 and 1897.

MR. W. H. HUNTER delivered his inaugural address as president of the Manchester Association of Engineers on Saturday. In the course of it he alluded briefly to the investigation of the phenomena connected with radio-activity, the results of which to the engineers of the future, he said, no man would be bold enough to predict. "In the meantime," he concluded, "I speak with some measure of confidence when I say that it is possible that at no distant date the engineering world will be startled by the revelation of a discovery relating to motive power of such sort and of such far-reaching consequence that if I were permitted to describe it to you to-night you would agree that it of itself may go far to establish the proposition which I have submitted to you this evening."

THE Coventry City Council on Monday again discussed the question of entering into an agreement with the Birmingham Corporation to supply water from their Shustoke reservoir and Whitacre pumping station, such water being obtained from the river Bourne and stored in the Shustoke reservoir. The waterworks and fire-brigade committee were finally authorised to take all steps necessary to enable the Council to apply to Parliament next session for the borrowing and other powers necessary to carry into effect the arrangement with Birmingham Corporation, and that authority be obtained in connection with the Bill for the Corporation to borrow the sum of 75,000*l.* to

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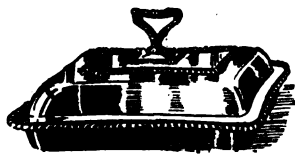
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cover the cost of new mains, &c., which it was estimated would be required in the city during the next sixty years. And also that it be an instruction to the committee to endeavour to obtain a clause in the proposed Bill empowering Birmingham to give and Coventry to take at any time a supply of Welsh water on terms as to price and other conditions to be mutually agreed upon by the contracting parties.

At a meeting held at Cannon Street Hotel on Wednesday to consider the subject of secret commissions, which was presided over by Earl Fortescue and attended by representatives of various professions and trades, it was decided to form an association to promote the enforcement of the provisions of the Prevention of Corruption Act 1906, and to bring to the notice of traders and public bodies the requirements of the law. It is proposed to convene a public meeting shortly in London, when the Act, which comes into force on January 1, will be fully explained and the association formally started. The secretary (pro tem.) is Mr. A. E. W. Gwyn, and the temporary address of the movement is 3 Laurence Pountney Hill, Cannon Street, E.C.

THE Glasgow Town Council have approved a draft of the Glasgow Corporation Order, 1907, on the understanding that clauses could be altered or deleted when it came up in its final form. Among the proposals are the construction of a storm-water overflow from sewer No. 1 to the river, and an extension of the period for the construction of the southern district sewage works; power to impose an assessment for lighting private streets and common stairs, payable one-half by owner and one-half by occupier; an amendment of the Glasgow Corporation (Gas, &c.) Order, 1902, as to stand-by supplies, and power to enable the Corporation to supply electrical energy to any of their own undertakings or properties situated outside the area of supply of the Corporation; powers similar to those in the Nottingham Improvement Act, 1874, and in the Alkali Act, which provide for the prosecution of any engineer, fireman, stoker, foreman or other person who negligently uses any fireplace or furnace constructed so as to prevent or burn the smoke arising therefrom in such a manner that it is not effectually prevented or burnt.

PROFESSOR KAPP, the president of the Birmingham University Engineering Society, in his presidential address dealt with safety appliances designed for the protection of workers in various dangerous and unhealthy trades, being the result of his experiences as the English representative on the international jury at the Milan exhibition, to adjudicate on the inventions submitted in competition for the prizes offered by the Association of the manufacturers of Italy for the prevention of accidents in industrial operations. The Professor announced that the world still awaits a safety appliance which would remove the danger attending the operation of a hand winch. The danger, he explained, lay not so much in the blow an operator might receive, but in the fact that where he was working on scaffolding or other elevations he might be knocked off his balance and fall. The jury considered a number of suggested solutions of the problem, but decided to recommend the withholding of the prize until the next competition in 1908.

#### CLOAK-ROOM FITTINGS.

UNLESS special precautions are taken there can be no doubt that ordinary hat and coat hooks can injure the walls on which they are placed. A heavy coat turns the hook into a lever and as a result the plaster or cement is torn, and if the hook is again placed, as is usually the case, close to its former position an unsightly breach will soon follow. The risk is only slightly diminished by fixing several hooks on a rail. In schools and other establishments where many coats and hats have to be deposited there is usually a rush, and neither hooks nor rails are treated with respect. In addition to the mechanical action some hooks are made of particularly thin metal which cannot resist a strain. Messrs. Taylor & Co., of Birmingham, as metalworkers, have turned their attention to the subject, and devised a system which is adapted for schools, assembly-rooms and other places where young and old people congregate. The appearance is satisfactory, there is no waste of space through clumsy rails, and it is adapted for small children as well as for seniors. The fittings are strong, but what in our eyes makes them most acceptable is that by the use of them

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the wall is not injured. There are also special duplicating sliding and numbered hooks by which the reception and return of hats, coats and umbrellas is expedited. Proprietors of all large rooms where conversaciones, &c., are given will find Messrs. Taylor's system advantageous and it will avoid crushing.

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THE patent indented steel bar is one of the most ingenious of modern inventions, especially in connection with concrete construction for fireproof floors. It has the advantage of forming a beam which possesses remarkable stiffness, and which can be used with any system of flooring. A floor composed of concrete with the patent bars was tested by the British Fire Prevention Committee, and the report relating to it has appeared. The area of the floor was 410 super feet, and the load was 280 lbs. per square foot. Each bay was 15 feet by 7 feet 5 inches from centre to centre, the floor was 6 inches thick, and the depth of the beams below the floor was 17 inches. The fire was applied for four hours. At the expiration of 15 minutes the maximum deflection was .9 inches. On the application of water the concrete on the soffit of the beams was knocked



off. It was found that the permanent set of the floor averaged  $\frac{3}{4}$  of an inch, but it was observed that neither fire, smoke nor water passed through the floor. The concrete was composed of 4 parts of blast furnace slag, 1 part of sand, and one part of ferrocrete Portland cement. The test was severe, but both the recorded observations and the photographs in the report show that the concrete and the beams withstood the action of fire and water to an extent that should be enough to satisfy the most severe critic.

### ART SCHOOLS IN THE POTTERIES.

A REPORT has been prepared by Mr. Thorogood, master of the Burslem School of Art, upon co-operation between employers of labour and the committee, with a view to inducing apprentices and employes to study art:—"In this district we probably have more students to whom a sound artistic training is of paramount importance than in any other part of the country—viz. designers, pottery decorators, tile draughtsmen, engravers, modellers, turners and litho-artists—practically all dealing with the staple industry. What provision is made for the education of these young apprentices outside the restricted experience of the factory? If they choose to attend the school and pay their fee, they may avail themselves of the opportunity of studying in the evening, after they have done their day's work, and in the course of the session perhaps make 192 hours' attendance. If they wish to study colour, the only time available in the daytime is Saturday afternoon. My experience in visiting other schools of art in the country (more often than not towns where there is no particular industry demanding artistic training) is that much more attention and better provision is made for the training of craftsmen, during both day and evening, than is the case in our town. My experience in dealing with the many young apprentices in the School of Art enables me to state with confidence that the manufacturers and the trade generally would directly benefit by taking more interest in their training. It is impossible for an apprentice to become a good draughtsman on a factory with the limited amount of time at his disposal, and it is deplorable to come in daily contact with young apprentices who are struggling to improve themselves but find they cannot do what is expected of them because they are not given the opportunity in the matter of time. Good draughtsmanship is indispensable to the craftsman, but the fact is overlooked that it takes a considerable number of years to become a capable draughtsman and colourist. In conclusion I appeal to those interested in one of the most ancient crafts—viz. that of potting—to make use of the Institution, now well equipped and staffed, for the purpose of improving the staple industry and general artistic taste of the district." Mr. Thorogood suggests that apprentices in any work requiring a thorough knowledge of form, draughtsmanship and colour should be allowed to

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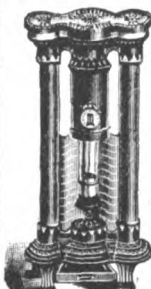
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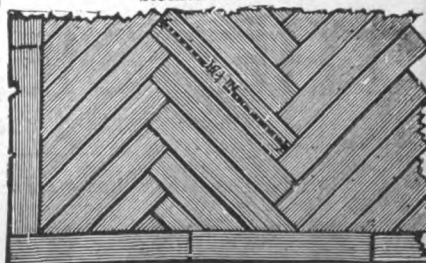
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attend the School of Art at least two mornings per week, such terms to be considered as part of the apprenticeship, and that manufacturers should state clearly in which direction they wished their apprentices to receive instruction. Mr. Thorogood has been granted leave to enable him to visit if necessary schools of art in France at the end of October.

### WATER-SUPPLY OF COVENTRY.

A REPORT concerning the future water-supply of Coventry was recently issued to the members of the City Council by the waterworks and fire-brigade committee. Having referred to the reports received from Mr. Hawksley, engineer, as to sites for a possible supply from the neighbourhood of Weston-under-Weatherley and elsewhere, the committee state they were informed that the Birmingham Corporation were prepared to supply water from their Shustoke reservoir and Whitacre pumping station. The committee add that they met the Birmingham water committee to discuss the matter. As a result it had been ascertained that the Birmingham water committee were willing, subject to the confirmation by the Council of that city and to the necessary Parliamentary powers being obtained for the purpose, to give a supply of water on the following terms:—Coventry at its own cost to lay a line of pipes to connect the reservoirs at Coundon with Birmingham's delivery main at Whitacre; Birmingham to pump and deliver to the Coventry reservoirs at Coundon a supply of water not exceeding 2,000,000 gallons per day as Coventry may require; Coventry to pay Birmingham for the water supplied at the rate of 4d. per 1,000 gallons, subject to a minimum rate of 1,250l. per quarter, entitling Coventry to a supply of about 822,000 gallons daily, or 75,000,000 gallons per quarter; the supply to be given and taken for a period of forty years, or for the period which Coventry may obtain for repayment of a loan for the cost of laying the main; Birmingham to use all reasonable care and take all reasonable precautions to prevent pollution or contamination, and to secure the purity of the water to be delivered, and to properly filter it before delivery; and Coventry to have access at all times to the water before delivery for the purpose of examining and taking samples; in the event of the water to be delivered at any time failing to reach a standard of purity reasonably

required by Coventry, Coventry to be at liberty to terminate the agreement, and (subject to Parliamentary powers being obtained for that purpose) to call upon Birmingham to provide a supply of Welsh water instead of Bourne water—the supply at Shustoke being obtained from the river Bourne—at a price to be mutually agreed upon or otherwise determined by arbitration. The cost of the main from Whitacre to Coundon is estimated at 40,000l. Additional reservoirs at Coundon for the storage of water at some future time are estimated to cost 25,000l. The annual cost of the scheme when the minimum (822,000 gallons) and maximum (2,000,000 gallons) are being taken, would be respectively 6,700l. and 14,923l.

The committee conclude a lengthy report by stating they are of opinion that an arrangement with Birmingham on the lines indicated will afford the best means of meeting the present difficulties, and provide an adequate and satisfactory supply of water for the city for a reasonable length of time. They accordingly recommend that they be authorised to give the necessary notices and take all other steps to enable the Council to make application to Parliament next session for the borrowing and other powers necessary to carry into effect an arrangement with Birmingham, and to prepare and submit to the Council for approval the Bill for the proposed Act. The committee also recommend that authority be obtained in connection with the Bill for the Corporation to borrow the sum of 75,000l. to cover the cost of the new mains, &c., which it is estimated will be required in the city during the next sixty years. The Council have accordingly arranged with Birmingham.

### LIGHTING AND HEATING OF THEATRES.

THE theatres and music halls committee of the London County Council have prepared amended regulations as to the electric lighting and heating arrangements in places of public entertainment which are kept open under the authority of letters patent, or licenses by the Lord Chamberlain or the County Council. Some of the former regulations remain, others are omitted. Among the new regulations are as follows:—

Additional means of lighting in such premises for use in the event of the gas or the electric light being extinguished

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shall be provided for the auditorium, corridors, passages, exits and staircases by a sufficient number of oil or candle lamps of a pattern to be approved by the Council, properly secured to an unflammable base and placed, if possible, out of reach of the public. This shall not apply where there is (a) a complete installation of both gas and electric light, or (b) two complete systems of electric lighting from separate companies, or (c) two complete systems from one company if specially approved by the Council for the purposes of these regulations. In cases (b) and (c), however, the exit notices shall be provided with independent means of lighting or with lights on both systems. All lamps (or lights) on both systems in the staircases, corridors, passages and exits (including the exit notices) shall be kept alight during the whole time the public are in such premises. No mineral oils shall be used in oil lamps.

No flexible conductors smaller than 35-40 S. W. G. shall be used. Conductors conveying currents of high electromotive force inside buildings shall be enclosed in screw-jointed and earthed iron or steel tubing, or armoured cable may be used for supply authorities' services. Any such conductors or any fittings between which high pressure exists or is liable to exist shall be so separated as to prevent any risk of shock to person or of short circuiting. No joints shall be made in iron barrel. Conductors must not be placed where liable to be heated by gas jets, steam-pipes or other appliances.

If casing be used it shall be of hard wood, e.g. teak or oak, or on the auditorium side of the proscenium wall American whitewood casing of good quality may be used. All metallic tubing shall be efficiently earthed, and shall be provided with screw joints or other means of insuring a good and permanent electrical connection, which must be continuous, with boxes and other fittings.

Any exposed portion of the metalwork of an arc lamp liable to become heated to a temperature sufficient to cause a conflagration by contact with scenery or other inflammable material shall be protected by a wire guard.

Tracker wires outside the fire-resisting room shall be so installed and shielded that in the event of breakage, slackness or other displacement, contact with live conductors will be impossible.

A platform with proper means of access thereto shall be

provided where necessary for the convenient operation of the board, and such platform shall be of fire-resisting construction, with hardwood floor (teak or oak) for insulating purposes. Connections shall be made where possible at the front of the board.

No electrical fitting or apparatus of any description shall be so fixed or arranged that under any circumstances can it interfere with the proper working of the safety curtain.

At least one pair of indiarubber gloves must be provided for the use of the electricians in connection with the electric-lighting arrangements, as a precaution in the event of high voltage occurring. The gloves must be kept on the stage switchboard and be kept in good order. At least one bucket, filled with dry sand, must be kept in some accessible position on the stage in readiness for use in dealing with an electric fire, and one must also be kept in each of the intake rooms.

The term "low pressure" in the case of hot water shall be understood to mean the pressure due to the vertical head of water between the boiler and the supply cistern, and in the case of steam it shall be understood to mean a maximum pressure of 15 lbs. per square inch above the pressure of the atmosphere. The construction, ventilation and management of the chamber, room or compartment in which the boiler may be placed and of any fixtures or fittings that may be affected by heat must also be to the Council's satisfaction.

Every boiler or heating apparatus shall be tested by hydraulic pressure when new, and annually thereafter, to twice the working pressure, in the presence of an official of the Council, the cost of any such test being borne entirely by the licensee of the premises. This test will not be required when the boiler or apparatus is insured with an approved boiler insurance company, in which case a certificate, or a duplicate thereof, of a recent test made by the company must be sent annually to the clerk of the Council for inspection.

Every boiler, whether hot water or steam, shall be provided with a dead-weight or spring safety-valve, of sufficient area, which shall be set to blow off at the approved pressure, and shall be so locked up as to prevent any unauthorised person adding to the load on it, whilst also permitting the attendant to lift the valve or turn it on its seat at any time. The safety-valve must be attached either direct to the boiler

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or by means of a special standpipe of size, form and material to be approved by the Council, and must be so placed as to be protected from soot and dirt.

The safety-valve shall not in any circumstances be placed on the circulating pipes.

Every hot-water boiler must have an independent water-supply cistern, and the supply pipe to the boiler must be at all times open to the atmosphere. The supply cistern and all pipes in exposed situations shall be adequately protected against the action of frost.

All pipes, except such as may be of copper, are to be of stout wrought-iron or wrought-steel tubing, or of a strong section of cast-iron or cast-steel; and all wrought-iron or wrought-steel feed pipes below  $1\frac{1}{2}$  inch internal diameter must be galvanised internally.

Steam boilers may be worked at any approved pressure, but if such pressure exceeds 15 lbs. per square inch above the atmosphere an efficient reducing valve and a safety valve of the same type as that required on the boiler must be fitted. These valves must be so placed that no higher pressure than 15 lbs. per square inch above the atmosphere can ever be reached in any part of the system or piping outside of the boiler-house or compartment. An approved pressure gauge must, in these cases, be fitted on the low-pressure side of the reducing valve. This regulation shall not apply to steam used solely for driving electric generating plant.

No coal, coke, wood or other combustible material is to be so stored or placed that it will be affected by the heat of the furnace, boiler or other heating apparatus.

Where it is desired for stage effects to use apparatus or connections that would not comply with these regulations, application, accompanied by full details, should be made to the Council, and such apparatus, &c., must not be used until the Council's permission has been obtained.

When it is proposed to make use of a steam boiler that has not previously been inspected by the Council's officers and approved, a notice of seven clear days must be given to the Council before putting the boiler to work.

When such a boiler, having been inspected and approved at one theatre, is transported to another for use under exactly similar conditions, further inspection and approval may not be requisite, but the necessary seven days' notice

must be given to the Council, and a recent certificate issued by the boiler insurance company must always be in the custody of the person who is in responsible charge of the boiler, and must be produced to the Council's officers on demand.

Where a boiler is not a fixture on the premises, but may be transported from time to time to other licensed premises, it must bear some approved and permanent stamp or mark that will serve to identify it with the boiler referred to in the certificates granted by the boiler insurance company.

All lifts, hoists, moving machinery, &c., shall be installed, guarded and protected with a view to the prevention of accidents to the public or employees.

In the event of any difference or dispute arising between the Council and the licensee of such premises as to any works which are required by these regulations to be executed to the satisfaction or approval of the Council, or are not definitely specified, or, in the case of alterations to any such premises where the installation has already been approved by the Council, as to the extent, if any, to which these regulations shall apply to such installation, such difference or dispute shall be referred to an arbitrator to be appointed by the President of the Institution of Electrical Engineers at the request of either party, and such arbitrator shall hear and, having regard to the standard required in the foregoing regulations, determine the same, and may either confirm the requirements of the Council or may confirm the same with such modification as he may think proper, or refuse to confirm the same, and the decision of such arbitrator as to the requirements of the Council and the reasonableness of the same and the persons by whom, and the proportions in which, the costs thereof are to be paid shall be final and conclusive and binding upon all parties.

In case of any reference as aforesaid, compliance with the requirements in dispute may be postponed until after the day upon which such reference shall be decided, and the same if confirmed in whole or part shall only take effect as from such day.

NOTE.—Inspections made by the Council's officers must not be taken as guaranteeing the safety or efficiency of any plant or apparatus or any part of the installation.

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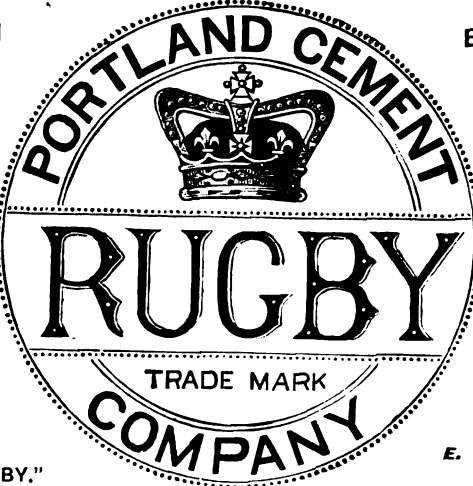




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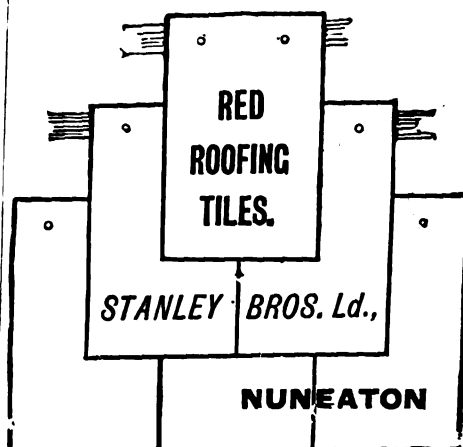


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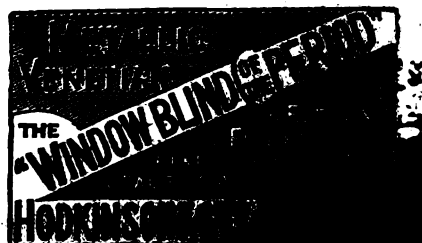


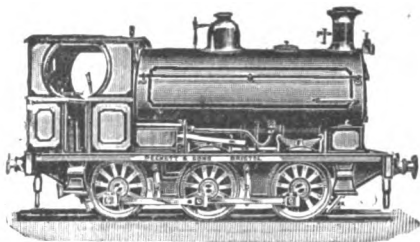
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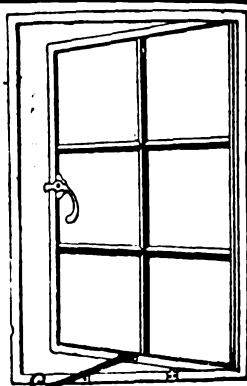
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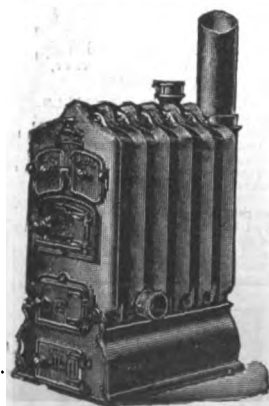
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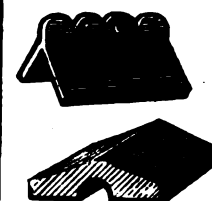
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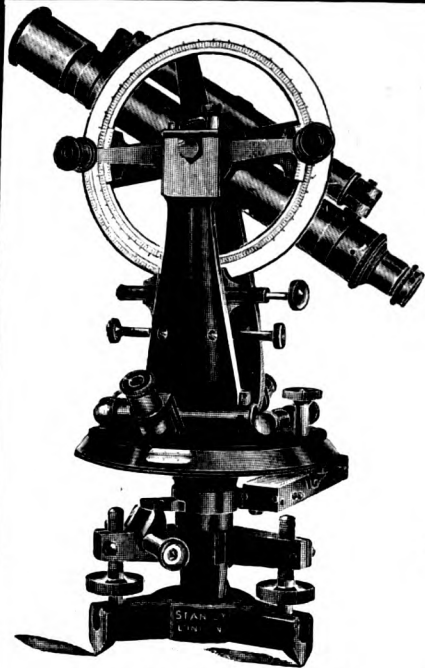
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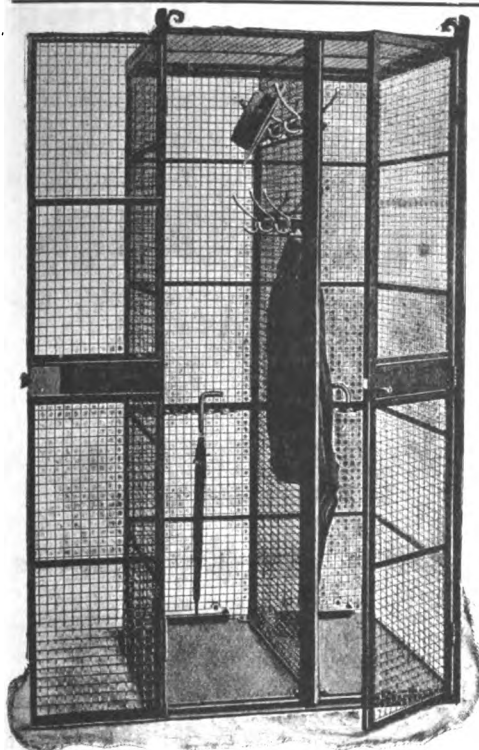
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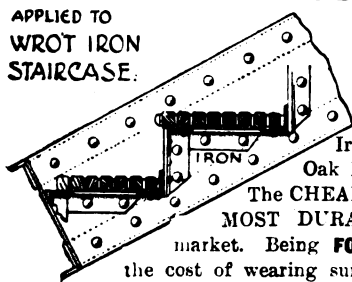
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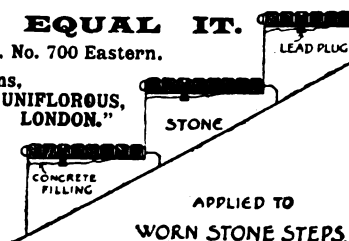
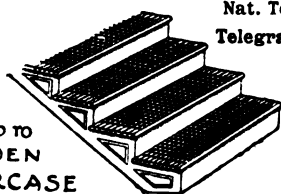
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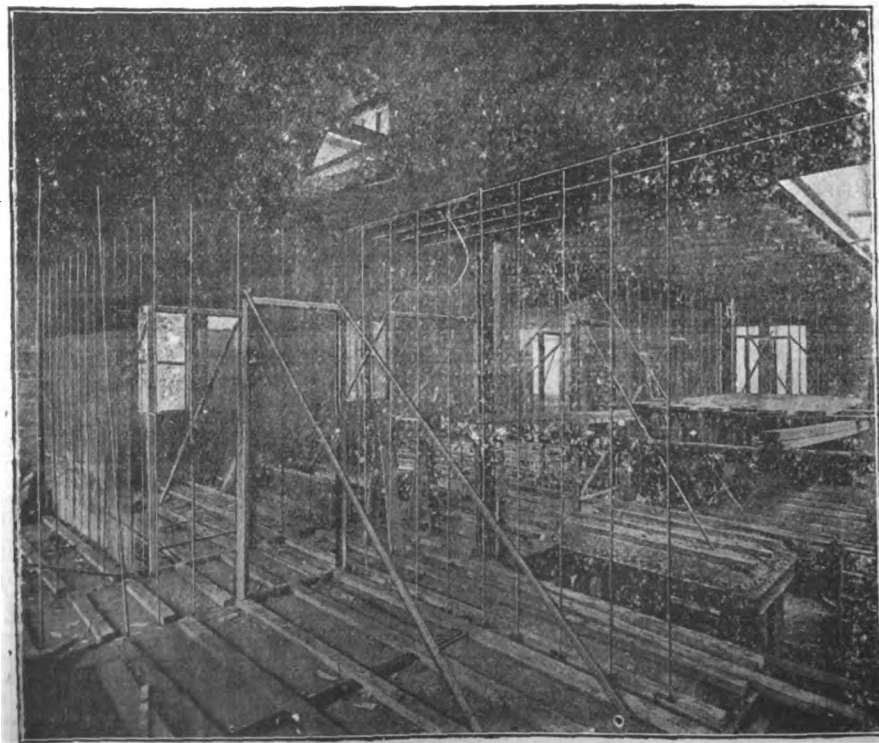
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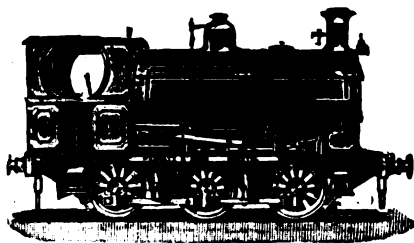
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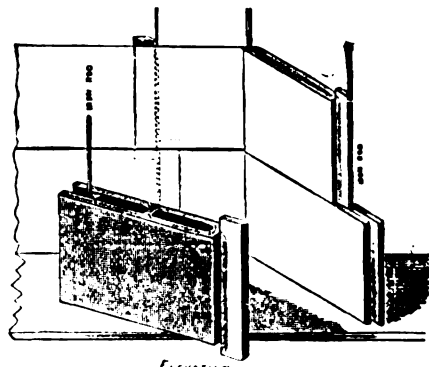
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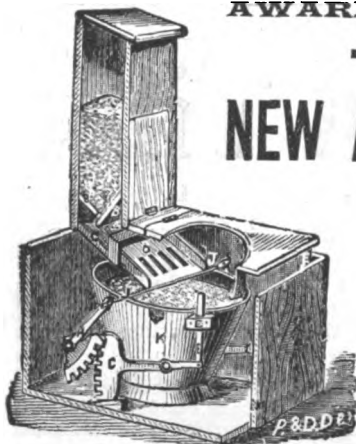
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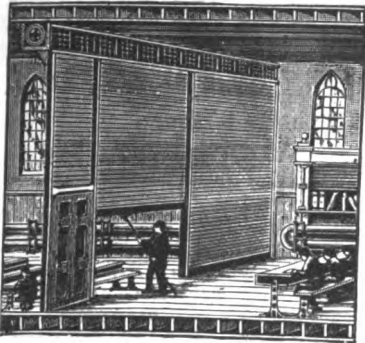
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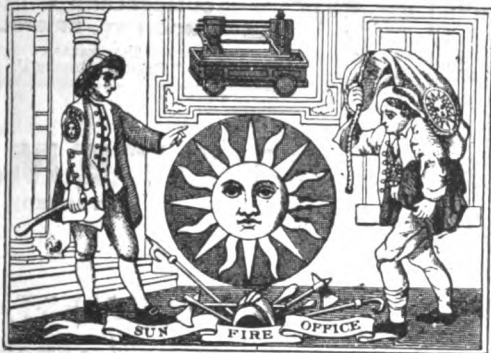
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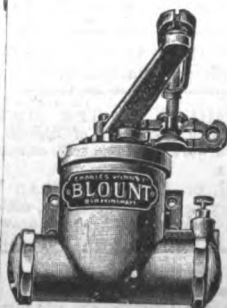
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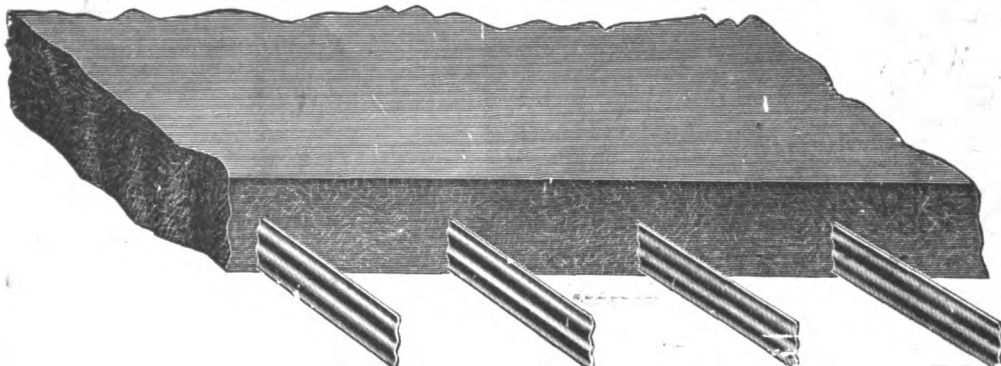
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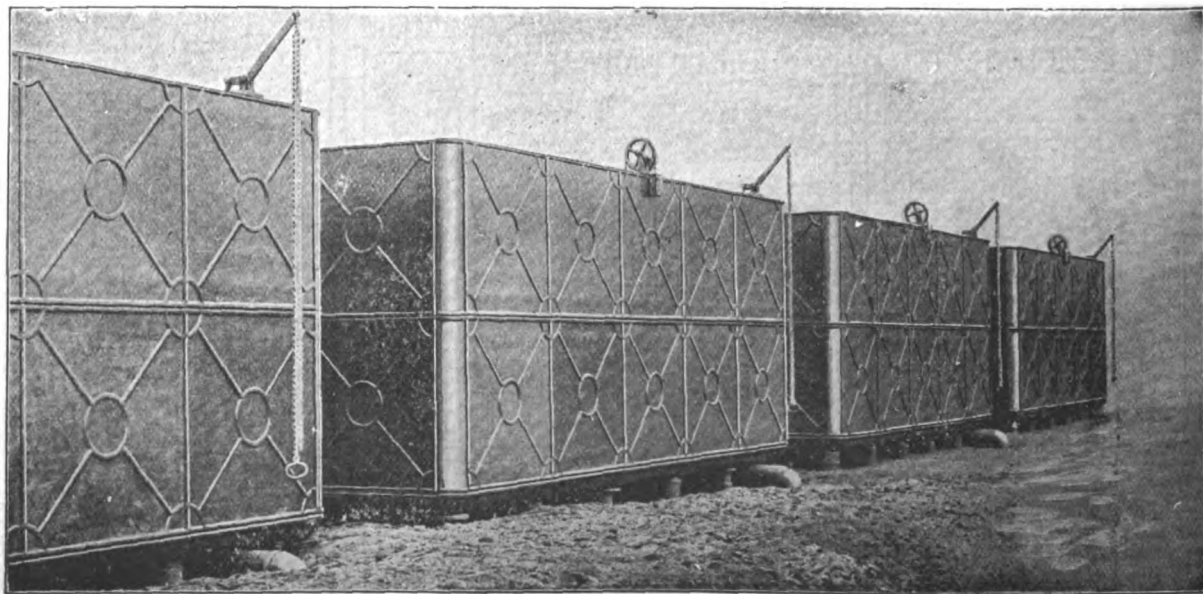
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FRIDAY, NOVEMBER 9, 1906.

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

**EDITORIAL NOTICES.**

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further

answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

**TENDERS, ETC.**

\*.\* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

**COMPETITIONS OPEN.**

EARLESTOWN.—Nov. 30.—The Newton-in-Makerfield Urban District Council invite competitive plans for erection of a public library, the total cost, exclusive of site, not to exceed 4,000l. Mr. C. Cole, clerk, Town Hall, Earlestown, Lancs.

GLASGOW.—Dec. 12.—The Corporation of Glasgow invite competitive designs for laying-out the estate at Riddrie, by the erection thereon of small self-contained houses. Premiums of 75l., 50l. and 25l. will be awarded. Mr. A. W. Myles, town clerk, City Chambers, Glasgow.

GOOLE.—Dec. 31.—The Goole Joint Body of Governors invite competitive designs for erection of a dual secondary school, accommodating 200 students, with provision for the conduct of technical and evening classes. Premiums of 50l. and 25l. Deposit 2l. 2s. Mr. James Wm. Johnson, clerk to the Governors, Council Offices, Goole.

MONTEVIDEO.—Dec. 14.—La Comision Nacional de Caridad require competitive plans for new foundling hospital with approximate cost. Plans and report, under mottoes, and, in sealed envelope, name and address of competitor. The four selected plans will receive 212l. each, and will be asked to further compete. Further particulars from the Consulate-General for Uruguay, 5 and 6 Clement's Inn, Strand, W.C.

SUNDERLAND.—Feb. 1.—The committee of the Sunderland infirmary invite designs for a children's hospital. Premiums of 100l., 50l. and 25l. are offered. Deposit 1l. 1s. Mr. Thomas Robinson, secretary, Infirmary Offices, Bank Buildings, Sunderland.

WOLVERHAMPTON.—Dec. 31.—The Board of Management of the Wolverhampton and Staffordshire general hospital, Wolverhampton, invite competitive designs for a nurses' home adjoining the hospital. Mr. J. Stephen Neil, house governor and secretary.

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**ACKWORTH.**—Nov. 22.—For the erection of working-men's club, institute and baths at Ackworth, Yorks. Mr. James Heseltine, architect and surveyor, Pontefract.

**ALDBOROUGH.**—Nov. 23.—For the erection of Aldborough proposed school, for the Norfolk education committee. Deposit 1*l.* 1*s.* Send names by November 5 to Mr. C. J. Brown, architect, Cathedral Close, Norwich.

**ANNFIELD PLAIN.**—Nov. 13.—For the erection of public conveniences on a site near West Terrace, Annfield Plain, Durham. Mr. T. J. Trowsdale, surveyor to the Council, Council Offices, Annfield Plain.

**BARNSELY.**—Nov. 19.—For the construction of collecting and detritus tanks, septic tanks, bacterial filters, conduits and other works required to be done at the proposed sewage works, which are to be constructed near Lund Lane, about 3 miles east of Barnsley. Deposit 10*l.* Mr. J. Henry Taylor, M.Inst.C.E., borough surveyor (engineer for the scheme), Manor House Offices, Barnsley.

**BARNWOOD.**—Nov. 24.—For the erection of a block to accommodate about 170 female patients at the Second County asylum, Barnwood, near Gloucester. Deposit 3*l.* 3*s.* Messrs. Giles, Gough & Trollope, architects, 28 Craven Street, Charing Cross, London, W.C.

**BELFAST.**—Nov. 12.—For the erection of shops and warehouse in Smithfield. Mr. Thomas Houston, architect and civil engineer, Kingscourt, Wellington Place, Belfast.

**BELFAST.**—Nov. 15.—For the construction of an underground convenience in Donegall Street North. Deposit 1*l.* 1*s.* The City Surveyor's Office, Belfast.

**BOSTON.**—Dec. 3.—For converting part of the fish market into a lavatory, &c., and converting the old police-station into a shop. Mr. G. E. Clarke, borough surveyor, Municipal Buildings, Boston, Lines.

**BRIGHTON.**—Nov. 17.—For the erection of a greenhouse at the Corporation waterworks, Lewes Road. Mr. A. Weller, borough surveyor, Town Hall, Brighton.

**BUDLEIGH SALTERTON.**—Nov. 13.—For carrying-out alterations and additions to 2 South Promenade, Budleigh Salterton, Devon. Deposit 1*l.* 1*s.* Mr. R. M. Challice, architect and surveyor, 14 Bedford Circus, Exeter.

**CLEVELEYS.**—Nov. 20.—For the erection of a public elementary school at Cleveleys, near Fleetwood, Lancs, to accommodate 300 scholars. Deposit 2*l.* Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

**DORKING.**—Dec. 1.—The Urban District Council invite quotations, plans and full details for providing and erecting a house-refuse destructor capable of dealing with 60 tons weekly. Separate prices are desired for (1) machinery, including steam-raising plant; (2) without steam-raising plant; and (3) building and roadway. Mr. W. J. Hodges, clerk, 64 South Street, Dorking.

**EARLSHEATON.**—Nov. 14.—For the erection of a creosoted wooden fence at the fever hospital, Earlsheaton, Dewsbury. Messrs. Holton & Fox, architects, Corporation Street, Dewsbury.

**EASTHAMPTSTEAD.**—Nov. 22.—For the building of a school for 200 scholars at Priestwood, Easthamptstead, near Bracknell, Berks. Deposit 3*l.* 3*s.* Names by November 12 to the Secretary to the Education Committee, The Forbury, Reading.

**ELLAND.**—Nov. 19.—For the erection of a Wesleyan manse at Victoria Road, Elland, Yorks. Messrs. Joseph F. Walsh & Graham Nicholas, architects, Museum Chambers, Halifax.

**EPSOM.**—Nov. 12.—For the erection of two acute blocks and the rebuilding of a nurses' block at the Manor asylum, Epsom, Surrey, for the London County Council. Deposit 5*l.* The Clerk of the Asylums Committee, 6 Waterloo Place, London, S.W.

**FULWOOD.**—Nov. 27.—For the erection of a public elementary school to accommodate 162 children at Fulwood, near Preston, Lancashire. Deposit 2*l.* Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

**GERRANS.**—Nov. 10.—For renovating the Wesleyan chapel, Gerrans, Cornwall. Mr. Barnett, chapel keeper, Gerrans.

**GLASGOW.**—Nov. 14.—For (1) the digger, mason and bricklayer's work; (2) the cast-iron and steelwork; (3) the fireproof floors; (4) the wrightwork; (5) the metal sashes; (6) the roof glazier's work; (7) the wood block floors; (8) the slater's work; (9) the plumber's work; and (10)

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GOSFORTH.—Nov. 13.—For erecting stables at the rear of the Council Chambers, High Street. Mr. Geo. Nelson, surveyor to the Council, Council Chambers, Gosforth.

GREAT HOUGHTON.—For the erection of Wesleyan church and schools at Great Houghton, near Barnsley. Messrs. Garside & Pennington, architects, Pontefract and Castleford.

HINGHAM AND WENDLING (NORFOLK).—Nov. 23.—For the reconstruction of the sanitary offices and other improvements at Hingham school, and for the enlargement and improvement of Wendling school. Names by November 12 to the office of the Norfolk Education Committee, 57 London Street, Norwich.

HULL.—For offices and store, St. Andrew's Dock. Messrs. Freeman, Son & Gaskell, architects, Carr Lane, Hull.

HUNCOAT.—Nov. 27.—For the erection of a public elementary school to accommodate three hundred children at Huncoat, near Accrington, Lancashire. Deposit 2*l*. Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

HYDE.—Nov. 24.—For the erection of the Leigh Street Council school, to accommodate 1,200 children. Deposit 3*l*. 3*s*. Mr. Joseph Lindley, architect, Town Hall Chambers, Hyde.

ILFORD.—Nov. 12.—For the roofing in with reinforced concrete of the septic tanks, &c., at the outfall works, Loxford Lane. Deposit 2*l*. 2*s*. Mr. H. Shaw, engineer and surveyor to the Council, Town Hall, Ilford.

IRELAND.—Nov. 21.—For the erection and completion of a post-office at Tralee, co. Kerry. Deposit 1*l*. The District Office of Public Works, Tralee.

IRELAND.—Dec. 1.—For the following works in connection with the erection of a new bacon factory at Roscrea, co. Tipperary:—(1) Excavations, foundations, concrete floors and walls. (2) Corrugated iron buildings, or alternatively buildings with Belfast felt roofing. Deposit 2*l*. The Secretary, Roscrea Bacon Factory, Roscrea.

KENDAL.—Nov. 15.—For the erection of a residence at Helsington Laithes. Mr. John F. Curwen, architect, 26 Highgate, Kendal.

LONDON.—Nov. 13.—For the reconstruction of the bridge carrying Hampstead Road over the London and North-Western Railway, near Euston station, in the borough of St. Pancras. Deposit 3*l*. Mr. Maurice Fitzmaurice, chief engineer, County Hall, Spring Gardens, S.W.

LONDON.—Nov. 20.—For the erection of an additional furnace in connection with their dust-screening apparatus at Marian Square, for the Bethnal Green Borough Council. The Borough Engineer and Surveyor, Town Hall, Church Row, Bethnal Green.

LONG DITTON.—Nov. 13.—For the construction of six filter beds, a service reservoir and other contingent works at Long Ditton, for the Metropolitan Water Board. Deposit 5*l*. The Engineer, Brixton Hill, S.W.

LISKEARD.—Nov. 21.—For the erection of a secondary school at Liskeard, Cornwall. Mr. John Sansom, architect to the committee, Liskeard.

MACCLESFIELD.—Nov. 26.—For the erection of a strong room at the Union offices, Macclesfield. Messrs. Whittaker & Bradburn, architects, King Edward Street, Macclesfield.

MIDDLEWICH.—Nov. 21.—For the centrifugal pumping plant and erection of pumping station and caretaker's house on the sewage disposal works. Mr. Frederick W. Stocks, engineer, Town Hall, Middlewich.

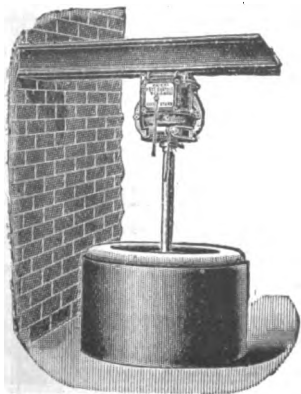
NETLEY.—For the erection of infirmary ward, "D" block, at the Royal Victoria hospital, Netley, Hants, in the Southern Command. Deposit 10*s*. Mr. Harry B. Measures, director of barrack construction, War Office, Atterbury Street, London, S.W.

NEWTON-IN-MAKERFIELD.—Nov. 30.—For the erection of a public library at an inclusive cost of 4,000*l*. Mr. C. Cole, Clerk, Town Hall, Earlestown, Lancs.

NORTH FAMERIDGE.—Nov. 13.—For alterations to North Fambridge school, Essex. Mr. F. H. Bright, clerk, 53 High Street, Maldon.

NORTH SHIELDS.—Nov. 14.—For proposed secondary school and pupil teachers' centre at Hawkey's Lane.

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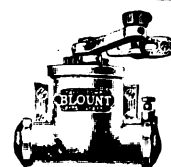
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PENZANCE.—Nov. 10.—For the erection of a wing and other additions and alterations to the Riviera Palace hotel. Mr. Oliver Caldwell, architect, Victoria Square, Penzance.

POOLE.—Nov. 15.—For the erection of additional buildings and alterations to the schools at Hamworthy. Mr. H. F. J. Barnes, architect and surveyor, Towngate Street, Poole.

SCOTLAND.—Nov. 15.—For the mason, carpenter, slater, plasterer, plumber, painter and glazier and ironwork for school to be erected at Blairmaud. Mr. John McCulloch, clerk, Birchwood, Boyndie.

SCOTLAND.—Nov. 19.—For the erection of shelter sheds, including masonwork, joinerwork, slaterwork and plumber work at Luing public school, and also for the masonwork and erection of fence in connection with water-supply for same school. Mr. A. Cowan, clerk to the Board, Easdale.

SEVERN TUNNEL.—Nov. 20.—For the construction of an engine-shed and other works at Severn Tunnel Junction, for the Great Western Railway Company. The Engineer, Newport Station.

SHERINGHAM.—Nov. 15.—For extension of two timber groyne on the foreshore at Sheringham, Norfolk. Deposit 1*l.* 1*s.* Mr. Edgar C. Rolfe, clerk, Church Street Chambers, Sheringham, or at the office of the consulting engineers to the Council, Messrs. Douglass & Arnott, 15 Victoria Street, Westminster, London, S.W.

SOUTHAMPTON.—Nov. 13.—For the erection of an inland revenue office. Deposit 1*l.* 1*s.* H.M. Office of Works, &c., Storey's Gate, S.W.

SWAINSTHORPE.—Nov. 10.—For the erection of a brick tower for water storage at the workhouse, Swainsthorpe, Yorks. The Master at Swainsthorpe.

THIRSK.—Nov. 21.—For alterations and additions to the Thirsk infants' Council school, for the North Riding education committee. Mr. C. Moore, Millgate, Thirsk, or at the County Hall, Northallerton.

TILBURY.—Nov. 15.—For the erection of a police station at Tilbury, Essex. Deposit 5*l.* Names by November 5 to Mr. F. Whitmore, county architect, Duke Street, Chelmsford.

WALES.—Nov. 10.—For carrying-out extensive alterations to and the renovation of the Wesleyan chapel, Pontypool. Mr. Gath J. Fisher, architect, Club Chambers, Pontypool.

WALES.—Nov. 14.—For the erection of a school for the accommodation of 300 boys, 300 girls and 300 infants, together with cookery and manual instruction centres, Treforest, Pontypridd. Deposit 3*l.* 3*s.* Mr. P. R. A. Willoughby, A.M.I.C.E., surveyor to the Council, Municipal Buildings, Pontypridd.

WALES.—Nov. 14.—For the erection of a Sunday school at Clydach. Hill's Dock, Clydach.

WALES.—Nov. 14.—For the erection of closets at the Blaenporth National school. Mr. W. D. Williams, correspondent, Gaer, Blaenporth.

WALES.—Nov. 17.—For erection of a minister's house at Station Road, Ynyshir. Mr. E. Thomas, 16 South Street, Ynyshir, Rhondda.

WALES.—Nov. 19.—For the erection of schools for 478 children, off Clarence Road, Cardiff. Messrs. Veall & Sant, architects, Cardiff.

WALES.—Nov. 28.—For erection of stone and steel bridge at Glanrafonddu, near Talley, Llandilo, Carmarthenshire. Mr. Charles H. Mounsey, county engineer and surveyor, Carmarthen.

WESTHAM.—Nov. 12.—For the erection of a public elementary school for infants at Westham, East Sussex. Names to Mr. F. J. Wood, county surveyor, County Hall, Lewes.

A MODEL of a Babcock & Wilcox water-tube boiler has been set up in the technological section of the Kelvingrove Museum, Glasgow. The model is complete in every detail, and is so arranged that all important parts may be examined without difficulty. The boiler is shown fitted into the brickwork, with the exception that the water tubes, the superheater and the interior of the fire-grate are exposed. The other side of the model shows the built-up exterior of brick, with the necessary apertures for cleaning and inspection purposes.

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| SAWDON, Bridlington (accepted) . . . . . | 867    | 0  | 0  |

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## CONNAH'S QUAY.

For the erection of infants' school, Custom House Lane.  
Mr. S. EVANS, county architect, Mold.

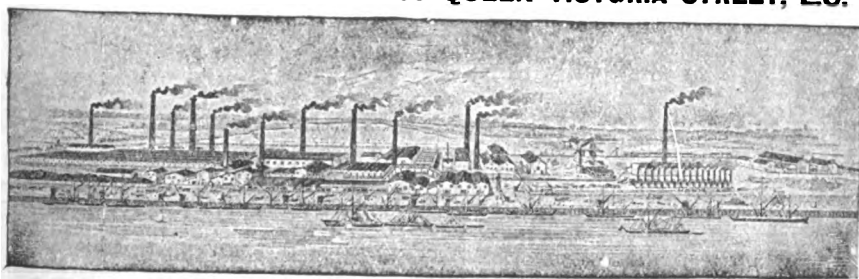
|                                           |        |    |    |
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| Salt . . . . .                            | £4,300 | 0  | 0  |
| Emmott . . . . .                          | 4,275  | 0  | 0  |
| Davies Bros. . . . .                      | 4,236  | 19 | 2  |
| R. Jones . . . . .                        | 4,186  | 7  | 0  |
| J. T. Jones . . . . .                     | 4,176  | 0  | 0  |
| Probert . . . . .                         | 4,111  | 15 | 0  |
| Hughes & Stirling . . . . .               | 4,056  | 7  | 2  |
| Davies . . . . .                          | 3,997  | 4  | 11 |
| Evans . . . . .                           | 3,944  | 0  | 0  |
| Reney . . . . .                           | 3,920  | 0  | 0  |
| Bellis . . . . .                          | 3,898  | 0  | 0  |
| Smith . . . . .                           | 3,887  | 0  | 0  |
| Lloyd . . . . .                           | 3,850  | 0  | 0  |
| Dryland & Preston . . . . .               | 3,815  | 0  | 4  |
| Desoer . . . . .                          | 3,714  | 0  | 0  |
| Rogers . . . . .                          | 3,710  | 0  | 0  |
| Wood & Co. . . . .                        | 3,706  | 0  | 0  |
| Wright & Son . . . . .                    | 3,695  | 0  | 0  |
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| R. Williams . . . . .                     | 3,573  | 15 | 10 |
| P. WILLIAMS, Overton (accepted) . . . . . | 3,544  | 0  | 0  |
| Gill & Son . . . . .                      | 3,517  | 0  | 0  |

For the erection of infants' school, Gelfryn  
county architect, Mold. Mr. S. EVANS,

|                             |        |    |    |
|-----------------------------|--------|----|----|
| Jones . . . . .             | £3,690 | 0  | 0  |
| Peel . . . . .              | 3,596  | 0  | 0  |
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| Davies Bros. . . . .        | 3,537  | 11 | 0  |
| Jones . . . . .             | 3,504  | 8  | 0  |
| Emmott . . . . .            | 3,409  | 0  | 0  |
| Hughes & Stirling . . . . . | 3,395  | 10 | 11 |
| Salt . . . . .              | 3,310  | 0  | 0  |
| Bellis . . . . .            | 3,297  | 0  | 0  |
| Reney . . . . .             | 3,282  | 0  | 0  |
| Smith . . . . .             | 3,195  | 0  | 0  |
| Simmons . . . . .           | 3,183  | 12 | 3  |
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| Johnson & Co.                         | 4,923  | 0 | 0 |
| Mattock Bros.                         | 4,922  | 0 | 0 |
| Gough & Co.                           | 4,818  | 0 | 0 |
| Stewart.                              | 4,758  | 0 | 0 |
| Renshaw.                              | 4,757  | 0 | 0 |
| Nicholls & Son.                       | 4,678  | 0 | 0 |
| Mattock & Parsons.                    | 4,643  | 0 | 0 |
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| Treasure & Son.                       | 4,400  | 0 | 0 |
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**HAREFIELD.**

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| Mattock Bros.                         | 5,600  | 0 | 0 |
| Appleby & Sons.                       | 5,577  | 0 | 0 |
| Spiers & Son.                         | 5,567  | 0 | 0 |
| Leslie & Co.                          | 5,411  | 0 | 0 |
| Dorey & Co.                           | 5,150  | 0 | 0 |
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| Godson & Son.                         | 4,986  | 0 | 0 |
| Page.                                 | 4,976  | 0 | 0 |
| Kearley.                              | 4,877  | 0 | 0 |
| Wisdom Bros.                          | 4,875  | 0 | 0 |
| Dickens.                              | 4,865  | 0 | 0 |
| Johnson & Co.                         | 4,725  | 0 | 0 |
| Barker & Co.                          | 4,717  | 0 | 0 |
| Mattock & Parsons.                    | 4,681  | 0 | 0 |
| Fassnidge & Son.                      | 4,606  | 0 | 0 |
| Knight & Son, Tottenham (recommended) | 4,289  | 0 | 0 |

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For the erection of Council schools. Mr. H. G. CROTHALL, architect.

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| Leslie & Co.                       | £4,258 | 0 | 0 |
| Minter.                            | 3,316  | 0 | 0 |
| Mattock & Parsons.                 | 3,250  | 0 | 0 |
| Batchelor.                         | 3,125  | 0 | 0 |
| Wisdom Bros.                       | 2,965  | 0 | 0 |
| Kearley.                           | 2,910  | 0 | 0 |
| Belch.                             | 2,895  | 0 | 0 |
| Renshaw.                           | 2,857  | 0 | 0 |
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**HEMEL HEMPSTEAD.**

For rebuilding bridge and widening the main road, &c. Mr. URBAN A. SMITH, county surveyor, Hatfield.

|                                         |        |    |    |
|-----------------------------------------|--------|----|----|
| Pedrette                                | £1,291 | 14 | 3  |
| Streeter & Co.                          | 1,001  | 14 | 8  |
| Buckley                                 | 821    | 15 | 0  |
| Williams                                | 811    | 15 | 7  |
| Wall, Ltd.                              | 800    | 0  | 0  |
| Vail & Shore                            | 734    | 11 | 7  |
| HENSON & SON, Wellingborough (accepted) | 629    | 8  | 10 |

**HUDDERSFIELD.**

For sewage-disposal works, for the Honley and South Crossland Joint Sewerage Board. Mr. W. H. RADFORD, engineer, Nottingham.

|                                        |         |    |    |
|----------------------------------------|---------|----|----|
| Clements                               | £11,082 | 15 | 0  |
| Edmondson & Wyatt                      | 9,894   | 0  | 0  |
| Firth & Co.                            | 7,997   | 16 | 7  |
| Byrom, Ltd.                            | 7,540   | 0  | 0  |
| Egan & Sons                            | 7,484   | 5  | 0  |
| Ward & Tetley                          | 7,384   | 7  | 7  |
| Balmforth                              | 7,263   | 11 | 3  |
| Annakin                                | 7,214   | 17 | 3  |
| Buckley                                | 7,208   | 12 | 4  |
| Turner                                 | 7,200   | 0  | 0  |
| Cottle                                 | 7,200   | 0  | 0  |
| Totty                                  | 7,095   | 12 | 6  |
| Laing & Son                            | 6,922   | 0  | 0  |
| Wood                                   | 6,900   | 0  | 0  |
| Bower Bros.                            | 6,895   | 0  | 0  |
| Harris Bros.                           | 6,826   | 8  | 0  |
| Graham & Co.                           | 6,799   | 0  | 0  |
| Bentley                                | 6,702   | 15 | 4  |
| Mackay & Son                           | 6,685   | 17 | 11 |
| Beighton & Berry                       | 6,679   | 12 | 0  |
| Graham & Sons                          | 6,677   | 0  | 0  |
| Schofield, Sons & Co.                  | 6,553   | 16 | 2  |
| Braithwaite & Co.                      | 6,521   | 2  | 10 |
| Graham                                 | 6,513   | 19 | 0  |
| Doleman                                | 6,207   | 7  | 11 |
| Barry                                  | 6,100   | 18 | 6  |
| WARING & SONS, Huddersfield (accepted) | 5,751   | 0  | 0  |

**IPSWICH.**

For the erection of two houses, Rushmere Park estate. Mr. H. STEWARD WATLING, architect, 4 Tann Street, Ipswich, Felixstowe, Dovercourt and Lowestoft.

|                           |      |   |   |
|---------------------------|------|---|---|
| Gravelling & Sewell       | £800 | 0 | 0 |
| Kenny                     | 774  | 0 | 0 |
| Thurman                   | 714  | 0 | 0 |
| Linzell                   | 673  | 0 | 0 |
| Firmin                    | 606  | 0 | 0 |
| SMITH, Ipswich (accepted) | 525  | 0 | 0 |

**LONDON.**

For improvements at Council school in Byron and Bright Streets, Poplar.

|                                                                                              |         |    |   |
|----------------------------------------------------------------------------------------------|---------|----|---|
| Miskin & Sons                                                                                | £22,087 | 0  | 0 |
| McCormick & Sons                                                                             | 21,018  | 0  | 0 |
| Lascelles & Co., Ltd.                                                                        | 20,886  | 18 | 3 |
| L. H. & R. Roberts                                                                           | 20,637  | 0  | 0 |
| Perry & Co.                                                                                  | 20,556  | 0  | 0 |
| Appleby & Sons                                                                               | 20,543  | 0  | 0 |
| Lovatt, Ltd.                                                                                 | 19,974  | 0  | 0 |
| Wall, Ltd.                                                                                   | 19,951  | 0  | 0 |
| Kirk & Randall                                                                               | 19,497  | 0  | 0 |
| Wallis & Sons, Ltd.                                                                          | 19,072  | 0  | 0 |
| Lawrance & Sons                                                                              | 18,953  | 0  | 0 |
| Patman & Fotheringham, Ltd.                                                                  | 18,673  | 0  | 0 |
| Greenwood, Ltd.                                                                              | 18,624  | 0  | 0 |
| Treasure & Son                                                                               | 18,370  | 0  | 0 |
| J. & C. Bowyer, Weston Street, Upper Norwood (recommended)                                   | 18,249  | 0  | 0 |
| Architect's estimate                                                                         | 20,464  | 0  | 0 |
| For adapting school in Worsley Road as a branch library. Mr. O. E. WINTER, borough engineer. |         |    |   |
| Dainton                                                                                      | £369    | 0  | 0 |
| Abbott, Pope & Co.                                                                           | 358     | 0  | 0 |
| Clifton                                                                                      | 348     | 0  | 0 |
| Stewart                                                                                      | 332     | 0  | 0 |
| Oldrey & Sons                                                                                | 330     | 0  | 0 |
| Leadbetter                                                                                   | 319     | 10 | 0 |
| Hudson                                                                                       | 318     | 0  | 0 |
| Roberts & Co.                                                                                | 290     | 0  | 0 |
| Reynolds                                                                                     | 278     | 0  | 0 |
| TROY & Co. (accepted)                                                                        | 220     | 0  | 0 |

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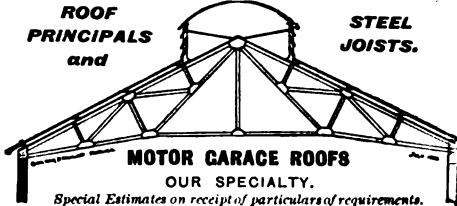
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**LONDON—continued.**

For alteration and extension of the laundry at the work-house, Swaffield Road, Wandsworth.

|                                                     |        |   |   |
|-----------------------------------------------------|--------|---|---|
| Ellis & Co. . . . .                                 | £3,004 | 0 | 0 |
| King & Son . . . . .                                | 2,963  | 0 | 0 |
| Bishop . . . . .                                    | 2,946  | 0 | 0 |
| Ronald, sen. . . . .                                | 2,860  | 0 | 0 |
| Moss & Co. . . . .                                  | 2,800  | 0 | 0 |
| Dakin & Co. . . . .                                 | 2,758  | 0 | 0 |
| Shelbourne & Co. . . . .                            | 2,690  | 0 | 0 |
| Thames Joinery Co. . . . .                          | 2,650  | 0 | 0 |
| Hollingsworth . . . . .                             | 2,642  | 0 | 0 |
| Jewell . . . . .                                    | 2,624  | 0 | 0 |
| Perry Bros. . . . .                                 | 2,597  | 0 | 0 |
| Leather . . . . .                                   | 2,590  | 0 | 0 |
| Wallis . . . . .                                    | 2,590  | 0 | 0 |
| Webster & Son . . . . .                             | 2,521  | 0 | 0 |
| Myall & Upson . . . . .                             | 2,500  | 0 | 0 |
| Parsons . . . . .                                   | 2,493  | 0 | 0 |
| F. & E. Davey . . . . .                             | 2,479  | 0 | 0 |
| Spencer, Santo & Co. . . . .                        | 2,470  | 0 | 0 |
| Triggs . . . . .                                    | 2,428  | 0 | 0 |
| Nightingale . . . . .                               | 2,428  | 0 | 0 |
| Renshaw . . . . .                                   | 2,427  | 0 | 0 |
| Fitch & Cox . . . . .                               | 2,411  | 0 | 0 |
| Wall . . . . .                                      | 2,410  | 0 | 0 |
| F. & G. Foster . . . . .                            | 2,369  | 0 | 0 |
| Tucker . . . . .                                    | 2,364  | 0 | 0 |
| HYDE & Co, Clifford Road, S.E. (accepted) . . . . . | 2,184  | 0 | 0 |

For the erection of two detached houses in Thurleigh Road, S.W. Mr. H. BIGNOLD, architect.

|                                   |        |   |   |
|-----------------------------------|--------|---|---|
| Harbour . . . . .                 | £3,300 | 0 | 0 |
| Frost . . . . .                   | 2,280  | 0 | 0 |
| Nicks & Co. . . . .               | 2,215  | 0 | 0 |
| Tucker . . . . .                  | 2,169  | 0 | 0 |
| LIMPUS & SON (accepted) . . . . . | 2,050  | 0 | 0 |

**LONDON—continued.**

For improvements at St. John's school, Halley Street, Limehouse.

|                                                          |         |   |   |
|----------------------------------------------------------|---------|---|---|
| Miskin & Sons . . . . .                                  | £11,053 | 0 | 0 |
| Lovatt, Ltd. . . . .                                     | 10,965  | 0 | 0 |
| Marsland & Sons . . . . .                                | 10,894  | 0 | 0 |
| Perry & Co. . . . .                                      | 10,638  | 0 | 0 |
| Lawrance & Sons . . . . .                                | 10,593  | 0 | 0 |
| Symes . . . . .                                          | 10,082  | 0 | 0 |
| Greenwood, Ltd. . . . .                                  | 10,082  | 0 | 0 |
| Wallis & Sons, Ltd. . . . .                              | 10,072  | 0 | 0 |
| Patman & Fotheringham, Ltd. . . . .                      | 9,983   | 0 | 0 |
| Treasure & Son . . . . .                                 | 9,715   | 0 | 0 |
| Hawkins & Co. . . . .                                    | 9,653   | 5 | 6 |
| Sharpington . . . . .                                    | 9,605   | 0 | 0 |
| J. & M. Patrick, Wandsworth (recom-<br>mended) . . . . . | 9,204   | 0 | 0 |

**LOWESTOFT.**

For the erection of a detached house, Oulton Broad. Mr. H. STEWARD WATLING, architect, 41 London Road, Lowestoft, Ipswich, Felixstowe and Dovercourt.

|                                     |      |   |   |
|-------------------------------------|------|---|---|
| Rich . . . . .                      | £500 | 0 | 0 |
| A. Beckett . . . . .                | 400  | 0 | 0 |
| Allerton . . . . .                  | 390  | 0 | 0 |
| G. Beckett . . . . .                | 367  | 0 | 0 |
| Jarvis . . . . .                    | 300  | 0 | 0 |
| Sewell . . . . .                    | 277  | 0 | 0 |
| Brewer . . . . .                    | 241  | 0 | 0 |
| SMITH, Ipswich (accepted) . . . . . | 215  | 0 | 0 |

For the erection of two houses, Russell and Manning Ross. Mr. H. STEWARD WATLING, architect, 24 Victoria Parade, Felixstowe, Ipswich, Dovercourt and Lowestoft. RAMSEY, Felixstowe, at per schedule.

**NEATH.**

For the erection of a Congregational chapel at Skewen. Messrs. LLOYD & MARTYN, architects, Skewen.

|                                 |        |   |   |
|---------------------------------|--------|---|---|
| Davies & Sons . . . . .         | £3,300 | 0 | 0 |
| Price Bros. . . . .             | 2,861  | 0 | 0 |
| Ogley, Skewen, Neath* . . . . . | 2,445  | 0 | 0 |

\* Accepted subject to modification.



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|                                                                     |        |   |   |
|---------------------------------------------------------------------|--------|---|---|
| For the erection of Council schools. Mr. H. G. CROTHALL, architect. |        |   |   |
| Dymock . . . . .                                                    | £2,697 | 0 | 0 |
| Tribe & Co. . . . .                                                 | 2,427  | 0 | 0 |
| Batchelor . . . . .                                                 | 2,285  | 0 | 0 |
| Dickens . . . . .                                                   | 2,233  | 0 | 0 |
| Brown . . . . .                                                     | 2,147  | 0 | 0 |
| Haynes . . . . .                                                    | 2,099  | 0 | 0 |
| Kearley . . . . .                                                   | 2,097  | 0 | 0 |
| Renshaw . . . . .                                                   | 2,077  | 0 | 0 |
| Godson & Son . . . . .                                              | 2,076  | 0 | 0 |
| Dorey & Co. . . . .                                                 | 2,074  | 0 | 0 |
| Wisdom Bros. . . . .                                                | 2,050  | 0 | 0 |
| Fassnidge & Son . . . . .                                           | 2,036  | 0 | 0 |
| A. & B. Hanson, Southall (recommended) . . . . .                    | 1,997  | 0 | 0 |

**OSSETT.**

For the erection of Wesleyan church. Messrs. GARSIDE & PENNINGTON, architects, Pontefract.

*Accepted tenders.*

|                                              |      |    |   |
|----------------------------------------------|------|----|---|
| Pickesgill Sons, Ossett, brick and stonework | £975 | 0  | 0 |
| Foster & Co., Keighley, joiner               | 623  | 14 | 0 |
| Wilson, Wakefield, plumber and glazier       | 160  | 0  | 0 |
| Brear & Son, Dewsbury, slater                | 109  | 8  | 0 |
| Sanderson, Ossett, plasterer                 | 51   | 0  | 0 |
| Carver, Wakefield, painter                   | 42   | 14 | 4 |

**PONTEFRACT.**

For alterations, &c., to property into three shops, Corn Market. Messrs. GARSIDE & PENNINGTON, architects, Pontefract.

*Alterations.*

|                                                |      |   |   |
|------------------------------------------------|------|---|---|
| Gundill . . . . .                              | £433 | 7 | 6 |
| WALKER & WARD, Pontefract (accepted) . . . . . | 411  | 0 | 5 |

*New shop fronts.*

|                                        |     |    |   |
|----------------------------------------|-----|----|---|
| Reynolds & Co. . . . .                 | 273 | 0  | 0 |
| Hirst & Sons . . . . .                 | 264 | 17 | 9 |
| Spink . . . . .                        | 248 | 0  | 0 |
| BLAKEY, Wakefield (accepted) . . . . . | 248 | 0  | 0 |

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For erecting secondary school at Seldown.

HARRIS (accepted) . . . . . £4,658 0 0

**PORTSMOUTH.**

For the erection of police station in Kingston Road.

|                                |        |   |   |
|--------------------------------|--------|---|---|
| Dowdell . . . . .              | £5,100 | 0 | 0 |
| Dungan . . . . .               | 4,900  | 0 | 0 |
| Turner . . . . .               | 4,814  | 0 | 0 |
| Durant . . . . .               | 4,715  | 0 | 0 |
| McCarthy Bros. . . . .         | 4,640  | 0 | 0 |
| Salter . . . . .               | 4,617  | 0 | 0 |
| Crockerell . . . . .           | 4,497  | 0 | 0 |
| Clark . . . . .                | 4,386  | 0 | 0 |
| Privett . . . . .              | 4,343  | 0 | 0 |
| LEARMOUTH (accepted) . . . . . | 4,219  | 0 | 0 |

**ROSS.**

For the water-supply, &c., at house near Ross, Herefordshire. Messrs. GROOME & BETTINGTON, architects and surveyors, Palace Chambers, Hereford. Quantities by architects.

|                                        |      |   |   |
|----------------------------------------|------|---|---|
| Smith & Watson . . . . .               | £126 | 0 | 0 |
| Wilks . . . . .                        | 109  | 0 | 0 |
| VAUGHAN, Hereford (accepted) . . . . . | 105  | 1 | 9 |

**ST. HELENS.**

For the erection of schools at Parr. Mr. FRANK S. BIRAM, architect, St. Helens.

ROTHWELL & SONS, Knowsley Road (accepted) . . . . . £15,330 0 0

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JONES, Wolverhampton (accepted) . . . . . £4,979 0 0

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LAILEY, engineer, 53 Victoria Street, Westminster.

|                               |         |    |    |
|-------------------------------|---------|----|----|
| Jones & Sons                  | £70,400 | 0  | 0  |
| Pethick Bros.                 | 68,575  | 0  | 0  |
| Pedrette Bros.                | 62,479  | 13 | 7  |
| Yewen                         | 61,822  | 16 | 6  |
| Hay & Co.                     | 60,570  | 10 | 0  |
| Iles                          | 59,528  | 0  | 0  |
| Dickson                       | 57,527  | 18 | 11 |
| Neal & Co.                    | 57,076  | 6  | 3  |
| Riley                         | 56,373  | 19 | 9  |
| Manders                       | 55,892  | 10 | 9  |
| Moran & Co.                   | 55,555  | 0  | 0  |
| Jackson                       | 55,146  | 16 | 3  |
| Stephens & Sons               | 55,146  | 0  | 0  |
| Cooke & Co.                   | 55,129  | 0  | 0  |
| Wheeler                       | 55,085  | 9  | 6  |
| Osenton                       | 55,078  | 0  | 0  |
| Wright & Co.                  | 54,683  | 3  | 11 |
| Osman                         | 54,462  | 16 | 0  |
| Macalpine & Co.               | 54,253  | 17 | 5  |
| Trimm                         | 52,628  | 0  | 0  |
| Johnson & Langley             | 52,063  | 0  | 0  |
| Cunliffe                      | 51,295  | 0  | 0  |
| Johnson Bros.                 | 50,750  | 0  | 0  |
| Braithwaite & Co.             | 49,913  | 11 | 6  |
| KAVANAGH, Tolworth (accepted) | 48,810  | 16 | 0  |
| Jackson                       | 47,399  | 4  | 6  |
| Smith & Co.                   | 44,714  | 5  | 3  |

*Power Station.*

|                                     |       |    |   |
|-------------------------------------|-------|----|---|
| Allwork                             | 1,386 | 17 | 0 |
| Bull & Esdaile                      | 1,386 | 0  | 0 |
| Gaze & Sons                         | 1,370 | 0  | 0 |
| Johnson                             | 1,311 | 18 | 4 |
| Hawkey                              | 1,309 | 0  | 0 |
| McDONALD BROS., Surbiton (accepted) | 1,293 | 11 | 0 |

**SURBITON—continued.***Cottage.*

|                              |      |    |    |
|------------------------------|------|----|----|
| Allwork                      | £413 | 17 | 0  |
| Gaze & Sons                  | 398  | 0  | 0  |
| Bull & Esdaile               | 372  | 0  | 0  |
| Hawkey                       | 350  | 0  | 0  |
| McDonald Bros.               | 330  | 0  | 0  |
| JOHNSON, Surbiton (accepted) | 319  | 8  | 10 |

**WALMER.**

For construction of stoneware sewers, surface-water drains, &amp;c. Mr. H. W. BARKER, engineer.

|                             |        |   |   |
|-----------------------------|--------|---|---|
| Hibbs                       | £1,079 | 0 | 0 |
| Osenton                     | 961    | 0 | 0 |
| Turner                      | 916    | 0 | 0 |
| S. & R. Jefford             | 897    | 0 | 0 |
| Browning                    | 892    | 0 | 0 |
| Jeffreys                    | 890    | 0 | 0 |
| Castle & Co.                | 827    | 0 | 0 |
| Johnson & Anderson          | 799    | 0 | 0 |
| Buckley                     | 777    | 0 | 0 |
| WILSON, Ramsgate (accepted) | 739    | 0 | 0 |

**WARWICK.**

For the installation of electric light at the Warwickshire county hall.

|                            |      |   |   |
|----------------------------|------|---|---|
| PLUCKNETT & Co. (accepted) | £500 | 0 | 0 |
|----------------------------|------|---|---|

**WESTON-SUPER-MARE.**

For the erection of bungalow at Uphill. Messrs. T. SCAMMELL, SON &amp; PERKINS, architects, Bristol.

|                                      |      |   |   |
|--------------------------------------|------|---|---|
| Perkins & Son                        | £685 | 0 | 0 |
| Stephens & Bastow                    | 678  | 0 | 0 |
| Hawkins & Son                        | 605  | 0 | 0 |
| Addicott                             | 600  | 0 | 0 |
| Ford & Sons                          | 570  | 0 | 0 |
| Beaven                               | 560  | 0 | 0 |
| Fear                                 | 518  | 0 | 0 |
| SFRAKE, Weston-super-Mare (accepted) | 490  | 0 | 0 |



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WATFORD.

For street works. Mr. ERNEST LAILEY, engineer, Watford.

|                                     |        |   |   |
|-------------------------------------|--------|---|---|
| Williams                            | £2,292 | 0 | 0 |
| Brown                               | 2,270  | 0 | 0 |
| BRACEY & CLARKE, Watford (accepted) | 2,250  | 0 | 0 |

For erection of four villas, Whippendell Road. Mr. S. E. GOMME, architect, Watford.

|                           |       |   |   |
|---------------------------|-------|---|---|
| BROWN, Watford (accepted) | 1,650 | 0 | 0 |
|---------------------------|-------|---|---|

WOOLWICH.

For the erection of women's dining-hall at the union house, Plumstead. Mr. J. O. COOK, architect, Woolwich.

|                                   |        |   |   |
|-----------------------------------|--------|---|---|
| Mills                             | £1,410 | 0 | 0 |
| Selby                             | 1,405  | 0 | 0 |
| Blay                              | 1,350  | 0 | 0 |
| Friday & Long                     | 1,340  | 0 | 0 |
| Harris                            | 1,219  | 0 | 0 |
| Lonsdale                          | 1,212  | 0 | 0 |
| Fenn                              | 1,167  | 0 | 0 |
| Loasby & Salmon                   | 1,167  | 0 | 0 |
| Proctor                           | 1,150  | 0 | 0 |
| Sanford & Co.                     | 1,120  | 0 | 0 |
| Jerram                            | 1,119  | 0 | 0 |
| Ware                              | 1,117  | 0 | 0 |
| Thomas & Edge                     | 1,093  | 0 | 0 |
| Crisp & Jones                     | 1,080  | 0 | 0 |
| Kent                              | 1,050  | 0 | 0 |
| Shorters                          | 1,046  | 0 | 0 |
| Steadman & Co.                    | 1,045  | 0 | 0 |
| Pasterfield & King                | 1,034  | 0 | 0 |
| R. & E. Evans                     | 1,009  | 0 | 0 |
| HYDE, Norwood Junction (accepted) | 804    | 0 | 0 |

WORTHING.

For the completion of the works at the new Corporation baths.

|                                     |      |   |   |
|-------------------------------------|------|---|---|
| Smart & Co.                         | £950 | 0 | 0 |
| Dickenson & Co.                     | 625  | 0 | 0 |
| East                                | 500  | 0 | 0 |
| Callender & Co., Ltd. (recommended) | 467  | 0 | 0 |

For detached residence at Heene. Mr. T. R. HYDE, architect, Worthing. Quantities by Mr. A. H. TUCKER.

|                        |        |    |   |
|------------------------|--------|----|---|
| Snewin & Son           | £2,966 | 0  | 0 |
| Standing               | 2,936  | 0  | 0 |
| Blaker & Son           | 2,863  | 18 | 3 |
| HEWER & SON (accepted) | 2,715  | 6  | 0 |

TRADE NOTES.

THE Leslie Walker Fire Alarm Company, Ltd., Gamage Buildings, Holborn, E.C., have recently completed an installation of their automatic fire detector which has been fitted throughout the boys' quarters at Harrow School.

THE new workhouse infirmary, Rugby, is being warmed and ventilated by means of Shorland's double-fronted patent Manchester stoves with descending smoke flues, the same being supplied by Messrs. E. H. Shorland & Brother, of Manchester.

WE have been requested to announce that Messrs. Cloke Bros. have relinquished their office at 3 St. Augustine's Road, and that all communications regarding refuse clearing or the supply of hand-picked hardcore, brick rubbish, ashes, clinker, &c., for delivery in London or on the following railways—Great Northern, Midland, Great Central or Metropolitan—should be addressed to 169 Bow Road, London, E.

THE Brazilian *Diario Official* of October 6 contains copy of a law authorising the expenditure of 350,000 milreis (about 21,875*l.*) on the completion of the "Palacio Monroe," the Brazilian Pavilion at the St. Louis Exhibition, which is to be erected in Rio de Janeiro as a permanent structure.

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**ELECTRIC NOTES.**

At the audit of the accounts of the Felixstowe Urban District Council Mr. M. W. Dixon, a Local Government Board auditor, said that after a full inquiry he must surcharge the members who had signed a cheque for 3,000*l.* in excess of the amount sanctioned incidental to the Council's electric-lighting provisional order, the Board of Trade having distinctly refused sanction to pay the sum in question to the Suffolk Electricity Supply Company, excepting under conditions which had not been complied with. On behalf of the Council it was stated that the electricity company had issued a writ and the Council was bound to raise the money to satisfy the claim.

The North-Eastern Railway Company are making a series of trials—which will be continued throughout the winter—in order to test the efficiency and relative value of electricity and gas for the lighting of railway coaches. A new type of carriage is being used for the trial of the electric light, an elliptical roof being substituted for the clerestory variety lately in use as being stronger and affording a larger amount of cubic space per passenger without fouling the loading gauge. Stone's electric-lighting system, consisting of a dynamo under each carriage driven by a belt from one of the axles and supplied with accumulators carried under the coach, supplies the illuminant to three handsome frosted lamps suspended from the ceiling of each compartment. When the train stops the mechanism automatically diverts the supply of current from the dynamo to the accumulators, thus securing a steady light while the train is at a standstill and so removing one of the difficulties which have hitherto obstructed the effective use of electricity for this purpose.

**BUILDING AND BUILDERS.**

The Douglas borough surveyor, Isle of Man, is preparing plans and estimates of the cost of erecting Russian baths.

The Staffordshire education committee have provided the sum of 8,623*l.* for the erection of the Stafford new high school for girls and pupil teachers' centre.

MR. JOHN WRIGHT, of the White House, Nottingham, builder, has bequeathed about 50,000*l.* for charitable purposes. His estate was sworn of the value of 68,037*l.*

THE annual meeting of the Building Trades Exchange of the City and District of Glasgow, Ltd., was held in the Exchange at 67 Hope Street on the 31st ult. The treasurer's report showed a credit balance for the year of 40*l.* 8*s.* 1½*d.*, and the dividend was 4 per cent.

ACCORDING to the Fatal Accidents Inquiry (Scotland) Act, 1895, and the new 1906 Act, Sheriff Gardner Miller and a jury conducted inquiries in Edinburgh on the 31st ult. as to the circumstances of three recent fatalities. One related to the death of a labourer, which resulted from an accident he met with at the building in course of erection at the corner of Princes Street and St. Andrew Street on October 15. In the course of operations at the building a box of bricks was being hoisted up and some of the bricks fell from the box and struck Gaffney, who afterwards succumbed to his injuries in the Edinburgh Royal Infirmary. The jury's opinion was that no fault or negligence could be attached to anyone, but they said that greater precaution might be taken where so much loading was being done.

THE publicity given to the Manchester plumbing dispute from the operatives' side of the case has prompted the employers to issue the following statement:—"Although the dispute at present hangs on the notice we gave the operatives on February 27 last (and which we were compelled to revert to when they refused our concessions), we were agreeable to the winter hours being reduced half an hour per day for six weeks, and to lengthen the summer hours half an hour per day for four weeks. This only means two weeks shorter time and a reduction of less than four shillings per annum, for which they work five hours less. We have not proposed to reduce the wages, which have always been 9½*d.* per hour. We also offered three other concessions, which more than compensated them for any supposed loss. We still offer to place the matter in the hands of the Conciliation Board, but up to the present our offer has been refused."

MR. H. B. MILLER, the American Consul-General at Yokohama, in a report to the Washington Bureau of Manufactures on the progress of the Japanese in the production

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of cement, predicts the opening of an era of expansion in this line, basing his belief on the lively demand that he feels sure is to come from Corea, Manchuria, parts of Russia and other Eastern countries. He says that the war temporarily checked the growth of the industry, but the restoration of peace revived it. Not only is the demand for Japanese cement springing up in Corea and Manchuria, but large orders received from San Francisco, brought about by the recent catastrophe, gave a great impetus to it. All the stock in the market has been cleared, and the manufacturers are busily engaged in trying to meet requirements.

MR. BURNS, M.P., having been asked by Mr. Field whether he is aware that certain tenants residing in Camberwell New Road received a peremptory notice to give up, without compensation or reduction of rent, the greater portion of their back gardens under penalty of eviction; whether he is aware that blocks of buildings are being erected close to the backs of the existing houses, almost to the exclusion of necessary light and air; and whether he will have this matter inquired into and reported upon by the local authority's surveyor, says:—"I have made inquiry on this subject, and am informed that it is the fact that the greater portion of the back gardens of the houses in question have been taken away, and that a garage is being erected on the site. I understand that a clear space of about 20 feet from the back walls of the houses has been left, and that the district surveyor has been instructed by the Building Act committee of the London County Council to report if any infringement of the Act takes place. The matter is not one with respect to which the Local Government Board have any jurisdiction."

The estates committee of the West Bromwich Corporation has had under consideration the question of the provision of strong rooms for the safe keeping of the documents under the control of the town clerk, the borough treasurer and borough surveyor. At the present time the strong-room accommodation in the town hall is very inadequate. The committee accordingly recommends the provision of three strong rooms to be built under the town hall, with entrances from the basement corridor, at an estimated cost of 400/.

### VARIETIES.

A NEW church is about to be erected for the district of St. Luke's, Gillingham, near Chatham.

THE Ritz Hotel, Piccadilly, has cost the sum of 850,000/., inclusive of site, buildings, decoration, furniture and equipment.

IN commemoration of the jubilee of the Roman Catholic cathedral at Shrewsbury, a stone porch has been added to the building at a cost of 1,000/.

THE East Riding County Council propose to borrow 10,000/ for the extension of the county hall. The builder's tender amounts to 7,200/., and to this sum must be added the cost of furniture and other expenses.

IT has been decided not to extend the Ashbourne grammar school, which is a picturesque sixteenth-century building, but to erect a new school, plans for which have been approved by the Education Department.

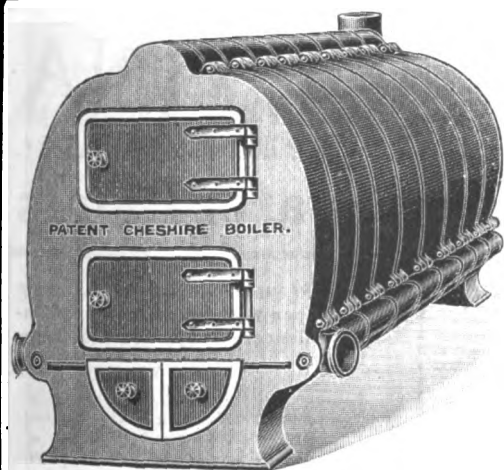
NEW warehouse, offices and show-rooms are about to be erected in High Holborn, London, W.C. The architect is Mr. Henry Smith, and the contractors are Messrs. Patman & Fotheringham, of Theobald's Road, London, W.C.

MESSRS. PATMAN & FOTHERINGHAM, of 100 to 102 Theobald's Road, London, are the contractors for the new hospital in Vincent Square, Westminster, S.W. The architects are Messrs. Read & Macdonald.

THE Salford Town Council have adopted plans for an extension to the Central Tramway car depôt which will provide accommodation for forty-five more cars, and authorised application to be made for sanction to borrow 19,604/.

ON Saturday afternoon the new refuse destructor at Dunoon was formally opened. The destructor has been erected at a cost of nearly 500/ by the Horsfall Destructor Company, Ltd., Leeds, and is a four-cell plant of the most modern description.

OWING to the number of fires which have occurred in barracks during recent years the War Office have had under consideration the best means of providing better protection and water supply. Motor fire-engines are to be issued to the principal military stations, where the men are to be trained to become expert in their use.



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Deal, Batten and Board Stocks—SOUTH DOCK.

Hardwood Yard—LAWRENCE STREET.  
Timber Ponds—CLAXHEUGH.

BRITISH tubemakers have been successful in securing, against American and German competition, next year's contract for tubes and fittings for the Continental Gas Companies' Association. This is the largest contract for iron tubes of the year, and it is the first time for five years that it has come to Britain. The contract was decided entirely on the question of price.

MR. H. R. HOOPER, a Local Government Board inspector, opened on the 1st inst. at the town hall, Mansfield, an inquiry into the Corporation's application to borrow 26,710*l.*, made up as follows:—For gas capital, 15,000*l.*; for the electricity undertaking, including provision of the Light Railway Company with current, 8,000*l.*; for land for street widening in Rosemary Lane, 840*l.*, and for public baths, 2,870*l.*

MR. OLDRIEVE, architect to the Board of Works, has prepared a scheme for the enlargement of the Court of Session, Edinburgh, which includes the erection of two new courts, in substitution of two of the present Outer House Courts. These new courts will, it is believed, be erected on the vacant ground between the present building and the Cowgate.

A NEW bank is being erected at Tautah, Egypt, from plans by Mr. Robert Williams, of London. The walls are of brick, with Doulling stone dressings from the Chelynych beds of the Ham Hill and Doulling Stone Company. The main entrance is of stone, and forms the chief feature of the building, which stands in a commanding position.

THE finance committee of the Carlisle Town Council have agreed to accept a loan of 100,000*l.* (47,500*l.* for water-works and 52,500*l.* for sewage disposal purposes) from the Prudential Assurance Company at 3½ per cent. interest, repayable by annual instalments of principal extending over the periods of repayment for which the loan is authorised, with interest on the current balance.

THE Lichfield City Council have decided to borrow 4,000*l.* for the following purposes:—Sewerage extensions in the city, 2,000*l.*; additional filter beds and alterations and additions to the sewerage disposal plant, 1,288*l.* 10*s.*; erection of two workmen's cottages at the sewage farm, 350*l.*; purchase of land in Beacon Street for dealing with the storm water, 250*l.*; contingencies, 111*l.* 10*s.*

THE Middlesbrough Corporation have received an offer from a bridge-building firm on Tees-side to build the proposed transporter bridge across the river Tees at Middlesbrough for 52,000*l.* The Corporation are promoting a Bill in Parliament for powers to build a transporter bridge of the cantilever type across the river Tees. The sum mentioned includes foundations, but not the legal expenses, which will bring the total cost to about 55,000*l.* The bridge is being designed and plans prepared for the Corporation by Mr. Geo. Imbault, of the Cleveland Bridge and Engineering Company, Darlington.

THE scheme of drainage and sewage disposal carried out at Milngavie, N.B., at a cost of 8,000*l.* was opened on the 24th ult. About three miles of sewers have been laid down. The disposal works extend to nearly four acres and are on the bacterial system. The installation consists of two covered tanks, each with a capacity of 123,000 gallons, and a continuous filter with destructor clinker as the filtering medium, having an area of 500 square yards and a minimum depth of 5 feet. The tank effluent is distributed by a Stoddart's apparatus and passes into the river Allander by a 15-inch pipe 530 yards in length. The engineer is Mr. T. O. Niven, C.E., Glasgow. The contractors for the drainage works are Messrs. G. Butler & Son, Milngavie, and for the disposal works Messrs. J. Paterson & Son, Ltd., Glasgow.

THE American Consul at Cardiff reports to the Bureau of Manufactures, Washington, that there were 483,031 tons of pig-iron produced in Wales during the first six months in 1906, an increase of 4,220 tons over the output for the corresponding period in 1905. The production by classification was 39,504 tons of forge and foundry, 398,881 tons of hematite and 44,646 tons of basic. The output of pig-iron in Great Britain during the same period was 4,905,424 tons, an increase of 283,824 tons; 157,760 tons of British pig-iron were exported to the United States during the eight months ended August 31 and 4,038 tons of American iron were imported during the same period. The British pig-iron industry is largely dependent upon foreign countries for its supply of iron ore, the imports for the first eight months of 1906 exceeding 5,000,000 tons, of which Spain furnished by far the larger percentage.

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(Extract from an article in "Good Words" by the Late SIR B. W. RICHARDSON, M.A., M.D., F.R.S., &c., entitled "Health at Home.")

Pamphlet of particulars, containing over 50 shades of colours from  
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THE  
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— ADVERTISING —



THE new University College Hospital, Gower Street, London, was formally opened by the Duke of Connaught on Monday. The building, which is of red brick with terracotta dressings, occupies an area measuring 232 feet by 225 feet, and rises in the form of a diagonal cross 70 feet above the level of the street, the tower, which springs from the central block, reaching a height of 140 feet. The cost of erection was 200,000*l.* The cruciform plan of the main structure is retained in each of the wards. The wards measure 86 feet by 25 feet, and are according to the ideas of the late Dr. G. Vivian Poore. Each contains twenty-four beds, making a total of about 300. The designs were prepared by Messrs. Waterhouse.

A new reservoir situated among the Dalry hills, known as the Caaf reservoir, has been formally opened on behalf of the Irvine and District Water Board. The Water Board is responsible for a water supply for Irvine, Kilwinning, Stevenston, Saltcoats and Nobell's Dynamite Works, a populated area of 30,000 people. The Caaf stream reservoir, which has been in course of erection for six years at an estimated cost of 40,000*l.*, will insure a constant and sufficient supply. Its capacity when filled will be about 190 million gallons, the water area 37 acres and the greatest depth of water 67 feet. The contractors were Messrs. James Young, Ltd., Glasgow, and the engineers Messrs. J. & A. Leslie & Reid. Additional filter accommodation is also being provided at a cost of 6,000*l.*

#### A NEW DRAWING TABLE.

THE success of W. F. Stanley & Co., Ltd., has been in a large measure owing to the inventiveness of the founder. That has been evident from the beginning, and gave to the instruments and appliances qualities which were not to be found in other examples. When a man is endowed with a power of invention, he is compelled to exercise it even at a time when less fortunate men seek for repose. It then becomes his hobby. Mr. Stanley therefore continues to act as he did many years ago, and one of his latest productions is a patent portable drawing table. The table is on a cast and wrought-iron stand with a heavy tripod base. It can be

raised by a screw to a height of 41 inches if necessary, and by means of a clamping-screw and arc it can be kept horizontal or fixed at any angle likely to be required. The table can therefore be used either when standing or seated. Attached to it is a tray for instruments. With one of the Stanley-Howard drawing-boards on the table work can be done with expedition and surety. The T-square which is adapted to the board can be fixed, and parallel and horizontal lines can be drawn with the aid of a pair of set squares. There is also an isograph, which will serve for other angles than the usual 90 degs., 60 degs. and 45 degs. In that way Mr. Stanley has found that he was able to do all the drawings, including the plan, elevation and sections for his new dividing machine. In a pamphlet he has issued he explains how the operations are carried out. All is feasible, and we have no doubt this new aid to drawing with exactness and facility will become as well known as the other conveniences for the draughtsman which bear Mr. Stanley's name and make architects and engineers indebted to him.

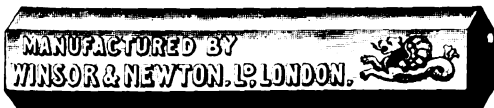
#### NEW CATALOGUES.

If the faithful Dominie Sampson were still living—and he would be sure to hold office in some Carnegie library—it would be excusable for him to use his favourite exclamation when he saw the illustrations of kitchens fitted with Carron cooking apparatus. "Prodigious!" is the most fitting adjective to describe them. But perhaps more justice would be done to the ranges by one of the cooks at Clerihugh's, who in a kitchen resembling Pandemonium by its open fires marshalled feasts that have become classical. With those great ranges with the subsidiary ovens, grilles, jacketed pans, pastry closets, bake-plates, fish-kettles, cookers, muffin-plates, burners, before one's eyes, it might be supposed that in Great Britain we had adopted the system of meals in common, and that a regiment of cooks had to assist in the production of public meals. One range in a hotel at Glasgow cost 276*l.* 16*s.* 6*d.*, another in Edinburgh 203*l.* 19*s.* 6*d.* Whether large or small they are charged on principle. The list of the establishments supplied with apparatus by the Carron Company is re-

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markable for its variety. Hotels, restaurants and clubs all over the country were to be expected, but we see also convents, colleges, monasteries, Government institutions, hospitals, homes, dining-cars, prisons, workhouses, canteens and numerous hospitable residences. Evidently they are used in some places as aiding in the production of good cheer, and in others on account of their economy. The colonies also know the advantage of employing them. Some ranges are of less dimensions, and the catalogue shows how well the firm can meet all necessities.

We have received from Messrs. R. Jenkins & Co., of Rotherham, a catalogue of their wrought-iron boilers for domestic purposes, in place of the usual kitchen-range boiler. A handy table of prices is given, which will be found of value when ordering.

### BENEFIT OF FIRES IN GLASGOW.

WHILST Glasgow is spoken of as a modern city, it is much more modern than probably most people imagine. Anyone returning to the city to-day after an absence of, say, twenty-five years, says the *Weekly Scotsman*, would scarcely recognise it, even at its very centre, except that the Clyde still rolls on and the main direction of the thoroughfares is unchanged.

Take the district round about the Cross. The quaint old Cross and Tron steeples are still there, linking the present with the past, but the Sautmarket, the Briggate, the Gallowgate, the High Street and the Trongate of bygone days exist only in name. No longer are the streets narrow and odoriferous, flanked by low-storeyed, narrow-windowed, grime-stained houses, with numerous courts and alleys leading to overcrowded pestilential "rookeries" behind. Under the City Improvements Acts the whole central area of the city has been practically cleared, remodelled and rebuilt on broad and spacious lines, at an enormous cost, no doubt, but not without ample compensation in the way of improvement in the health and morals of the city dweller.

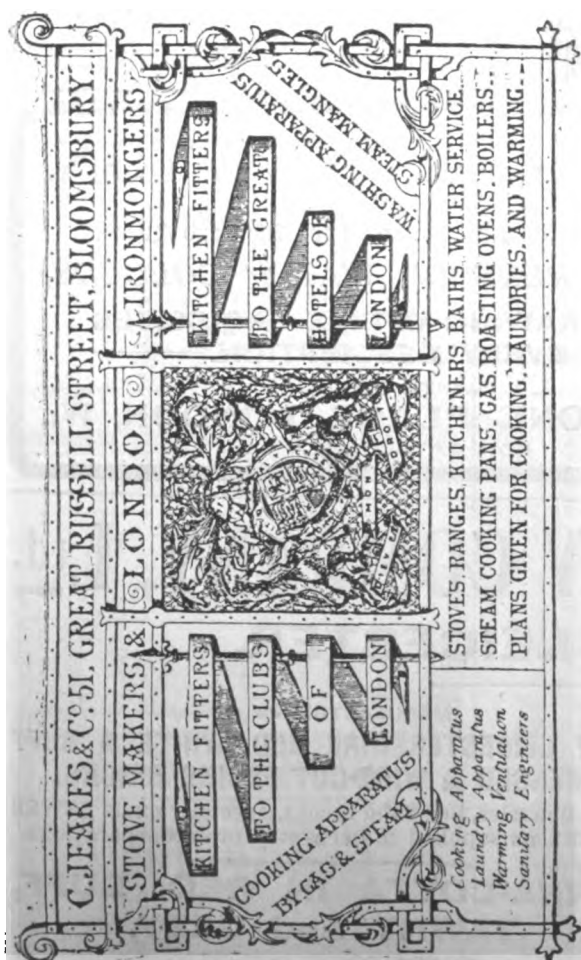
Apart, however, from the area in which the City Improvement Acts have been in operation, there are districts and thoroughfares in other parts that have undergone almost complete transformation. Especially has this been the case in the area from Queen Street in the east to Wellington Street in the west. This has arisen in part from the demand for improved and extended accommodation in that district of the city where business does most congregate.

But another factor has been at work. Every now and then we read in the newspapers the heading "Great Fire in Glasgow." Does it ever occur to anyone what changes on the face of the city have been wrought by agency of the "devouring element?"

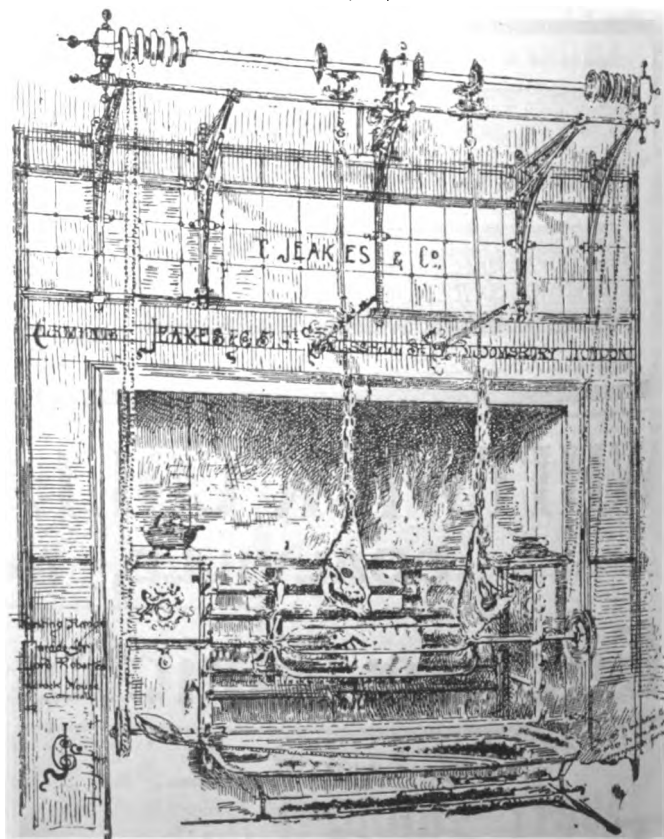
Take Buchanan Street, for instance, which is to Glasgow what Princes Street is to Edinburgh, or Oxford Street is to London. Buchanan Street was neither an old street, nor insanitary, nor unduly narrow, yet, largely as the result of the ravages of fire, the lower and most fashionable part of the street has been almost entirely rebuilt since the early eighties, and as it now stands it will probably bear favourable comparison, from an architectural point of view, with any business thoroughfare in any British city.

Local records show that until about twenty-three years ago Buchanan Street had been comparatively immune from serious fires. This fortunate state of affairs ended in 1883 when, on an October Saturday afternoon, fire broke out in the great furniture warehouse of Messrs. Wylie & Lochhead, and next morning there was a wide gap on the west side of the street right through to Mitchell Street—nearly a quarter of a million of money gone at a single sweep. On the site of the ruined warehouse rose another and grander, which to-day is one of the architectural features of the thoroughfare.

A few years later another great warehouse, almost directly opposite that of Messrs. Wylie, Hill & Co., met with equally complete disaster, the loss in this case amounting to something like 120,000/. If memory serves aright, the warehouse of Messrs. Fraser, Sons & Co., nearer Argyle Street, suffered then or shortly afterwards. The pavement had scarcely been cleared of the builders' barricades when Messrs. Macdougall's building at the corner of Mitchell Street was burned out from basement to attics. After this the street had respite from the fire fiend till about three



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years ago, when Messrs. Wylie, Hill & Co.'s warehouse, with much adjoining property, was once more laid in ruins.

In the interval the hand of the builder had not been idle. On the west side of the street, at the Argyle Street end, the rebuilding of the warehouse of Messrs. Stewart & Macdonald effected a much-needed improvement by removing half of the "bottle neck," which had long hindered the traffic and obscured the vista. Further up on the same side old premises disappeared, and in their places arose a quaint, picturesque building for Miss Cranston, of tea-room fame, at the corner of Gordon Street, a striking pile of buildings, which serve as headquarters for the Commercial Bank; and at the corner of St. Vincent Street another massive block erected by the National Bank.

The other side has undergone change to a somewhat similar extent, the new buildings including a great block of shops and offices at the corner of St. Vincent Place, the Royal Insurance Company's new offices at the corner of Royal Bank Place, a lofty block further down, occupied mainly by the North British Rubber Company, and, most recently of all, the fine block erected by Mr. Stuart Cranston, another tea-room pioneer, through which an archway leads into the famed Argyle Arcade.

Thus in its lower half Buchanan Street has undergone well-nigh complete regeneration. The process of rejuvenation has not extended to the upper half of the street to the same extent. Here there are not a few "crannogs," amid which the Athenæum stands almost the sole representative of modernity. But it will soon have more company, since the Liberal Club are about to erect a new club-house cheek-by-jowl with it, and opposite there is a dilapidated, deserted pile which cannot long escape the transforming hand of the building contractor.

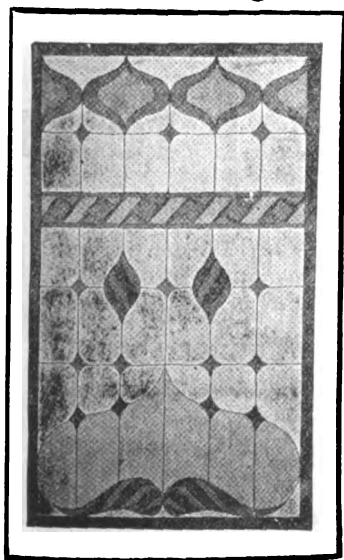
### ELECTRICITY IN DAMASCUS.

DAMASCUS acquired a new interest last year in becoming the scene of the first electrical enterprise in Turkey. After the rejection of a similar scheme for Aleppo in favour of the present one, a concession was obtained by a Turkish functionary, and made over to the Société Impériale Ottomane des Tramways, d'Éclairage et de Force Électriques de

Damas. The company is practically Belgian. It has a capital of 240,000l., of which 160,000l. is held by the Société Générale de Chemins de fer Économiques, the Société Générale Belge d'Entreprises Électriques and the Compagnie de Railways et d'Électricité. The terms of the concession give the company a very wide scope. They comprise a monopoly of electric traction, light and power, a virtual monopoly of electrical appliances, a right to establish agencies elsewhere and a telephone service, should such be necessary. The company is under contract with the municipality to light certain parts of the town, and is bound to repave the streets where the tramway passes. A force of 1,200 horse-power is derived from the falls of the river Barada at Et Tekiye, twenty-two miles from Damascus. The original plan was for five miles of tramway, crossing the city in two directions. For the present only 3½ miles, connecting the suburbs of Maidan and Salhiyeh, are being built.

There is no doubt that the company has encountered no small amount of legal, transport and engineering difficulties. By the end of last year a beginning of the work of harnessing the falls had been made. At the moment of writing the bulk of the work at the falls is finished, and in the town rails are laid on half of the 3½ miles, while the transforming station, depôts, &c., are nearly complete. The work has been carried on by a Société de Construction, which employed contractors for certain parts. There has been no lack of native unskilled labour, but it requires a large number of foremen, who are chiefly Italian. Unskilled workmen, of whom there are some 750, are paid from 1s. 3d. to 2s. a day, which varies according to the season from eight to ten hours. Masons receive 5s. 8d. a day, and foremen 6l. to 8l. a month. As to the prospects of the company it is hard to speak. The tramway is expected to be the least profitable part of the concern. It will no doubt largely supplant the cab traffic which is not inconsiderable on its route. More than that it can hardly do without introducing a minor revolution into the habits of the natives. Furthermore, local time is not money, although the present undertaking may, by a happy combination of cause and effect, conduce to make it so. Similarly electric light supplied at a reasonable rate may create a larger demand for artificial light.

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**REBUILDING SAN FRANCISCO.**

ACCORDING to the *Argonaut* of San Francisco in an entirely unsuspected quarter of the city—in Fillmore Street, far to the west, in the heart of the residence quarter—there sprang up like magic a retail business district which has since remained there. But so speedily was this short and unwise street crowded, and to such a height did rents there soar, that the merchants and business men seeking quarters there found themselves forced to go elsewhere. A concerted movement, therefore, resulted in the establishment of a handsome retail quarter on Van Ness Avenue, from Market to Washington Streets, and there that quarter has also since remained. For a time the wholesalers wavered. Many of them went to Oakland. Others established themselves around the Southern Pacific Railway yards and tracks in the southern part of the city.

There is a vast stretch of territory in the city which is still a desolate waste. Hundreds of blocks are still covered with ruins; miles of streets are still encumbered with debris. The downtown business district has been cleared away but little. In those parts of the city where the buildings were combustible little remains save standing chimneys. But in the solid business district, where the buildings were constructed of brick and stone, veritable mountains of ruins still remain. Within the legal limits of San Francisco there lies a large extent of territory which was not built upon and which, therefore, bears no superincumbent ruins to-day. This land lies to the north, to the west and to the south of the burned district. Will the new builders of the new San Francisco build on land which is covered with mountains of ruins and debris? Or will they build on land which is open and ready to the hand of the workman? If this question were left to be answered solely by the old citizens of San Francisco, sentiment would impel them to build where they had built before. But is this question going to be answered by them? Is the new San Francisco going to be built by the old San Franciscans? Or is it going to be built by other men—by strangers—by men who come from distant cities—men from distant lands—by corporations? Great railway corporations will soon be contending for the control of San Francisco. Some are already established there; others are on the way. They have no sentiment whatever. They have no emotional love

for the old San Francisco. They are intent only on building up a new one. Where will they strive to have it built? Will they try to have it built where it is most difficult, or where it is easiest? Will they build on the level lands that lie on tide-water to the north? Or will they build on the lands that lie on tide-water to the south? Or will they wait before they build—wait and clear away the heaps of debris and mountains of ruins on the level lands that lie to the east and that once were covered with the buildings of the old San Francisco?

**PREVENTION OF DUST ON ROADS.**

A SUB-COMMITTEE of the Road Board of the Mid-Lothian County Council, reporting on the prevention of dust on roads, stated that in Scotland experiments had been tried recently with tar-macadam. The cost of the experiments in Renfrewshire was 4s. per ton more than ordinary macadam, and in Mid-Lothian tar-macadam would be an increase of 63 per cent. The most important county experiments yet carried out were in Northumberland, where over eight miles of road had been relaid with tar-macadam four inches thick. The bottoming cost 900l. per mile, and the covering of tar-macadam 2s. 3d. per square yard, or 1,496l. additional per mile. On portions of the road which had been laid for two years the surface was in good condition, and although not absolutely dustless, no inconvenience from dust occurred when motor cars were passing. The probable life of tar-macadam was estimated at double, if not more, than ordinary macadam. Tar painting appeared to be the most favoured and effective palliative, but it did not last longer than twelve months. In Leith, where the experiment of last year had been repeated at a cost of 1½d. per square yard, the result was fairly good, but not entirely free from dust. To provide practically waterproof or dustless roads in villages or populous places would mean a very heavy addition to the rates if they were universally carried out, and unless some other source of revenue was found it was clear that even temporary measures only could be effected on a limited scale. The roads as now constructed were unsuited to the new class of traffic on them. The use of the roadside soil as a binding was an economical

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process for building up most of the roads for ordinary traffic, but it was totally unsuitable for motor cars. A much harder road was required, in which soil should not be used for binding. In view of the present state of experiments, it was recommended that no extraordinary measures should be taken in the meantime, and this was agreed to.

### ABERDEEN MASTER MASONS.

A NOVEL action is in progress in the Scottish Courts. The Aberdeen Master Masons' Incorporation, Ltd., ask that Leslie Smith, master mason, 77 Skene Square, Aberdeen, should produce a schedule containing a short description of all work contracted to be performed by him between July 8, 1904, and March 20, 1906, and the amount of the contract price in each case, in so far as the prices under the several contracts exceed 10%, and refer to work contracted to be performed inside the boundary line round the city and suburban area of Aberdeen, fixed between the Unincorporated Aberdeen Master Masons' Association and the Aberdeen Operative Masons and Stonecutters' Society, in order that the subscriptions at the rate of 1 per cent. on the prices of the contracts payable by him as a member of the Incorporation, in terms of their articles of association, may be ascertained. Payment is also asked of 100%. The Incorporation state that Mr. Smith was admitted a member on July 8, 1904, and he resigned on March 20, 1906. During the time he was a member he carried on business and performed numerous pieces of work in Aberdeen, the contract price of which exceeded 10%, and it was his duty, in terms of the articles of association, within two days after his offers for such pieces of work were accepted to send notice to the secretary or treasurer, so as to enable his subscription of 1 per cent. on the contract price to be fixed. Mr. Smith has, however, only made one return for work so contracted for by him, and has systematically refused to make returns for other work. In his answers he says he was never truly a member of the Incorporation. In July 1904 he indicated his willingness to join, but on reading the articles of association he at once informed the directors and secretary that he highly disapproved of Article 53, which he found to have the effect of giving rise to and perpetuating a malpractice in the

trade, while the suppression of malpractice was represented to and believed by him to be one of the main objects of the Incorporation. In consequence of the provisions of the article it became the invariably recognised practice of members of the Incorporation to add at least 1 per cent. to their proper estimates in all contracts, and thereby to levy from the public to that extent contributions for the creation of a proposed benefit fund. He at once refused to accept the obligations of membership. The Incorporation, in answer to defender's statements, say that he was fully aware of the conditions of membership before he joined, and that he was appointed a director and attended several meetings. It was not until March 20 last that he intimated his resignation of membership.

### FIREPROOF WOOD.

THE meeting of the Fire-resisting Corporation was held last week. Mr. Alfred Baker said that the Company's patents stood in the accounts at 69,067 $\frac{1}{2}$ ., and many valuable patents had been added during the past year, giving a further life of about fourteen years to the old patents. The time appeared to be near at hand when the authorities would recognise the enormous protection against fire to be obtained by the use of fireproof wood. There was evidence that the various county councils were beginning to think seriously upon the subject. The London County Council had passed regulations making it compulsory for theatres to have their scenery fireproof, and provincial theatres were following the example, with the result that an increasing trade was springing up in that direction. The company had done a considerable amount of work in the provinces in the supply of fireproof wood for several of the electric railways in order to obviate danger from a short-circuit. No fewer than four Admiralties had expressed satisfaction with the company's specialties; so much so that they had ordered trials to be made with a view to erecting plant in their dockyards for the purpose of using the wood in the construction of battleships. Mr. Fox, a director of the company, remarked that the advantages of fireproof wood had been fully recognised in the United States. It had been used on no less than 100 ships in the United States Navy which had passed through the Spanish-American War in a most satisfactory

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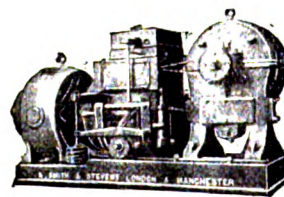
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manner. Whereas eleven ships of the Spanish Navy were burned to the water's edge, the American ships, although shot through and through, had not caught fire. Fireproof wood was also being used in all the newest buildings in New York, and there were already three insurance companies who were willing to grant a reduction of from 10 to 33 per cent. in the insurance against fire on buildings when fireproof wood was used.

### SOCIETY OF ENGINEERS.

At a meeting of the Society of Engineers held at the Royal United Service Institution, Whitehall, on Monday evening, November 5, Mr. Maurice Wilson, president, in the chair, a paper was read on "Recent Storage Battery Improvements," by Mr. Sherard Cowper-Coles.

The author first referred to the comparatively small advance that has been made with the lead accumulator of recent years although the industry is of considerable importance, the annual monetary output for storage batteries in England and Germany being estimated at nearly 1,000,000*l.*, so that any economies effected in the life or manufacture of accumulators would be of great importance to the commercial world, irrespective of the new fields of application it would open up. The nickel iron cell was referred to, and a typical discharge diagram given as compared to a lead accumulator.

The important bearing thermo-electricity has on accumulators or secondary batteries was discussed, and a diagram was shown illustrative of this. Ignition cells for firing petrol engines were then considered, and their advantages and disadvantages enumerated as compared to the magneto machines, and figures were given showing that the motorist in having an ignition cell charged paid for the labour and convenience and not the electrical energy. Efficiency being of minor importance, it was maintained that primary batteries with reversible electrodes would be cheaper than storage batteries.

The cut-off point of discharge was then dealt with, and it was pointed out that manufacturers of accumulators were not in agreement, and that there was no standard method of determining the cut-off point, some makers specifying a certain voltage for a given rate of discharge,

while others use the same voltage for all rates, the points of cut-off bearing no proper ratio to the rate of discharge. A diagram was given showing a curve arrived at from a number of determinations of discharge with a 70-ampere hour cell at constant current, all being based upon a cut-off point of 1.85 volts at a ten-hour rate. It was argued that if some such basis of discharge were used by all makers it would be easy to compare the output of different batteries, and the author suggested that a special cut-off point curve for use with motor vehicles based upon constant watt discharges should be determined.

The defects of the negative pasted plate were then considered, and the author stated that, in his opinion, the deterioration in the negative active matter was due to the fact that sulphate of lead is soluble in strong sulphuric acid. The author carefully traced the reaction which takes place in a negative electrode during charge and discharge, and showed that the concentrated acid within the plate is the medium for the continual transference of matter from the interior of the plate to nearer the surface, thus clogging up the pores and preventing the access of electrolyte to the interior. The author stated it as his opinion that it was of importance that long attenuated pores in the plate must be done away with in some way.

The author then gave an historical sketch of the accumulator as far as relates to cells of a compact nature, and to electrodes that retain a large quantity of the electrolyte within themselves, and therefore have not attenuated pores, but in which the active matter itself is not necessarily porous, under four headings:—(1) Solid cell, in which access to electrolyte is not provided for. (2) Cells of the "multiple-unit" pasted-plate type, in which an attempt is made to deal with the electrolyte difficulty. (3) Cells without plates of the solid network type, in which the solidity of the cell and access of active matter to electrolyte are both dealt with. (4) Cells without plates of the solid network type, in which the electrodes consist of non-conducting networks covered with a film only of active matter.

After directing attention to the various stages of development of the network type of cell, the conclusion arrived at by the author was that immediate future developments would be in the direction of electrodes which contain the electrolyte within themselves.

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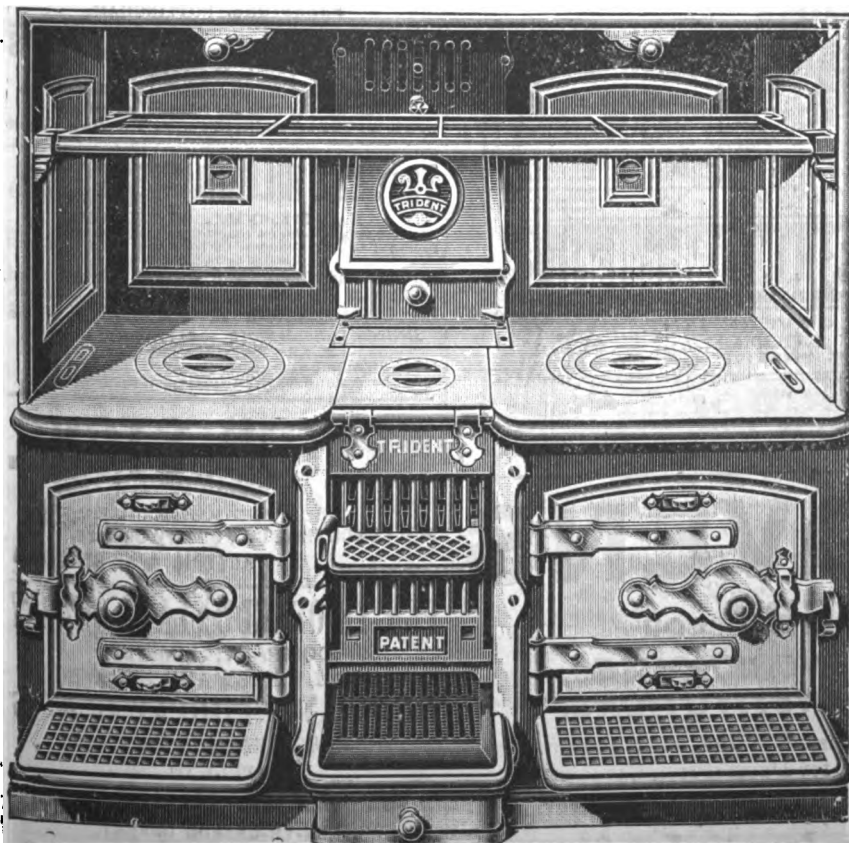
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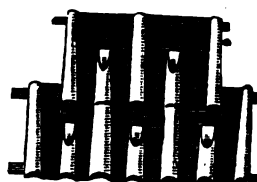


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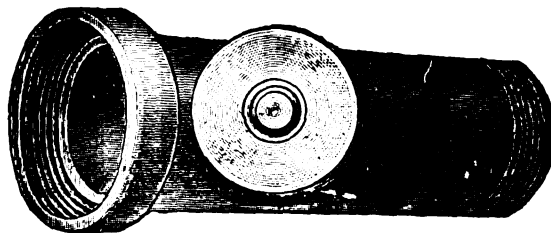
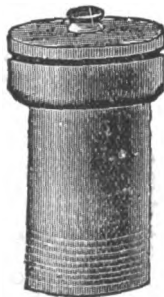
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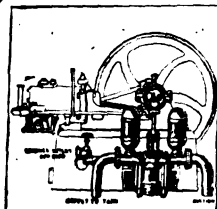
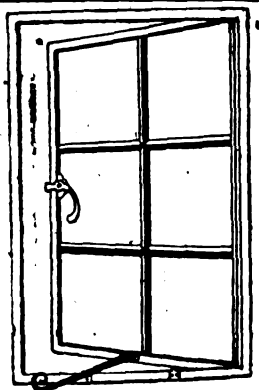
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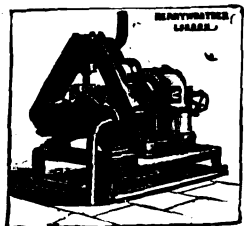
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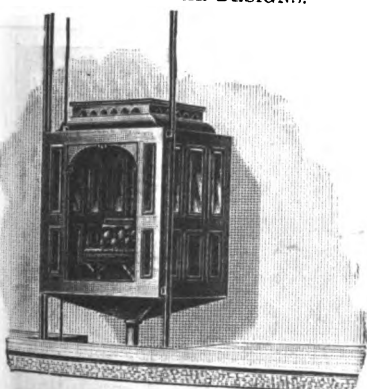
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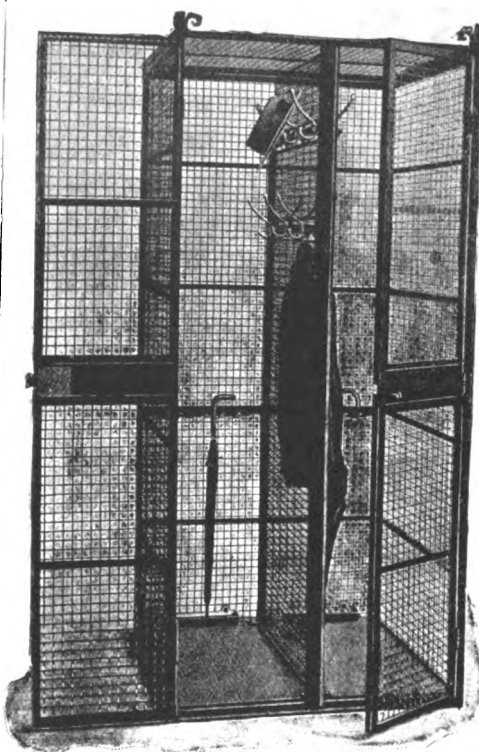
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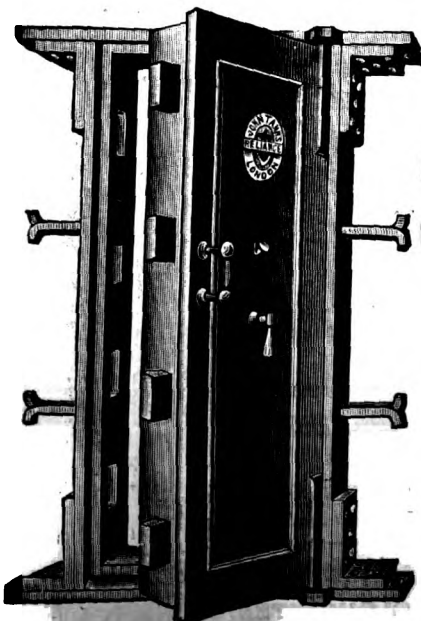
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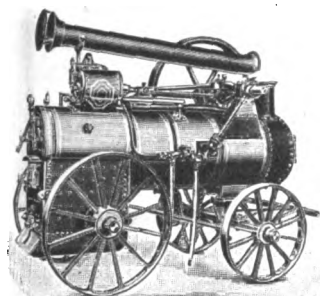
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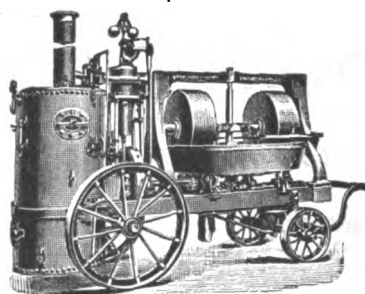
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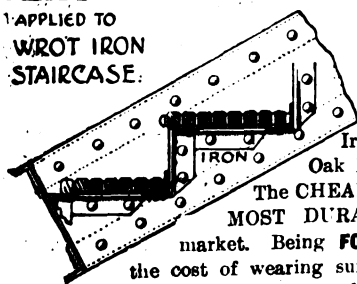
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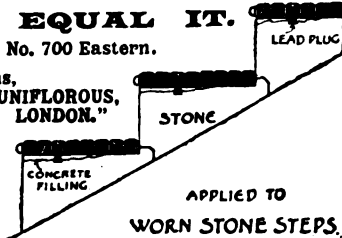
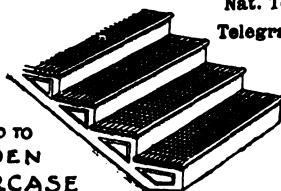


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THE  
**Architect and Contract Reporter.**

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

**EDITORIAL NOTICES.**

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further

answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

**TENDERS, ETC.**

As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

**COMPETITIONS OPEN.**

EARLESTOWN.—Nov. 30.—The Newton-in-Makerfield Urban District Council invite competitive plans for erection of a public library, the total cost, exclusive of site, not to exceed 4,000l. Mr. C. Cole, clerk, Town Hall, Earlestown, Lancs.

GLASGOW.—Dec. 12.—The Corporation of Glasgow invite competitive designs for laying-out the estate at Riddrie, by the erection thereon of small self-contained houses. Premiums of 75l., 50l. and 25l. will be awarded. Mr. A. W. Myles, town clerk, City Chambers, Glasgow.

GOOLE.—Dec. 31.—The Goole Joint Body of Governors invite competitive designs for erection of a dual secondary school, accommodating 200 students, with provision for the conduct of technical and evening classes. Premiums of 50l. and 25l. Deposit 2l. 2s. Mr. James Wm. Johnson, clerk to the Governors, Council Offices, Goole.

MONTEVIDEO.—Dec. 14.—La Comision Nacional de Caridad require competitive plans for new foundling hospital with approximate cost. Plans and report, under mottoes, and, in sealed envelope, name and address of competitor. The four selected plans will receive 212l. each, and will be asked to further compete. Further particulars from the Consulate-General for Uruguay, 5 and 6 Clement's Inn, Strand, W.C.

SUNDERLAND.—Feb. 1.—The committee of the Sunderland infirmary invite designs for a children's hospital. Premiums of 100l., 50l. and 25l. are offered. Deposit 1l. 1s. Mr. Thomas Robinson, secretary, Infirmary Offices, Bank Buildings, Sunderland.

WOLVERHAMPTON.—Dec. 31.—The Board of Management of the Wolverhampton and Staffordshire general hospital, Wolverhampton, invite competitive designs for a nurses' home adjoining the hospital. Mr. J. Stephen Neil, house governor and secretary.

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## CONTRACTS OPEN.

ACCINGTON.—Nov. 26.—For the erection of an engine and boiler-house at Altham Bridge. Deposit 2*l.* 2*s.* Messrs. Haywood & Harrison, architects, Accrington.

ACKWORTH.—Nov. 22.—For the erection of working-men's club, institute and baths at Ackworth, Yorks. Mr. James Heseltine, architect and surveyor, Pontefract.

ALDBOROUGH.—Nov. 23.—For the erection of Aldborough proposed school, for the Norfolk education committee. Deposit 1*l.* 1*s.* Send names by November 5 to Mr. C. J. Brown, architect, Cathedral Close, Norwich.

ASHFORD.—Nov. 30.—For the widening of the bridge over the ditch, Beaver Road, near the sewage pumping station. Mr. William Terrill, surveyor, North Street, Ashford, Kent.

BARNCOOSE.—Nov. 22.—For the erection and completion of proposed houses at Barncoose, Cornwall. Mr. Sampson Hill, architect, Green Lane, Redruth.

BARNSELY.—Nov. 19.—For the construction of collecting and detritus tanks, septic tanks, bacterial filters, conduits and other works required to be done at the proposed sewage works, which are to be constructed near Lund Lane, about 3 miles east of Barnsley. Deposit 10*l.* Mr. J. Henry Taylor, M.Inst.C.E., borough surveyor (engineer for the scheme), Manor House Offices, Barnsley.

BARNWOOD.—Nov. 24.—For the erection of a block to accommodate about 170 female patients at the Second County asylum, Barnwood, near Gloucester. Deposit 3*l.* 3*s.* Messrs. Giles, Gough & Trollope, architects, 28 Craven Street, Charing Cross, London, W.C.

BELFAST.—Dec. 3.—For a stores building (two storeys) in brick, 18 feet long by 50 feet wide, with steel principal roof and steel girder supported floor; also offices, 34 feet long, making a total length of block 215 feet, at their Dundalk station, for the Great Northern Railway Company (Ireland). Deposit 2*l.* 2*s.* Mr. W. H. Mills, engineer-in-chief, Amiens Street, Dublin.

BLACKBURN.—Dec. 3.—For the erection of extensions to Accrington Road Council school, to accommodate 300 children. Deposit 2*l.* 2*s.* Messrs. Cheers & Smith, architects, 24 Richmond Terrace, Blackburn.

BOSTON.—Dec. 3.—For converting part of the fish market into a lavatory, &c., and converting the old police-station into a shop. Mr. G. E. Clarke, borough surveyor, Municipal Buildings, Boston, Lincs.

BRIGHTON.—Nov. 17.—For the erection of a greenhouse at the Corporation waterworks, Lewes Road. Mr. A. Weller, borough surveyor, Town Hall, Brighton.

BRISTOL.—Nov. 21.—For the erection of a police and fire station at Eastville, Bristol. Deposit 2*l.* Mr. T. H. Yabbicom, city engineer, 63 Queen Square, Bristol.

BURNLEY.—Dec. 22.—For the erection of proposed technical school in Ormerod Road. Deposit 1*l.* 1*s.* Mr. G. H. Pickles, borough engineer, Town Hall.

CLEVELEYS.—Nov. 20.—For the erection of a public elementary school at Cleveleys, near Fleetwood, Lancs, to accommodate 300 scholars. Deposit 2*l.* Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

DORKING.—Dec. 1.—The Urban District Council invite quotations, plans and full details for providing and erecting a house-refuse destructor capable of dealing with 60 tons weekly. Separate prices are desired for (1) machinery, including steam-raising plant; (2) without steam-raising plant; and (3) building and roadway. Mr. W. J. Hodges, clerk, 64 South Street, Dorking.

EASTHAMSTEAD.—Nov. 22.—For the building of a school for 200 scholars at Priestwood, Easthamstead, near Bracknell, Berks. Deposit 3*l.* 3*s.* Names by November 12 to the Secretary to the Education Committee, The Forbury, Reading.

ELLAND.—Nov. 19.—For the erection of a Wesleyan manse at Victoria Road, Elland, Yorks. Messrs. Joseph F. Walsh & Graham Nicholas, architects, Museum Chambers, Halifax.

FERRYBRIDGE.—Dec. 3.—For the repairs to Ferrybridge bridge, on the Doncaster and Tadcaster main road, within the rural district of Pontefract. Deposit 1*l.* Mr. F. G. Carpenter, West Riding surveyor, County Hall, Wakefield.

FULWOOD.—Nov. 27.—For the erection of a public elementary school to accommodate 162 children at Fulwood, near Preston, Lancashire. Deposit 2*l.* Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

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**HALIFAX.**—Nov. 24.—For the mason, joiner, plumber, slater, steel constructor's and patent glazing works required in the erection of engineers' works. Mr. Lister Coates, architect, Central Chambers, 10 Central Street, Halifax.

**HINGHAM AND WENDLING (NORFOLK).**—Nov. 23.—For the reconstruction of the sanitary offices and other improvements at Hingham school, and for the enlargement and improvement of Wendling school. Names by November 12 to the office of the Norfolk Education Committee, 57 London Street, Norwich.

**HUNCOAT.**—Nov. 27.—For the erection of a public elementary school to accommodate three hundred children at Huncoat, near Accrington, Lancashire. Deposit 2/. Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

**HUNSLET.**—Nov. 20.—For the execution of alterations and additions required at the Union offices. Mr. W. E. Richardson, architect, Rothwell, Leeds.

**HYDE.**—Nov. 24.—For the erection of the Leigh Street Council school, to accommodate 1,200 children. Deposit 3/. 3s. Mr. Joseph Lindley, architect, Town Hall Chambers, Hyde.

**IRELAND.**—Nov. 21.—For the erection and completion of a post-office at Tralee, co. Kerry. Deposit 1/. The District Office of Public Works, Tralee.

**IRELAND.**—Dec. 1.—For the following works in connection with the erection of a new bacon factory at Roscrea, co. Tipperary:—(1) Excavations, foundations, concrete floors and walls. (2) Corrugated iron buildings, or alternatively buildings with Belfast felt roofing. Deposit 2/. The Secretary, Roscrea Bacon Factory, Roscrea.

**LISKEARD.**—Nov. 21.—For the erection of a secondary school at Liskeard, Cornwall. Mr. John Sansom, architect to the committee, Liskeard.

**LONDON.**—Nov. 20.—For the erection of an additional furnace in connection with their dust-screening apparatus

at Marian Square, for the Bethnal Green Borough Council. The Borough Engineer and Surveyor, Town Hall, Church Row, Bethnal Green.

**LONDON.**—Nov. 29.—For the construction of an underground convenience for men and women in Theobald's Road, and for additions to the existing underground convenience in Shaftesbury Avenue, for the Holborn Borough Council. Messrs. Gardner & Theobald, 110 Great Russell Street.

**MACCLESFIELD.**—Nov. 26.—For the erection of a strong room at the Union offices, Macclesfield. Messrs. Whittaker & Bradburn, architects, King Edward Street, Macclesfield.

**MEXBOROUGH.**—Nov. 19.—For the erection of a police station at Mexborough. Deposit 1/. Mr. J. Vickers-Edwards, county architect, County Hall, Wakefield.

**MIDDLEWICH.**—Nov. 21.—For the centrifugal pumping plant and erection of pumping station and caretaker's house on the sewage disposal works. Mr. Frederick W. Stocks, engineer, Town Hall, Middlewich.

**NEWCASTLE-UPON-TYNE.**—Nov. 21.—For the erection of slaughter-houses at the cattle market, Scotswood Road. Deposit 2/. 2s. The City Property Surveyor's Department, Town Hall.

**NEWTON-IN-MAKERFIELD.**—Nov. 30.—For the erection of a public library at an inclusive cost of 4,000/. Mr. C. Cole, Clerk, Town Hall, Earlestown, Lancs.

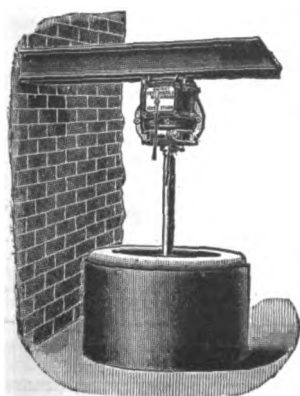
**NORTH WOOLWICH.**—Nov. 20.—For the erection of school buildings to accommodate 852 children at Storey Street, North Woolwich, and for the construction of deep foundations, for the East Ham education committee. Deposit 50/. Mr. R. L. Curtis, architect, 11 and 12 Finsbury Square, London, E.C.

**QUEENSBURY.**—Nov. 20.—For the erection of a house at Scarlet Heights, Queensbury, Yorks. Mr. Herbert F. Sharp, architect, &c., 1 Briggs Villas, Queensbury.

**SAUNDERTON.**—Nov. 17.—For alterations at the Union house at Saunderton, High Wycombe. Mr. B. L. Reynolds, clerk, 12 Easton Street, High Wycombe.

**SCOTLAND.**—Nov. 19.—For the erection of shelter sheds, including masonwork, joinerwork, slaterwork and plumberwork at Luing public school, and also for the masonwork

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SEVERN TUNNEL.—Nov. 20.—For the construction of an engine-shed and other works at Severn Tunnel Junction, for the Great Western Railway Company. The Engineer, Newport Station.

STANLEY.—Nov. 21.—For the erection of twelve dwelling-houses (stone) at Shield Row, Stanley, Durham. Mr. T. E. Crossling, architect and surveyor, Stanley, R.S.O., county Durham.

THIRSK.—Nov. 21.—For alterations and additions to the Thirsk infants' Council school, for the North Riding education committee. Mr. C. Moore, Millgate, Thirsk, or at the County Hall, Northallerton.

WAKEFIELD.—Nov. 17.—The West Riding education committee invite whole or separate tenders in connection with the following, viz.:—Settle proposed temporary secondary school—alterations, &c. (builder, joiner, plumber); Menwith-with-Darley provided school—alterations (builder, joiner, slater, plumber, plasterer, painter); Conisborough, Morley Place provided school—additions to teacher's house (builder, joiner, slater, plumber, plasterer, painter). Mr. J. Vickers-Edwards, county architect, County Hall, Wakefield.

WALES.—Nov. 17.—For erection of a minister's house at Station Road, Ynyshir. Mr. E. Thomas, 16 South Street, Ynyshir, Rhondda.

WALES.—Nov. 21.—For alterations to Gorphwysfa, chapel, erection of new vestry with classrooms above, and chapel-house at Skewen. Mr. J. Cook Rees, architect Neath.

WALES.—Nov. 22.—For the erection of twelve houses at Woodfield, near Blackwood, Mon. Mr. W. A. Griffiths, architect, Pontllanfraith, Mon.

WALES.—Nov. 24.—For building a schoolroom, &c., and

renovating Bethel C.M. chapel, Pembrey. Mr. Thomas Williams, Commercial Arms, Pembrey.

WALES.—Nov. 28.—For erection of stone and steel bridge at Glanyrafond u, near Talley, Llandilo, Carmarthenshire. Mr. Charles H. Mounsey, county engineer and surveyor, Carmarthen.

WOODFORD.—Dec. 15.—For the erection and completion of a boys' school to accommodate about 500 pupils, and for sundry alterations to the girls and infants' schools at Churchfields, Woodford, Essex, for the Essex education committee. Mr. Frank Whitmore, Chelmsford, and Mr. Arthur Hogwood, architects, 33 Great Tower Street, E.C. Names and deposit (5/.) before Nov. 26 to Mr. Ernest J. Bond, clerk to the local advisory committee, Woodford Green, Essex, and 95 Leadenhall Street, London, E.C.

WORTHING.—Nov. 20.—For carrying-out an addition to Swandean House, Durrington. Mr. Frank Roberts, borough engineer and surveyor, Municipal Buildings.

RAPHAEL HOUSE, with its constant striving after new ideas and new ideals in the realm of art, is again very much *en evidence* with an excellent collection of Christmas and New Year cards, books and calendars, emanating from the well-known firm of publishers, Messrs. Raphael Tuck & Sons, Ltd., whose achievements are in advance of all that has hitherto been accomplished in this particular line, comprising as it does several thousand distinct designs. The variety of productions is surprising, and it would seem almost invidious to allude to particular ones where nearly all are of such a high standard. The calendars, however, are specially deserving of notice, forming as they do dainty works of art, which will grace many homes during the coming year. Nor should mention be omitted of the picture post-cards, of which beautiful missives the firm in question are the acknowledged pioneers. Father Tuck's famous "Annual," too, is again a commendable production, and in the way of novelties the "half-masks" will serve for many a festive and merry occasion. Taken altogether the art missives from Raphael House should tend to increase the joy and pleasure of life, and they will be doubtless appreciated the world over.

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**TENDERS.****BAGWORTH.**

For enlargement of Council school. Mr. J. F. GOODACRE, architect, Leicester.

|                           |        |    |   |
|---------------------------|--------|----|---|
| Crane & Son               | £1,617 | 12 | 0 |
| Chaplin                   | 1,566  | 0  | 0 |
| Corah & Son               | 1,565  | 0  | 0 |
| Orton                     | 1,526  | 0  | 0 |
| Toone & Sons              | 1,459  | 16 | 0 |
| Faulks                    | 1,447  | 0  | 0 |
| Moses                     | 1,414  | 7  | 0 |
| Herbert                   | 1,386  | 0  | 0 |
| Beck & Son                | 1,357  | 10 | 0 |
| SHIPMAN, Ratby (accepted) | 1,351  | 9  | 0 |

**BRANDON.**

For the electric lighting of Brandon colliery district, Durham, for the Urban District Council.

|                                          |        |    |    |
|------------------------------------------|--------|----|----|
| Glover & Co.                             | £1,172 | 7  | 0  |
| British Insulator Co.                    | 957    | 1  | 1  |
| Northern Electrical Engineering Co.      | 798    | 0  | 0  |
| Hind & Son                               | 792    | 10 | 0  |
| Armstrong                                | 741    | 18 | 11 |
| Pullan                                   | 735    | 10 | 0  |
| Fletcher                                 | 670    | 4  | 11 |
| REID, FERENS & Co., Newcastle (accepted) | 642    | 6  | 0  |

**CHESTER-LE-STREET.**

For work in connection with the water supply.

|                                    |      |    |   |
|------------------------------------|------|----|---|
| Jesmond Plumbing Co. (recommended) | £237 | 16 | 3 |
|------------------------------------|------|----|---|

There were eight tenders.

**CHINGFORD.**

For making-up, &c., Woodland Road.

|                                           |        |   |   |
|-------------------------------------------|--------|---|---|
| Zadig & Co.                               | £1,102 | 0 | 0 |
| Trueman                                   | 1,029  | 0 | 0 |
| Adams                                     | 1,005  | 0 | 0 |
| Etheridge                                 | 955    | 0 | 0 |
| Knifton                                   | 924    | 0 | 9 |
| Parsons & Parsons                         | 890    | 0 | 0 |
| W. & C. FRENCH, Buckhurst Hill (accepted) | 800    | 0 | 0 |

**DALTON.**

For the erection of detached residence, Wakefield Road. Mr. E. W. LOCKWOOD, architect, Huddersfield.

**Accepted tenders.**

|                                     |      |    |   |
|-------------------------------------|------|----|---|
| Boothroyd, Almondbury, mason        | £337 | 0  | 0 |
| Moorhouse, Meltham, joiner          | 230  | 0  | 0 |
| Gaston & Son, Huddersfield, plumber | 136  | 0  | 0 |
| Burgoine, Mold Green, painter       | 10   | 15 | 0 |
| Jowitt, Huddersfield, plasterer     | 91   | 0  | 0 |
| Ditto, tiler                        | 72   | 0  | 0 |

**HAMPTON-ON-THAMES.**

For bath-room and sanitary works at The Cedars. Mr. WALTER J. EBBETTS, F.R.I.B.A., architect, Savoy House, 115 Strand, W.C.

|              |      |    |   |
|--------------|------|----|---|
| Evans        | £361 | 0  | 0 |
| Offer & Sons | 274  | 10 | 0 |

**KILWORTH.**

For the erection of Council schools. Messrs. COALES & JOHNSON, architects, Market Harborough.

|                                       |        |   |   |
|---------------------------------------|--------|---|---|
| Bott, Son & Palmer                    | £5,400 | 0 | 0 |
| Brown                                 | 5,370  | 0 | 0 |
| Henson & Son                          | 5,350  | 0 | 0 |
| Martin                                | 5,096  | 0 | 0 |
| Hacksley Bros.                        | 5,089  | 0 | 0 |
| Drevir                                | 4,997  | 0 | 0 |
| Corah & Son                           | 4,986  | 0 | 0 |
| Co-operative Builders, Ltd.           | 4,985  | 0 | 0 |
| Haycock & Sons                        | 4,838  | 0 | 0 |
| Jarman & Sons                         | 4,800  | 0 | 0 |
| HICKMAN, Market Harborough (accepted) | 4,687  | 0 | 0 |

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|                                            |        |   |   |
|--------------------------------------------|--------|---|---|
| Bain & Co.                                 | £2,190 | 0 | 0 |
| Humphreys, Ltd.                            | 2,081  | 0 | 0 |
| Hawkins & Co.                              | 1,650  | 0 | 0 |
| Harbrow                                    | 1,644  | 0 | 0 |
| Smith & Co., Ltd., Stratford (recommended) | 1,614  | 0 | 0 |

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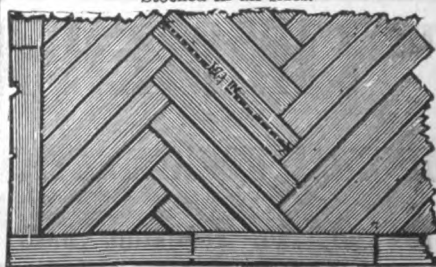
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For alterations at housewifery centre at Dulwich Hamlet school.

|                                              |      |    |   |
|----------------------------------------------|------|----|---|
| Burman . . . . .                             | £248 | 0  | 0 |
| Everitt . . . . .                            | 225  | 0  | 0 |
| Leng . . . . .                               | 208  | 0  | 0 |
| Leney & Son . . . . .                        | 199  | 0  | 0 |
| Rice & Son . . . . .                         | 197  | 0  | 0 |
| J. & C. Bowyer . . . . .                     | 193  | 10 | 0 |
| Lathey Bros. . . . .                         | 190  | 0  | 0 |
| Triggs . . . . .                             | 190  | 0  | 0 |
| Akers & Co. . . . .                          | 189  | 0  | 0 |
| Downs . . . . .                              | 183  | 0  | 0 |
| Mitchell & Son . . . . .                     | 175  | 10 | 0 |
| Bragg & Sons. . . . .                        | 167  | 0  | 0 |
| Line . . . . .                               | 166  | 0  | 0 |
| Mills . . . . .                              | 163  | 0  | 0 |
| Sharpington, Nunhead (recommended) . . . . . | 156  | 0  | 0 |

For (1) for making-up, &amp;c., Bowes Road; (2) for paving footways in Warwick Road, Bowes Park, Southgate. Mr. C. G. LAWSON, surveyor.

**Contract No. 1.**

|                                    |        |   |   |
|------------------------------------|--------|---|---|
| Griffiths & Co. . . . .            | £3,600 | 0 | 0 |
| Bell . . . . .                     | 3,497  | 0 | 0 |
| Adams . . . . .                    | 3,261  | 0 | 0 |
| MANN, Edgware (accepted) . . . . . | 2,815  | 0 | 0 |

**Contract No. 2.**

|                                        |     |   |   |
|----------------------------------------|-----|---|---|
| Griffiths & Co. . . . .                | 585 | 0 | 0 |
| Mann . . . . .                         | 527 | 0 | 0 |
| ADAMS, Wood Green (accepted) . . . . . | 525 | 0 | 0 |

For the erection of a new factory and connecting bridges at Wood Green. Mr. F. L. PITHER, architect. Quantities by Messrs. WESTMORELAND &amp; HORDER.

|                                             |        |    |   |
|---------------------------------------------|--------|----|---|
| Edwards . . . . .                           | £7,242 | 15 | 0 |
| Roberts . . . . .                           | 7,197  | 0  | 0 |
| Butcher . . . . .                           | 7,052  | 0  | 0 |
| Allen & Sons . . . . .                      | 6,990  | 0  | 0 |
| Ford & Walton . . . . .                     | 6,800  | 0  | 0 |
| CARMICHAEL, Wandsworth (accepted) . . . . . | 6,593  | 0  | 0 |

**LONDON—continued.**

For electric wiring and fittings at fire station, Cannon Street.

|                                                                    |      |    |   |
|--------------------------------------------------------------------|------|----|---|
| Barker & Co. . . . .                                               | £445 | 6  | 0 |
| Defries & Sons . . . . .                                           | 445  | 0  | 0 |
| Barlow & Young . . . . .                                           | 413  | 0  | 0 |
| Grant & Taylor . . . . .                                           | 351  | 0  | 0 |
| Dawson, Ltd. . . . .                                               | 345  | 0  | 0 |
| Taylor & Co. . . . .                                               | 335  | 14 | 9 |
| Clark & Co. . . . .                                                | 326  | 0  | 0 |
| Durell & Co. . . . .                                               | 323  | 0  | 0 |
| Suter & Co. . . . .                                                | 300  | 0  | 0 |
| Coleby & Co. . . . .                                               | 265  | 0  | 0 |
| Sunderland & Co., 39 Victoria Street, S.W. (recommended) . . . . . | 257  | 0  | 0 |

For the erection of manual training centre, &amp;c., at Shap Street school, Haggerston.

|                                          |        |    |   |
|------------------------------------------|--------|----|---|
| Marchant & Hirst . . . . .               | £2,000 | 0  | 0 |
| McCormick & Sons . . . . .               | 1,899  | 0  | 0 |
| Stevens & Sons . . . . .                 | 1,798  | 0  | 0 |
| Perry & Co. . . . .                      | 1,792  | 0  | 0 |
| Lascelles & Co. . . . .                  | 1,769  | 19 | 8 |
| Dabbs & Son . . . . .                    | 1,706  | 0  | 0 |
| Godson & Sons . . . . .                  | 1,704  | 0  | 0 |
| Grover & Son . . . . .                   | 1,659  | 0  | 0 |
| Lawrance & Sons . . . . .                | 1,617  | 0  | 0 |
| Symes, Stratford (recommended) . . . . . | 1,592  | 0  | 0 |
| Architect's estimate . . . . .           | 1,778  | 0  | 0 |

For the erection of police-station at Wood Green. Mr. J. DIXON BUTLER, architect, New Scotland Yard, S.W. Quantities by Messrs. THURGOOD, SON &amp; CHIDGEY.

|                           |        |    |   |
|---------------------------|--------|----|---|
| Pocock . . . . .          | £9,472 | 14 | 0 |
| Willmott & Sons . . . . . | 9,092  | 0  | 0 |
| Newby Bros. . . . .       | 8,693  | 0  | 0 |
| Lovatt, Ltd. . . . .      | 8,521  | 0  | 0 |
| Lascelles & Co. . . . .   | 8,496  | 0  | 0 |
| Lathey Bros. . . . .      | 8,408  | 0  | 0 |
| Shurmur & Sons . . . . .  | 8,390  | 0  | 0 |
| Mowlem & Co. . . . .      | 8,352  | 0  | 0 |
| Fairhead & Sons . . . . . | 8,275  | 0  | 0 |
| Godson & Sons . . . . .   | 8,247  | 0  | 0 |
| Lawrance & Sons . . . . . | 8,244  | 0  | 0 |

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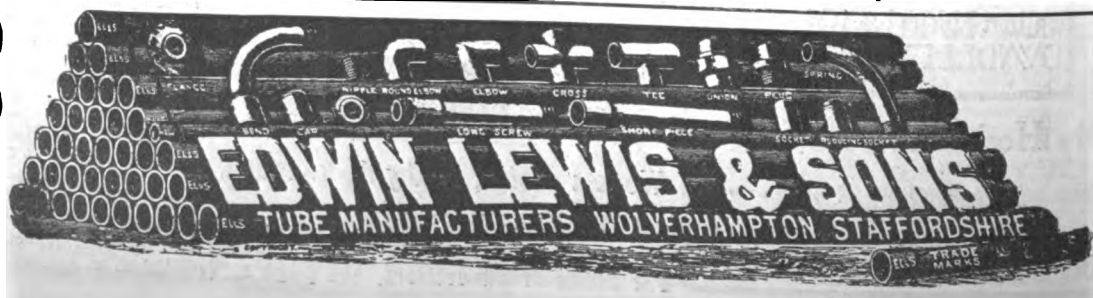
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**LONDON—continued.**

|                                                        |         |    |   |
|--------------------------------------------------------|---------|----|---|
| For rebuilding Byron and Bright Street school, Poplar. |         |    |   |
| Miskin & Sons . . . . .                                | £22,087 | 0  | 0 |
| McCormick & Sons . . . . .                             | 21,018  | 0  | 0 |
| Lascelles & Co. . . . .                                | 20,886  | 18 | 3 |
| Roberts . . . . .                                      | 20,637  | 0  | 0 |
| Perry & Co. . . . .                                    | 20,556  | 0  | 0 |
| Appleby & Sons . . . . .                               | 20,543  | 0  | 0 |
| Lovatt, Ltd. . . . .                                   | 19,974  | 0  | 0 |
| Wall, Ltd. . . . .                                     | 19,951  | 0  | 0 |
| Kirk & Randall . . . . .                               | 19,497  | 0  | 0 |
| Wallis & Sons . . . . .                                | 19,072  | 0  | 0 |
| Lawrance & Sons . . . . .                              | 18,953  | 0  | 0 |
| Patman & Fotheringham . . . . .                        | 18,673  | 0  | 0 |
| Greenwood, Ltd. . . . .                                | 18,624  | 0  | 0 |
| Treasure & Son . . . . .                               | 18,370  | 0  | 0 |
| J. & C. Bowyer ( <i>recommended</i> ) . . . . .        | 18,249  | 0  | 0 |
| Architect's estimate . . . . .                         | 20,464  | 0  | 0 |

**LONG EATON.**

For the erection of bakery, stabling, &c., for the Working-Men's Co-operative Society. Messrs. RIDGWAY & SMITH, architects, Long Eaton.

*Contract No. 1.—Building.*

|                                                       |         |    |   |
|-------------------------------------------------------|---------|----|---|
| Hanford . . . . .                                     | £11,465 | 15 | 0 |
| Lewin . . . . .                                       | 10,930  | 0  | 0 |
| Barlow & Co. . . . .                                  | 10,825  | 0  | 0 |
| Dennett & Ingle . . . . .                             | 10,750  | 0  | 0 |
| Scurr & Jowett . . . . .                              | 10,375  | 0  | 0 |
| Hutchinson & Son . . . . .                            | 10,300  | 0  | 0 |
| Youngman . . . . .                                    | 9,809   | 0  | 0 |
| Brown & Son . . . . .                                 | 9,538   | 0  | 0 |
| PERKS & SON, Long Eaton ( <i>accepted</i> ) . . . . . | 9,097   | 0  | 0 |
| Architects' estimate . . . . .                        | 9,929   | 0  | 0 |

*Contract No. 2.—Steel and Iron.*

|                            |       |    |   |
|----------------------------|-------|----|---|
| Baker & Co. . . . .        | 1,953 | 19 | 8 |
| Smith & Co. . . . .        | 1,766 | 5  | 0 |
| Marple & Gillott . . . . . | 1,751 | 5  | 0 |
| Cross & Cross . . . . .    | 1,733 | 0  | 0 |

**LONG EATON—continued.**

|                                                               |        |    |    |
|---------------------------------------------------------------|--------|----|----|
| Redpath, Brown & Co. . . . .                                  | £1,721 | 6  | 0  |
| Bagshaw & Sons . . . . .                                      | 1,610  | 15 | 0  |
| Gimson & Co. . . . .                                          | 1,590  | 3  | 0  |
| Lambourne & Co. . . . .                                       | 1,569  | 0  | 0  |
| Goddard, Massey & Warner . . . . .                            | 1,562  | 2  | 6  |
| CORT, PAUL & CORNICK, Leicester ( <i>accepted</i> ) . . . . . | 1,497  | 4  | 11 |
| Architects' estimate . . . . .                                | 1,475  | 0  | 0  |

*Contract No. 3.—Plumbing and Glazing.*

|                                                       |     |    |   |
|-------------------------------------------------------|-----|----|---|
| Coffee . . . . .                                      | 980 | 0  | 0 |
| Kettering Co-operative Builders . . . . .             | 966 | 0  | 0 |
| Cooper & Berrie . . . . .                             | 835 | 0  | 0 |
| Flower & Co. . . . .                                  | 827 | 14 | 0 |
| Farmer . . . . .                                      | 819 | 10 | 0 |
| PERKS & SON, Long Eaton ( <i>accepted</i> ) . . . . . | 810 | 0  | 0 |
| Architects' estimate . . . . .                        | 850 | 0  | 0 |

**MANCHESTER.**

For supplying and erecting boilers, mountings, &c., at the Royal Infirmary. Mr. EDWIN T. HALL and Mr. JOHN BROOKE, architects.

|                                            |        |   |   |
|--------------------------------------------|--------|---|---|
| Galloways, Ltd. . . . .                    | £1,518 | 0 | 0 |
| Besley & Son . . . . .                     | 1,445  | 0 | 0 |
| D. Adamson & Co. . . . .                   | 1,435  | 0 | 0 |
| Tinker, Shenton & Co. . . . .              | 1,431  | 0 | 0 |
| G. Adamson & Co. . . . .                   | 1,430  | 0 | 0 |
| Yates & Thorn . . . . .                    | 1,396  | 0 | 0 |
| Tinkers, Ltd. . . . .                      | 1,390  | 0 | 0 |
| Oldham Boiler Co. . . . .                  | 1,370  | 0 | 0 |
| HEATON & SON ( <i>accepted</i> ) . . . . . | 1,343  | 0 | 0 |

For supplying steam pipes, pumps, &c., at the Royal Infirmary. Mr. EDWIN T. HALL and Mr. JOHN BROOKE, architects.

|                                                       |        |   |   |
|-------------------------------------------------------|--------|---|---|
| Tinkers, Ltd. . . . .                                 | £1,625 | 0 | 0 |
| D. Adamson & Co. . . . .                              | 1,298  | 0 | 0 |
| Yates & Thorn . . . . .                               | 1,297  | 0 | 0 |
| Brightside Foundry Co. . . . .                        | 1,255  | 0 | 0 |
| DARGUE, GRIFFITHS & Co. ( <i>accepted</i> ) . . . . . | 1,235  | 0 | 0 |

# The "MASTA" Patent Improved PARTITION BLOCKS AND CEILING SLABS

Are manufactured chiefly of Stourbridge Fireclay, making them absolutely **Fireproof and Sound-proof**, and **Exceptionally Light in Weight**. **Fibrous Ceilings** made of same material.

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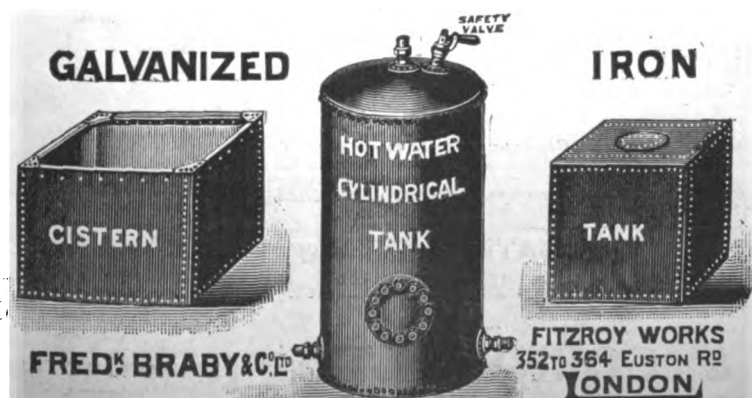
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For the erection of factory offices, &c. Messrs. J. POTTS & Son, architects, Sunderland.

|                                                |         |    |   |
|------------------------------------------------|---------|----|---|
| Hall & Wharton . . . . .                       | £16,215 | 0  | 0 |
| Storey . . . . .                               | 13,798  | 0  | 0 |
| Ferguson . . . . .                             | 13,330  | 0  | 0 |
| Elrich . . . . .                               | 13,278  | 0  | 0 |
| Allison . . . . .                              | 13,150  | 0  | 0 |
| Armitage . . . . .                             | 12,504  | 0  | 0 |
| Stott . . . . .                                | 12,501  | 9  | 4 |
| Wright . . . . .                               | 12,165  | 3  | 0 |
| White . . . . .                                | 12,069  | 0  | 0 |
| Davidson . . . . .                             | 11,994  | 9  | 3 |
| Taylor . . . . .                               | 11,990  | 0  | 0 |
| D. & J. Ranken . . . . .                       | 11,989  | 0  | 0 |
| Cooper . . . . .                               | 11,849  | 0  | 0 |
| Pitt . . . . .                                 | 11,847  | 11 | 4 |
| HUDSON & SONS, Sunderland (accepted) . . . . . | 11,750  | 0  | 0 |
| Howarth . . . . .                              | 11,709  | 0  | 0 |
| Huntley . . . . .                              | 11,284  | 0  | 0 |
| Cleary & Charlton . . . . .                    | 11,200  | 0  | 0 |

**NEWPORT (N.B.).**

For the joint fever hospital which is being erected for the burghs of Newport and Tayport and the Cupar and St. Andrews districts of Fife County Council.

*Accepted tenders.*

|                                                               |        |   |    |
|---------------------------------------------------------------|--------|---|----|
| Anderson, Dundee, mason and brickwork . . . . .               | £2,046 | 8 | 8  |
| J. & L. Simpson, Leuchars, carpenter and joinerwork . . . . . | 1,130  | 5 | 6  |
| Watson & Sons, Ltd., plumberwork . . . . .                    | 449    | 0 | 0  |
| Williamson & Son, Largo, plasterwork . . . . .                | 294    | 3 | 10 |
| Black, St. Andrews, slaterwork and harling . . . . .          | 226    | 4 | 1  |
| Forsyth & Sons, Edinburgh, painterwork . . . . .              | 206    | 7 | 6  |
| Watson & Son, Perth, laundry plant . . . . .                  | 199    | 1 | 10 |
| Total, £4,551 19s. 7d.                                        |        |   |    |

**PORTLAND.**

For the erection of a clock tower in Easton Square Gardens.  
Mr. R. S. HENSHAW, engineer and surveyor.

|                                              |      |    |   |
|----------------------------------------------|------|----|---|
| Conway . . . . .                             | £260 | 0  | 0 |
| Jesley & Baker . . . . .                     | 219  | 17 | 0 |
| WAKEHAM BROS., Plymouth (accepted) . . . . . | 209  | 0  | 6 |

**ORSETT.**

For alterations and additions to the workhouse.

|                               |        |   |   |
|-------------------------------|--------|---|---|
| Brown, Grays, Essex . . . . . | £4,800 | 0 | 0 |
|-------------------------------|--------|---|---|

**ST. BLAZEY.**

For erecting shops, stores and offices, for the Co-operative Society. Mr. F. C. JURY, architect, St. Austell.

|                                                   |        |    |   |
|---------------------------------------------------|--------|----|---|
| Bennett . . . . .                                 | £1,113 | 0  | 0 |
| Truscott . . . . .                                | 912    | 0  | 0 |
| Bounsall & Oliver . . . . .                       | 835    | 15 | 6 |
| Northcote . . . . .                               | 829    | 13 | 0 |
| Hewett . . . . .                                  | 783    | 10 | 0 |
| Mitchell . . . . .                                | 776    | 19 | 0 |
| BOUNSALL & PEARCE, St. Blaze (accepted) . . . . . | 740    | 14 | 0 |
| Pooley (masonry only) . . . . .                   | 493    | 4  | 0 |
| Richards . . . . .                                | 378    | 10 | 0 |

**TRADE NOTES.**

MESSRS. WM. POTTS & SONS, of Leeds and Newcastle-on-Tyne, have just erected a new clock with two large external dials at Messrs. Watson & Sons, Ltd., Whitehall Soap Works, Leeds, to the order of the directors.

MESSRS. JOHN PICKLES & SON, saw-mill engineers, of Hebden Bridge, have taken up the manufacture of improved machinery for the manufacture of hollow concrete or cement blocks. These new machines can turn out blocks 16 inches long by 10 inches wide and 8 inches deep to the extent of 200 blocks per day.

THOSE who require accuracy in technical reports or in copies of technical documents can be recommended to have recourse to the Metropolitan Reporting and Typewriting offices, 32 Chancery Lane, W.C. The charges are fixed and moderate, and the arrangements are adapted to suit the convenience of clients.

THE Southend Borough Council have decided to expend 8,400l. in enlarging the sanatorium.

**MAHOGANY LOGS AND**  
**DRY BOARDS.**  
**TEAK LOGS & PLANKS.**

**IRVIN & SELLERS**  
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Kitchen Side of Fitting: Copper and Bath at back.

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**The "ELLKAY" FOLDING BATH** For BEDROOMS and DRESSING-ROOMS.  
**The POPULAR "ELLKAY."** A CHEAPER BATH FOR ARTISANS' DWELLINGS.

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Awarded Royal Sanitary Institute's Medal.

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Telegrams,  
"BATHROOM, LONDON."

## BUILDING AND BUILDERS.

CONSIDERABLE alterations and improvements are contemplated at the Royal Bucks Hospital, Aylesbury.

THE cost of the new science buildings at Charterhouse, Guildford, is estimated to be about eleven thousand pounds.

MR. W. J. HODGSON, C.E., of Camberley, was successful in a limited competition for designs for Sunday schools for the Wesleyan church at Bagshot, Surrey.

THE Birmingham City Council on Tuesday authorised the baths and parks committee to obtain plans from certain selected architects for the erection of baths in Nechells Park Road at an estimated cost of 21,995*l.*, including the engineering plant. In the estimate of cost 1,558*l.* is put down for architect's charges, &c.

At the Auction Mart the site of Nos. 7 and 8 Poultry, extending through into Bucklersbury, with a frontage to each thoroughfare of over 30 feet, and covering the superficial area of 2,700 feet, was let on a building lease for eighty years. The ground rent obtained was 2,000*l.* a year, representing at thirty years' purchase a capital value of 60,000*l.* for the freehold.

THE Company of Plumbers held an examination on the 10th inst. at King's College, London, for those desirous of qualifying for registration. About thirty master and operative plumbers attended, and of this number eight were successful. The practical examinations included tests in lead-bossing and joint-wiping as required for best sanitary work, and the written and oral examinations were on the subjects of house sanitation, drainage, ventilation and the connection of pure water to domestic dwellings.

THE London County Council on Tuesday rejected the recommendation of the Building Act committee that the standing orders should be suspended to enable the Council to consider the question of applying in the next session of Parliament for the amendment of the London Building Acts so far as might be necessary to alter the constitution and duties of the Tribunal of Appeal, and to enable the Council to establish a satisfactory system of payment of district surveyors by salaries.

THE Durham education committee recommend the County Council that new schools be provided at Murton

Colliery and Benfieldside to replace the present unsatisfactory buildings, also that a school be provided at Cold Hesledon which has not at present any convenient school accommodation, that a school to accommodate 250 infants be erected at Willington, that the present school at Chilton Buildings be enlarged by adding a new wing for about 100 scholars and to build a new infants' school for about 200 children, and that a new school be provided large enough to supply the increasing needs of the district of Old Cornforth.

## ELECTRIC NOTES.

THE Somerset Electric Power Company have offered the Bath Corporation to purchase their electric-light undertaking, which has not been a successful venture. The price mentioned is 200,000*l.*

THE Corporation of Cardiff, with a view to push their electrical undertaking, have issued a booklet to the public which, among other matters, deals with the colours of wall-papers in relation to their reflecting powers.

THE main signal box at Crewe station has been opened. It is claimed to be the largest worked by electricity in the world. Nearly 500 men were engaged in moving the points necessary for the change from physical to electric communication. The new box will cover the Manchester, Liverpool and Chester lines. The extensive signals at London Road, Manchester, are to be next electrified.

MR. J. W. EWART, in a paper on "Electric Arc Lighting," read before the Birmingham and District Electric Club on Saturday, commented upon the present craze of some shopkeepers to substitute intense glare and brilliancy for good even illumination. Arc lamps of all kinds, he contended, were too conspicuous in all window-lighting schemes. He described the use of reflectors and shades, which should be designed to shield the light from the eyes and reflect it on to the goods displayed in the windows. The best examples of effective lighting schemes were, he said, to be seen on the stage, where the source of all light was always kept well out of the field of vision. He thought tradespeople would do well to follow this rule.

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For the effectual Protection and Preservation of Fencing, Weather Boarding, Wood-Paving Blocks, Damp Walls. Imparts a Rich Colour to Oak Fencing. Can be Varnished.

Sample Gallons, 2/6 each. Tins Free.

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Sole Proprietors and Manufacturers,

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BOX GROUND  
ST. ALHELM'S  
Registered  
TRADE MARK

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QUARRY OWNERS.



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ST. ALHELM'S BOX GROUND STONE.

**BOX GROUND,  
COMBE DOWN,  
STOKE GROUND,  
WESTWOOD GROUND,  
HARTHAM PARK  
and the PRINCIPAL QUARRIES  
PORTLAND.**

**HEAD OFFICES BATH.**

**LIVERPOOL:**

40 IMPERIAL BUILDINGS,  
EXCHANGE ST. EAST.

To be obtained only of the BATH STONE FIRMS LTD.

### Fluate,

for HARDENING, WATERPROOFING  
and PRESERVING BUILDING MATERIALS.

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**MANCHESTER.**

TRAFFORD PARK.

SUMMER DRIED SEASONED BATH STONE FOR WINTER USE.

THE Worcester City Council recently obtained tenders for the supply of new plant at the Hylton Road station. The lowest tenders were Messrs. Siemens Bros., amounting to 4,231*l.*, and the Electric Construction Company, 4,134*l.* The committee recommend the Council to accept the tender of the Electric Construction Company, Ltd., of Wolverhampton, for the supply of two 300-360 K.W. alternators, complete with exciter and coupled to two 350-440 K.W. engines, of Bellis & Morcom's make, with additional spares, fixed at the Hylton Road generating station for 4,134*l.*, subject to the Local Government Board sanctioning a loan for the purpose.

THE London County Council have adopted the recommendation of the highways committee that the Council should supply electrical energy in bulk to the entire County of London, and to adjoining boroughs and districts, at an estimated outlay of 18,000,000*l.* Of this sum 14,000,000*l.* would be required to take over the companies' undertakings throughout the area of supply, and 4,000,000*l.* for land, plant and transmission. An amendment "that the Council declines to embark upon so speculative an undertaking as that of compulsory supply of electrical energy to the district indicated," was lost by a large majority.

THE opening meeting of the Institution of Electrical Engineers' session was held on the 8th inst. at the Institution of Civil Engineers, at which the new president, Dr. R. T. Glazebrook, delivered his inaugural address. The following awards were announced:—The Institution premium, value 25*l.*, to V. A. Fynn; the Paris electrical exhibition premium, value 20*l.*, to Professor A. Schwartz and W. H. N. James; an extra premium, value 10*l.*, to H. T. Harrison, to W. J. A. London, to Dr. D. K. Morris and G. A. Lister, and to R. N. Tweedy and H. Dudgeon; an original communication premium, value 10*l.*, to Dr. W. E. Sumpner; the first student's premium, value 10*l.*, to A. G. Ellis; the second student's premium, value 8*l.*, to H. W. Taylor; the third student's premium, value 5*l.*, to F. C. Prentice and J. S. Westerdale; an extra premium, value 5*l.*, to W. Browning; Salomon's scholarship, value 50*l.*, to R. C. Jakeman; David Hughes scholarship, value 50*l.*, to A. Kinnes and G. F. O'Dell.

A BILL is about to be promoted by manufacturers and others in Cheshire to supply electricity in bulk to local

authorities and persons requiring a supply for power. A Bill seeking authority to supply both electricity and power-gas was recently considered by a select committee. Owing to the strong opposition by property-owners to the erection of additional gasworks, the Bill in the first House was thrown out. In the present promotion it is not intended to seek powers for the supply of power-gas, but only electricity, and to acquire by agreement existing undertakings. The area which it is proposed to supply was originally included in the North-Western Electricity and Power-Gas Bill, which received Royal assent in 1903, including North Staffordshire, Flint and Denbigh. In this district, particularly Staffordshire, it has been demonstrated that power-gas can be used for the staple trade of the Potteries, and it is thought that in a few years by the introduction and adoption of this means of heating the trade will receive considerable benefit. It is proposed to supply current from at least six power stations within the area, situate on suitable sites, so that the outlying rural districts and more remote towns and villages will be able to avail themselves of a supply of electrical current, and so place these localities on the same level as large towns obtaining the advantages of production on the largest scale.

### VARIETIES.

THE residents and visitors of Le Touquet and Paris-Plage have decided to build an English church to serve the needs of both places. The French syndicate has given a site worth 800*l.*, and Mr. Blomfield Jackson has the plans in hand.

A DEPUTATION from Brussels arrived last week in England for the purpose of investigating the workmen's dwellings erected in London, Liverpool, Manchester and Sheffield.

AT the last meeting of the Hornsey (London) Borough Council a letter was read from the Local Government Board refusing to sanction a scheme for building a town hall, estimated to cost 200,000*l.*

A LOCAL GOVERNMENT BOARD inspector has held an inquiry at Newcastle into an application by the city Council for sanction to borrow 3,913*l.* for alterations to the Grainger arcade at the markets.

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## STRUCTURAL ENGINEERS.

**ESTABLISHED 1802**

OUR SPECIALTY IS THE IMMEDIATE DELIVERY OF PLAIN & RIVETTED STEEL WORK.



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Steel Works supplied and erected by Messrs. Redpath, Brown & Co., Edinburgh.

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HOUSE AT CHAPELTOWN, LEEDS.

CATHEDRAL SERIES.—MANCHESTER: SOUTH-EAST CORNER, SHOWING  
OLD CHAPTER-HOUSE.

DETAILS OF OLD BEAUPRE, GLAMORGANSHIRE.

BURFORD PRIORY, OXON.

Mr. C. CARKEEK JAMES has been instructed by the Egyptian Government to report on the sanitary improvements desirable at Cairo. It is believed that the provision of a drainage scheme would cost £5,000,000.

A LOCAL GOVERNMENT BOARD inquiry was held in Maidstone on Friday. The Corporation wish to borrow 9,500*l.* for the erection of a police station, 4,600*l.* for the erection of a depot and stables, and other sums making in all 15,454*l.*

The St. Helens Town Council have answered in the negative the question of Messrs. John Swallow & Co., who asked whether, in the event of large engineering works being established in the Sutton district, they would be exempted from rates to the end of 1910.

The Metropolitan Water Board have sanctioned estimates of 548,000*l.* for the construction of one of the storage reservoirs in the Lea Valley authorised by the East London Waterworks Act of 1900, and of 250,000*l.* for the building of a reservoir on the Board's property at Island Barn.

The plans for the new building which is to accommodate Henshaw's blind asylum, Lancashire, are to be ready in a month. They should have been ready now, but the architects who are competing for the three prizes offered for the best plans have asked for an extension of time, and this the Board of Governors has allowed.

The Cheshire County surveyor has reported that a certain length of road at Tott, near Knutsford, was only newly macadamised last year, and was in perfectly good

order, and would have lasted five years or longer if it had not been broken up and become positively ruined by the action of the dust-laying materials. The County Council have agreed to carry out repairs at a cost of 600*l.*

PENDING the approval of the building scheme for the proposed offices of the Royal Liver Society on a portion of the George's Dock site, Liverpool, plans and specifications of the offices are being prepared by Mr. W. Aubrey Thomas, 14 Dale Street, who has been appointed architect. The quantities will be taken out by Messrs. Richard Holt, 8 Victoria Street, and H. L. Goldsmith, 62 Dale Street.

THE Cannock Rural and District Councils have agreed to the erection of a permanent hospital at a cost of about 2,500*l.* on land to be leased from Lord Hatherton, at Pye Green, for twenty-eight years. Mr. H. M. Whitehead, surveyor to the Rural District Council, is to prepare the necessary plans. The loan is to be borrowed for thirty years.

THE sub-committee of the West Hartlepool education committee report that it would be necessary to build a secondary school for girls with places for 300 scholars and to make provision for extension. They will report definitely at an early date on the question of a site. It was decided to have plans prepared for an extension of the technical college and to reserve further land for future extension.

WHAT is believed to be the smallest inhabited house in Great Britain is to be seen at Llandyssul, South Wales. Built by the owner, a bachelor, who occupies it, it has a frontage of 5½ feet, is 6 feet from front to back, 6 feet from ground to eaves and about 4 feet more to the ridge. Near it is his carpenter's shop, which measures only a little more than the house, having an 8-foot frontage. From front to back it is 7 feet, to eaves 8 feet, and to ridge about 12 feet.

THE Portsmouth Town Council have ascertained that the power to acquire and use the South Parade Pier can be obtained by provisional order, and that therefore an Act of Parliament is not absolutely necessary. Instructions have therefore been given for the necessary application to be made for a provisional order for acquiring and maintaining the South Parade Pier. It is hoped by this course to save the sum of 500*l.*

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# Leeds Fireclay Company, Ltd.

Head Office : Wortley, Leeds

The whole of the Stations on the Underground Electric Railways (about 35)  
are being faced with

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Sang de Bœuf Colour.

With Gold Lettering.

*Inspection of samples by Architects respectfully invited.*

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At a meeting of the Redditch Urban District Council a scheme was considered for the provision of a refuse destructor for the town. Mr. A. J. Dickinson, the surveyor, presented an estimate, from which it appeared a two-cell destructor would cost about 3,250*l.*, this including repayment of loan and interest. The cost of disposal with the destructor, the surveyor estimated, would be 98*l.* 10*s.* a year, but against that would be a credit of 270*l.* A resolution was passed deciding upon the provision of a destructor at an estimated cost of 3,250*l.*, to be erected on a site near the electric-lighting station.

THE conference on Monday of the Medical Society of London adopted the following resolution:—"That this conference of medical men desires to record its conviction that the present stress of noise in the public thoroughfares of London is such as to cause disastrous consequences to the health and vitality of the people, and that legislation in respect to the growing evil of street noises was urgently needed and should be promoted without delay." Another resolution called for legislation to prevent all street noises, for the effective supervision and control as to speed and otherwise of all classes of vehicles, and for the entire prohibition of noisy traffic through purely residential streets at least between midnight and 6 A.M.

AN arbitration was opened at Westminster to determine the price to be paid by the Leeds Corporation for the acquisition of lands in the Laverton, Carlesmoor, Colsterdale and Leighton valleys, for the purpose of extending the municipal waterworks undertaking under powers conferred by the Act of 1901. There are seven claimants. Mr. J. T. Wood sat as umpire, with Mr. L. Clare as arbitrator for the claimants, and Mr. C. Gott as arbitrator for the Corporation. The parties were represented by Mr. Freeman, K.C., and Mr. C. C. Hutchinson; and the Corporation by Mr. Honoratus Lloyd, K.C., and Mr. Jeeves. It is understood that the claims against Leeds involved in the arbitration amount to 61,250*l.*

DR. THORPE (Government analyst) says, with reference to the water supply of London, that in 1905 the West Middlesex and Grand Junction portions of it occupied the highest position in respect of organic purity. This improvement has been brought about through these works being able to

make use of the water from the large reservoirs at Staines. He hopes that in the near future the Staines storage system will be extended, so that other works may enjoy the advantage of operating with the impounded water, and thus further improve the general quality of the London supply. At the same time he has arrived at the general conclusion that the maximum pollution of the Thames-derived water is declining, a result partly brought about by the progressive provision and utilisation of stored water at the metropolitan waterworks.

AMONG the cases entered for hearing at the Manchester Civil Court (Mr. Justice A. T. Lawrence presiding) by special jury is that of Kellett v. the Mayor and Corporation of Stockport. On this Mr. Langdon, K.C., made an application to his Lordship on the 9th inst. The case, he said (involving matters in dispute with reference to the Kinder waterworks of the Stockport Corporation), was a heavy one and might occupy a considerable time. Mr. Rufus Isaacs, K.C., was to lead him (Mr. Langdon) for the plaintiff, Mr. Pickford, K.C., with Mr. Sutton, being for the defendants, and it would be a convenience to everyone if his Lordship would say that the case should not be called on before Saturday, the 17th inst. All parties assenting, his Lordship ordered the case to be entered for that date.

AN unusual application was made at a Local Government Board inquiry at Wood Green, when the local authority asked for sanction to borrow several thousands of pounds for private street improvement. The clerk to the district council informed the inspector that a large number of people in Wood Green were men with not very substantial incomes who bought their houses through building societies. The road-making charges were a heavy burden, inasmuch as the loan only covered a period of four years. The consequence was that not only did the frontagers suffer, but the council also, because prompt payment under the circumstances was impossible. He therefore applied for the loan to be extended over a period of seven years. The inspector said the application was a most unusual one, but he thought the council had made out a strong case. He should report to the Local Government Board accordingly.

MR. EVANS SPICER, chairman of the London County Council, in his review of the year up to March 31, says:—

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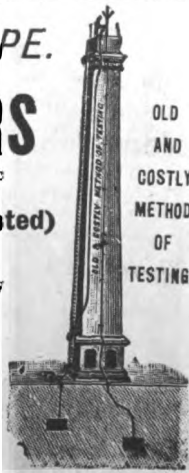
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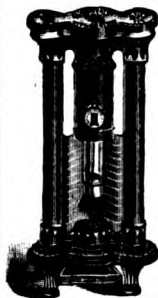
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The Council's operations in connection with the execution of its works without the intervention of a contractor continued to prove satisfactory during the year. The statements of works completed show a balance of cost below certificated value as regards estimated works of 80,376*l.* and as regards jobbing works of 3,742*l.* All the constructional works in connection with the formation of Kingsway and Aldwych and the tramway subway under those thoroughfares were entrusted to the works committee for execution, and were completed at a total cost of 273,653*l.* or 55,160*l.* below the final certificate of work executed.

THE deputation from the National Housing Reform Council, which recently waited on Sir H. Campbell-Bannerman and Mr. John Burns, M.P., submitted a series of proposals under twelve heads:—(1) That local authorities should be stimulated to carry out their duties under the Health and Housing Acts; (2) that there should be compulsory house-to-house inspection under the auspices of every local authority; (3) closing and demolition of unhealthy dwellings; (4) clearance of slum areas (the deputation considered that the owner of slum property which is dangerous to human health should be treated in the same way as the owner of diseased meat); (5) the creation of model suburbs; (6) increased facilities to local authorities for acquiring land; (7) cheapened and simplified process for compulsory purchase of land; (8) appointment of a town and village development commission; (9) small holdings developments; (10) town extension planning by local authorities; (11) cheaper loans to local authorities; (12) revision of by-laws as to gardens, new roads and unnecessary expense in construction of buildings.

THE city of Damascus is being provided with a tramway system. The present plans involve the construction of some 3½ miles of lines in the city, one-half of which is reported as already laid, with subsequent additions up to a total system of 5 miles in length. Power will be obtained from falls some 22 miles distant, where the works are already well advanced. The work is in the hands of a French company.

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### ELECTRIC-LIGHT WIRING.

THE screwed steel conduit system for electric-light wiring is now employed by Messrs. Strode & Co. in a variety of buildings, one of the latest being in the Naval College at Dartmouth. One of the advantages of the system is that all the tubes can be fixed during construction, and concealed in the walls, floors and ceilings, so that the decorative treatment of rooms is not interfered with. The joints being made with screwed sockets, the whole system is made watertight, as well as affording perfect protection for the cables and wires against all kinds of injury. The cables and wires can be drawn into the conduits at any time, and are always accessible by means of drawing-in boxes provided. The best arrangement of these drawing-in boxes, and the proper setting out of the runs of the various tubes, is only arrived at by expert knowledge. It is also essential to make a continuous metallic connection throughout between the tubes, boxes, switchboards, fuse-boards, &c., so that the whole system is earthed. If properly carried out this system will be found to be safe, protective, permanent and fireproof. At the Savoy Hotel over fifty miles of steel conduit have been installed. The electric bells, wiring, telephones and fire alarms were also carried out on the same system.

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**NON-INFLAMMABLE WOOD.**

THE American Consul at Bordeaux, in a report to the Washington Bureau of Manufactures, says that, warned by the great damage caused by the recent fire at the Milan Exposition, the French Deputy Commissioner-General devoted much of his time to the study and investigation of the different methods of rendering wood, paper, silk, cotton and woollen stuffs non-inflammable. He decided to experiment with a mixture consisting of sulphate of ammonia, 135 grams; borate of soda, 15 grams; boric acid, 5 grams; and water, 1,000 grams; and with this he treated pine shavings, wood, paper and cotton fibre. After a thorough drying the pile was set on fire, and when the fire had exhausted itself the impregnated shavings and wood were found to be simply blackened and charred; they gave out no flame. Paper and cotton fibre treated with the same solution consumed very slowly without a blaze. So successful and conclusive seemed the demonstration that orders were given that all wood and timber used in the construction of the buildings for the forthcoming Bordeaux Exposition, and all cotton, canvas and linen stuffs, carpets and rugs employed in the furnishing should be treated with this mixture.

**INSANITARY AREAS.**

In the thirty-fourth annual report of the medical officer of the Local Government Board he says:—"It is satisfactory to note the comparatively few occasions on which the visit of an inspector has been concerned with sanitary administration in connection with smallpox. In 1904-5 these visits numbered only twenty, whereas in 1903-4 and 1902-3 they were thirty-six and 124 respectively. The diminution here indicated of central intervention in matters of local administration is, however, to be referred, as far as many rural and most minor urban districts are concerned, almost wholly to the subsidence of smallpox, not to any general improvement in the methods of sanitary administration and infectious disease prevention adopted by the authorities of such districts. There had been found, indeed, as a result of visits by inspectors to districts of this class on account of smallpox, serious grounds for suspecting in not a few instances much neglect of sanitary matters generally on the

part of the authority and its officers. Accordingly, in 1904-5 opportunity was taken so far as the resources of the Board's medical staff have permitted, to investigate the sanitary state and administration of rural and urban districts in various directions throughout the country. About a dozen separate administrative areas, mainly small urban districts, have come specially under scrutiny during the year, and with results which are far from encouraging."

After mentioning certain districts where investigation had been made, the report continues:—"It is a matter for serious consideration whether the creation of small urban districts is in the true interests of efficient sanitary administration. Subdivision of administrative districts leads, in the aggregate, to larger disbursements in the way of salaries, due to the multiplication of officers, and in the way of office accommodation for these and for the local authority. To justify this increased expenditure the counterbalancing consideration should be increase of administrative efficiency. In districts that, after subdivision, still remain of considerable importance, this result may perhaps be attained, but it may be apprehended that a point of subdivision is not infrequently reached at which the increased expenditure is accompanied by diminished efficiency. At what point as indicated by the population the dividing line between increase and decrease of such efficiency is reached may be a question not easily determined—one to be decided not by an arbitrary standard of population alone, but by other considerations of a local nature."

**NEW STREET STATION ROOF, BIRMINGHAM.**

THE collapse of a large portion of the roof of Charing Cross Station about a year ago caused questions to be raised respecting the security of that which covers the original portion of New Street Station, Birmingham. At a meeting of the shareholders of the London and North-Western Railway shortly after the Charing Cross disaster the chairman stated that it should be the subject of careful examination. As a matter of fact, says the *Birmingham Daily Post*, this roof is continually under inspection, as one part or another is always undergoing painting for the protection of the ironwork against corrosion. During the present year, however, a complete overhauling has been in progress, every

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portion of the metalwork and every rivet being minutely examined. The roof is practically fifty-three years old, and at the time of its construction was regarded as a remarkable example of engineering. With a length of 1,080 feet it has a single girder span of 212 feet at a height of 75 feet from the rails. It was for a long time the largest single-span roof in the world. The ends of the girders rest upon substantial iron columns, those upon the New Street side being partly enclosed with masonry. The form of girder is a singularly beautiful one, consisting first of an elliptical double T of wrought-iron, which gives the roof its outline. Beneath this is a thick cylindrical tie-rod, also arched, and connected with the upper portion by twelve upright trusses of latticework, the intervals between each upright being crossed by tension straps. It is a very elegant form of construction, and has excited much admiration.

The examination which has recently been carried out by the company's engineer shows that the roof has worn remarkably well and is still perfectly secure. A good deal, however, has been learned during the last half century respecting the behaviour of metals under tension and compression, and, in order to provide an ample margin of security, as well as to add to the ultimate life of the roof, it has been deemed desirable to incur an expenditure of several thousand pounds in its reinforcement. For some months work has been going in connection with the reconstruction of the wind screen at the south end of the station, which has naturally had to bear the brunt of exposure to all sorts of trying conditions. This somewhat difficult undertaking is well advanced. The removal of the sheeting for the protection of workmen has revealed what is being done to counteract any tendency to spreading in connection with the roof girders. To each of these there is being applied a supplementary tie-bar or double strap of steel extending from foot to foot of the girder at a distance of about 5 feet or so below the centre of the original tie-bar, and braced up into a slightly arched form by rods depending from the main arch upon each side of the upright trusses. The use of pneumatic tools enables this work to be done with a celerity which would not have been possible a few years ago. Up above an opening of the roof near the supporting columns in the private road of the station there has been constructed a platform upon which is placed the engine

working the compression apparatus, and elastic tubes are carried along the scaffolding to the spot at which the riveting of the lengths of steel is carried on. Two of the reinforced girders are now fully exposed to view opposite to the Queen's Hotel portion of the station. It is seen that the effect will be to make the roofwork look a little more complicated and a little lower than at present, but the operation of and the reason for the device is obvious. The platform for another engine and apparatus is being erected nearer to Navigation Street, so that the work may be carried on in two sections. It will, however, take about six months to complete.

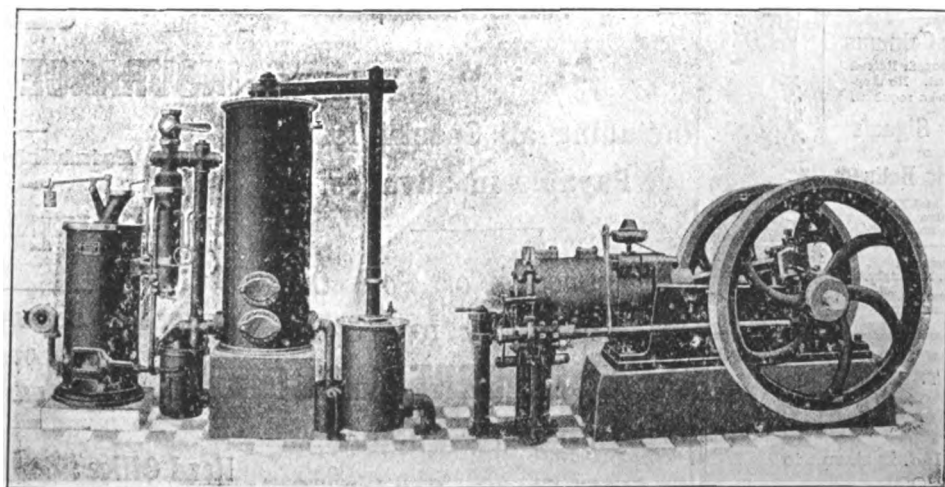
### BUILDING A HOUSE IN MALABAR.

WHEN a Malayalee starts to build himself a house, he is not particular how long it takes before the house is ready for occupation, says *Indian Engineering*, but he exercises every possible precaution, which his astrologers and his shastras lay down, to preclude the least ill-luck eventuating on the building. First and foremost there is a world of fuss as to the selection of a desirable site. On no account should a house be constructed on land the eastern side of which is bounded by a temple, a serpent grove, a demon shrine, or other place of worship. The compound must have a certain particular aspect, and its south-eastern arm should stretch out to a greater length than the other parts, and the structure itself should not stand in the centre of the compound, but on some spot decided upon after an abstruse geometrical calculation. An auspicious moment for the tree-felling having been found and the felling having been duly carried out, the tree is sawn up and worked out into the various shapes required, after which the astrologer is again sent for, in order to fix a day for planting the four corner posts of the building. The work of construction proceeds slowly, a hideous image, a glass bottle, a cactus branch or some other substances being hung up in a conspicuous place, with the view of averting the evil eye. The walls and woodwork being over, the thatching has to be taken in hand, and for this again an auspicious moment has to be ascertained and fixed.

There is, then, the other important question of a site for the well. A diviner must be called in to find a favourable

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spot for the sinking of the well. A house built in the regular orthodox fashion will invariably face the east. Other cardinal points may be faced, but the south is avoided under any circumstances. Why an eastern prospect is so highly prized is because it enables the sun to enter the house through the front door. Yet another little ceremony consists in applying a lighted torch to a corner of the roof immediately after the thatching. It is assumed that the house, having hereby taken fire once, will ever after enjoy immunity from destruction by the devastating firegod. The Mahyalee will not willingly grow a casuarina tree in his grounds, it being considered dreadfully unlucky. A jessamine bower cannot be put up in front of the building, for it will fast become the abode of an evil spirit. The flame of the forest is another unlucky tree, the planting of which would bring about the early death of the owner.

### FLOOR SPACE IN SCHOOLS.

In the House of Commons last week Dr. Macnamara asked the President of the Board of Education if he could state the practice of the Board in the matter of the number of square feet of floor space to be allocated to each child in the planning of new schools, Council and non-provided; whether it was the practice to permit existing Council and non-provided schools to accommodate children on any other scale; if so, whether he would state that scale and the extent to which it was now in operation; and if he would consider the desirableness in the interests of the health and comfort of the children and of educational efficiency, of insisting upon at least a 10 square feet scale all round? Mr. Birrell, in reply, said the aim of the Board of Education is to secure for each child in a public elementary school 10 square feet of floor space. In the case of new schools or enlargements their practice now is always to insist on this, and as regards existing schools they endeavour to bring about the same state of things. But in exercising pressure to this end some regard has to be paid to the heavy burden that would be placed upon the rates by any sudden demand for so large an increase of school provision as would be entailed by a universal application of a 10-feet scale, that burden being already in many places

very severe. The scale recognised in former days for Board schools and voluntary schools alike was 8 square feet for each child, and this no doubt obtains, so far as nominal accommodation is concerned, in a large number of schools, both Council and voluntary. But, on the other hand, it must be remembered that very many schools, though calculated on the 8 feet square basis, do in fact afford much more than 8 square feet for each child, owing to the number of children attending them being much less than the nominal accommodation.

### PAVING IN EDINBURGH.

A STATEMENT has been presented to the members of the streets and buildings committee of the Edinburgh Corporation by Councillor David Grieve on the work of that committee during the five years of his convenership, which he resigns on his retirement from the Council next month.

Edinburgh is perhaps distinguished among larger cities by the general hilliness of its site and the great breadth of many of its carriageways. Unusually large areas of paving have to be dealt with and maintained, and these are frequently of steep inclination, entailing much extra wear from horse's hoof and wheel-drag. It would appear, therefore, that the only practicable paving for most lines of heavy traffic must be the hardest, non-slippery stone procurable. There are some strong objections against stone paving. One of these is that, apart from their noise, stones form one of the roughest of wheel-paths for the vehicle, and add greatly to its draught. With the view of meeting this defect, the old idea of a smooth stone tramway for wheels was revived three years ago in Elm Row, and with considerable success. The noise and vibration of traffic over stone paving has developed so much in these days that the demand in all much used thoroughfares is for a paving substance less rigid than stone. For this cause various kinds of wood paving have been on trial within the past few years, including Scottish beech, Russian redwood and hardwood from Australia (in three varieties). Wood has sufficiently solved the noise problem, but has brought its own defects. These are—more or less rapid wear and decay, expansion and the need of frequent gravelling for horses. The Australian varieties of hardwood promise a much longer

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life than the softer woods anywhere tried, and in Princes and Rutland Streets have entirely supplanted the latter during the past five years.

Hardwood blocks have been put down almost every year since 1897, and in rare cases has any sign of decay yet appeared, whilst the average wear under heaviest traffic has only been barely 1-16th of an inch per year. During the period under review this material has been laid at the following places, viz. Princes Street (completing of east and west-end paving), Rutland Street, Queensferry Street, Lothian Road, North Bridge (at Post Office and *Scotsman*), South Bridge (east side, opposite University), Nicolson Street, George Street, St. Andrew Square, Morningside Road, Dalry Road, Gorgie Road, Warrender Park Road, Lockhart Bridge, West Maitland Street and George IV. Bridge. The principal bar to the more general adoption of hardwood paving is its excessive first cost. In March 1904 a deputation, formed by Treasurer Brown, Mr. Grieve and Mr. Sim, was sent southwards to the principal English towns to reap the benefit of their experience with wood or other noiseless paving, and find, if possible, a cheaper market for the purchase of hardwood. The net results of this deputation's visits were:—(1) A reduction of about 3/ per 1,000 blocks (or 20 per cent.) on that year's purchases, and (2) considerable improvements in the laying of the blocks and the plant and tools employed. In March of the following year the same parties, adding Councillor Macarthy, were sent again to England on the same subject, and gained additional valuable information from what they saw in London, Nottingham and Newcastle, and from interviews with experts. They also arranged advantageous purchases of the wood required that season.

But, in paving experiments, the committee have been content to limit themselves to wood alone. In February last they instructed the surveyor to inquire as to other smooth pavings which might be tested in selected streets with reasonable prospects of advantage. As one result of these inquiries, they laid this year in East Fountain Bridge, Manor Place and Cowgate the most approved form of compressed rock-asphalte. This is considerably cheaper and more cleanly than hardwood, and does not, like it, give trouble by after expansion. As to asphalt's alleged slipperiness in certain weathers, there has as yet been little

or no gravel called for on these surfaces. A second result of the surveyor's inquiries was the obtaining of estimates for composite asphalt and tar-macadam to suit the lighter classes of traffic, and the old causeway of Eton Terrace and Lennox Street has been replaced by tar-macadam of a special manufacture for which exceptional merit is claimed. Sufficient time has not yet elapsed for forming opinions about this paving. It is possible that this latest experiment is some contribution towards solving the problem of a dustless highway. The initial cost of a surface of tar-macadam is just double that of a full top coat of ordinary macadam. Should the life of the first be twice as long there ought to follow a great extension of its use, at least in the quieter residential streets. In connection with the dust question, during these two last summers the committee have co-operated with Leith in tar-coating the macadam of Ferry Road, and this annual treatment has had the effect of keeping down dust while the dryer season lasted. The opinions he had formed as to the materials which should now be more extensively adopted were:—(a) Australian or other similar hardwood (preferably black butt) for close-built tramway routes, with heavy traffic and grades not over 1 in 23; (b) compressed rock asphalt for other close-built non-tramway routes, with heavy traffic, where the grade is small; and (c) tar-macadam for close-built residential streets, of light traffic and moderate grade. The general condition of our carriageways, as of our foot pavements, would bear comparison at the present moment with those of any city in the kingdom. The macadamised roads, in particular, have been all reshaped in the past five years, and are now in splendid order. Co-operation between the city road surveyor and the various street-disturbing authorities to keep down repeated openings of the surface has been vigorously maintained. During his term of chairmanship these streets have withstood the installation of a great system of underground telephones. They have also been extensively cut up for the distributing mains occasioned by the Talla water supply, for the gas mains from Granton, the post-office telegraphs, and the substitution of valve for ball hydrants. Yet, notwithstanding all these special elements of disturbance, added to the ordinary openings contended with, the surfaces have been maintained in an increasingly high state of repair.

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**WORKMEN'S COMPENSATION.**

THE annual meeting of the Birmingham Master Builders' Association was held on Monday under the presidency of Mr. J. B. Whitehouse. In the course of his address he called attention to the amendment of the Workmen's Compensation Act. The present law was, he said, so incomplete, so full of defects, and so badly drawn that neither masters nor men were secure under its provisions. It had been rightly termed, from the vast amount of litigation that had taken place, the Lawyers' Compensation Act. What they wanted was a complete Act. They were in agreement that some compensation should be paid to a workman if he met with an accident in the course of his employment. They wanted the man to feel that he was safe, and they wanted, on the other hand, to feel that they were protected. He should like to quote a case where the present Act was not a good one. They would take a small employer with very little capital who did not insure, and one of whose workmen met with a serious accident. The workman was entitled by law to compensation from that employer, but the latter was not insured, and had nothing; the position of the man was then a bad one. If it was a case of total disablement he was in a precarious position for the whole of his life. If it was a fatal accident, then it was hard lines on the widow and children. The Government had said nothing in the present Bill to remedy many of the defects which were known to exist under the present law. There was nothing about compulsory insurance, but that alone would not be sufficient, because if they took the case he had just quoted, and granted that the employer had been insured, he was sorry to say there were too many insurance companies who were prepared to take the premiums, but had no intention to meet their claims and liabilities. They had printed at the back of their policies, in very small type, such as it required a double-power magnifying-glass to read, clauses that rendered void any of the liabilities which might come from those employers upon some technical point. With compulsory insurance alone the man was still in a very bad position. What was required was a Bill containing clauses of compulsory and national insurance. There ought to be compulsory and national insurance because the Government had the powers of obtaining money

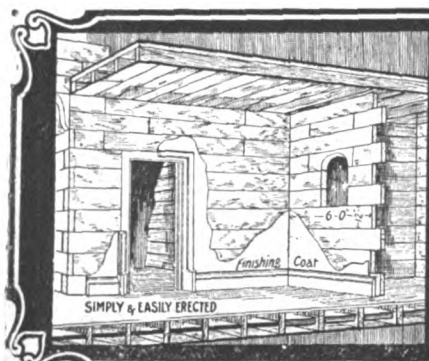
cheaper than any other body. Under national insurance it would not matter whether the workman was in the employ of a sub-contractor, chief contractor or an undertaker; he would be entitled to compensation by law, and would be able to receive it without having deductions, as at present, owing to litigation. He was surprised that the trades unionists had not seen the very evil position a large number of men occupied under the present Act, and would occupy under the proposed measure unless it was amended. They were not safeguarded, and the masters, too, were in a false position. It had been said that the Labour members had the Government in the hollow of their hands, and if it was to their advantage to have compulsory and national insurance now was their time to obtain it.

**CHIMNEYS AND FLUES.**

THE following report was adopted at the last annual meeting of the United States National Fire Protection Association:—

Your committee on chimneys and flues has interpreted its subject as meaning all conveyers of heat or the results of combustion, and at the outset we beg to say that we consider this subject as practically an inexhaustible one on account of not only the various classes of flues, but also on account of the unlimited types, constructions, arrangements, purposes and locations of each of the various classes.

Chimneys and flues have been investigated from the standpoint of construction, location and protection by the architect, builder and manufacturer, as well as by the insurance interests until at this time we have these subjects treated of in all building codes, fire ordinances and rulings of the various inspection bureaus in a more or less exhaustive manner, but the variations of temperature in like flues cannot be taken up in these rulings without the writing of volumes upon the question of protection, and so would the consideration of each case of air drafts, ventilation and general surroundings produce volumes of rules and requirements; hence it is that in the various codes and rules each subject has received a general treatment rather than a specific treatment for each condition likely to arise, and it is in this general way, with some attention to specific



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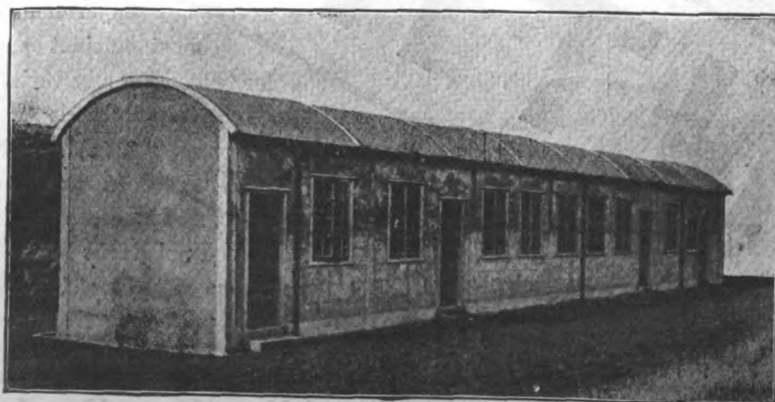
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questions, that your committee has approached and treated these subjects.

As a general proposition, all heat-conveying flues should be free from all contact with inflammable materials, should have a free ventilating space surrounding them, should be securely built and supported, should be so placed that they can be readily reached so as to clean them off on the tops; the distance from inflammable materials is to a great extent dependent upon the construction of the flue, the temperature of the heat passing through it, and the continuous length of time the heat is passing through.

Specifically, we desire to bring to your notice the following features:—

In all chimneys and flues of brick construction only good, hard, well-burnt brick should be used; soft or "salmon" brick should be prohibited; all joints should be struck smooth on inside, excepting where the flue is lined with well-burnt clay or terra-cotta pipe; no pargeting mortar shall be used on the inside; for bake-ovens, low-pressured boilers and similar purposes the brickwork shall be at least 8 inches in thickness and lined continuously on inside with well-burnt clay or terra-cotta pipe, and be capped with terra-cotta, stone or cast-iron; for high-pressure boilers the brickwork shall be not less than 12 inches in thickness, with the inside 4 inches of this wall built up of firebrick laid in fire-mortar for a distance of 25 feet in any direction from the source of heat; for smelting furnaces or of steam boilers or other apparatus which heat the flues to a high temperature, shall be built with double walls of suitable thickness for the temperature, with an air space between the walls, the inside 4 inches to be of firebrick laid in fire-mortar for a distance of not less than 25 feet in any direction from the source of heat. All other chimney flues shall be lined continuously on the inside with well-burnt clay or terra-cotta pipe made smooth on inside from the bottom of the flue or throat of the fireplace if flue starts from the latter; chimneys not in continual use or in dwellings from fireplaces or stoves, need not be lined, but must be struck smooth on inside. It is not advisable to have any bends or curves requiring a smaller upward inclination than 75 degs., and all curves and bends are to be deprecated. No flue should be less than 8 by 8 inches. No chimney shall be built up from any floor, shelf or beam of a building where

these are of wood. In a frame building where the chimney is not built up from the ground, it should rest on a base of masonry of firebrick set in fire-mortar not less than 12 inches thick, this base resting on supports independent of the construction of the building. In a brick building where the chimney is not built in the wall, it should be built as in similar cases in a frame building, or the wall should be corbelled out so as to support the chimney, which should then be properly anchored into the wall. In a stone or concrete building the treatment should be the same as in a brick building. All unused flue holes in chimneys shall be bricked up or closed with permanent, tightly-fitting metal covers, but no papers, bags, cloths or other inflammable materials must be used for this purpose. Horizontal brick flues should be covered on their tops with neat cement.

In the consideration of the best methods for protecting woodwork and other inflammable materials from the effects of heat from metal heat-conveying flues we are brought face to face with a question of diversified and various aspects, as, for instance, the thickness of the metal, the degree of heat conveyed, the distance from the woodwork, the continuous length of time that heat is being conveyed, air drafts and the amount of ventilation about the flue. The class of protection must be considered and required in conjunction with and is dependent on these conditions. In some places metal shields with air spaces of varying depths on each side will be sufficient; in other places a heavy coating of asbestos on the flue and an air-space between it and the woodwork will answer; in other places the woodwork should be protected with asbestos overlaid with tin following all lines and angles of the woodwork, standard tin clad; but your committee is unable, under the varying conditions, to lay down any one method, and can only recommend that the protection shall be adequate for the conditions involved, and shall consist of practically one of the three above-mentioned methods.

Sheet-metal stove pipes should be prohibited where passing through roofs, sides of buildings where in concealed spaces or where subject to sufficient moisture to cause rusting. Where passing through partitions, floors or other inflammable materials they should be surrounded with thimbles of metal so constructed as to maintain an air space of at least 2 inches between the pipe and the thimble and

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with ventilating holes so placed as to carry off the heat from within the thimble—or be surrounded with metal pipe and so placed as to maintain a clear space of at least 1½ inches between the smoke-pipe and the surrounding pipe—or be held in a soap-stone collar or well-burnt clay ring of not less than 2 inches in thickness, and so placed that no wood will be within 2 inches of the pipe; should enter the chimney in full sight, fit the chimney hole closely; should not enter a chimney hole within 12 inches of any wooden floor, partition, or of any ceiling other than fire-proof construction, unless there is a metal shield with ventilating space on both sides between the pipe and the woodwork, when the distance may not be less than 8 inches, or if the woodwork is covered with asbestos overlaid with tin standard clad, then the distance may be not less than 2 inches. All joints must be tight.

Tile flues, whether of well-burnt clay or of vitrified tile, should not be used; these are subject to breakage, not only from physical shock, but from the effects of heat, moisture and cold, through contraction and expansion, especially where the variations of these conditions are extreme. If permitted they should not rest upon any wooden shelf, flooring, &c., and should have a space of at least 2 inches between them and all woodwork through which they may pass; they must not be used in concealed space.

Clay pipe flues or chimneys are prohibited.

Any hollow, continuous space in a building constructed of hollow building brick, tile or cement blocks cannot be made use of as a flue or chimney. This practice is extremely dangerous and is prohibited.

Steam pipes should under no condition be allowed in contact with wood or any other inflammable material; where on the side of a room they should be hung on iron hangers of approved design; where overhead they must be hung on iron holders; where on floors they should be supported on bricks, approved iron supports, iron pipes or should be hung from above; where passing through floors the floors must be cut away so as to allow a clear space between the pipes and the wood, and the pipes must be properly bushed; should not be in any location where they cannot be easily reached for the purpose of cleaning all dust, rubbish, &c., from them, such as behind benches,

false flooring, &c.; wherever placed or however hung, they must be permanently fixed so as not to be affected in their position by "hammer," expansion and contraction. The overhead method of steam piping is preferred.

Foundry cupolas should have cast-iron or steel charging floors; should extend at least 10 feet above highest point of any roof within a radius of 50 feet; be covered on top with a heavy wire netting; be capped with a spark arrester, and in all parts be at least 2 feet from all surrounding woodwork.

The size of all dampers in all flues should be limited in area; those in furnace and boiler flues should advisably be of a size of but nine-tenths of the area of the flue opening.

Iron smoke stacks from boilers should not be within 10 inches of any woodwork.

As a summing up of these generalisations we can only point out the fact that the entire matter of safety and protection to the greatest extent lies with the inspector, for, for one building that is being built and in which the architect or builder may be willing to concede the need for care in the construction of these devices, there are hundreds of thousands already built with defective chimneys and flues which need the attention of the proper authorities for their correction; hence it is primarily "up to" the inspection bureaus to apply such rules as we already have.

In addition to the points already brought out we would suggest that—

1. The inspection bureaus give closer supervision of all new buildings, particularly dwellings and others which are subject to cheap construction, and insist to whatever extent they deem justifiable on the application of the building codes of their locations, where there are any, to the bad conditions which may be found being carried out.

2. That all chimneys be cleaned out yearly, at least.

3. That regular rules be insisted upon as to the cleaning of all dust, rubbish, waste, &c., from all steam pipes, and particularly from the tops of all horizontal heat-conveying pipes.

4. That all heat-conveying pipes receive regular inspection in order to see whether they have become loose at the joints, whether they have sprung so as to come in contact with wood, whether they are properly supported.

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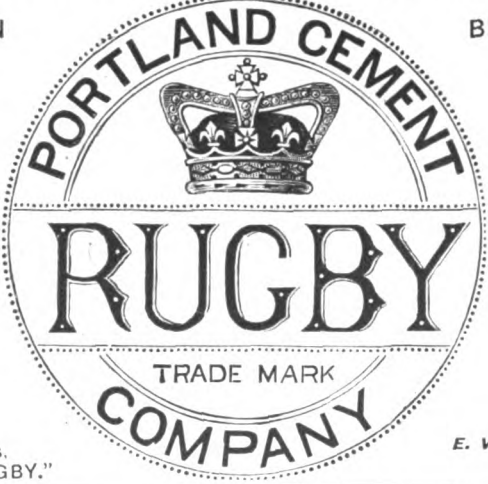
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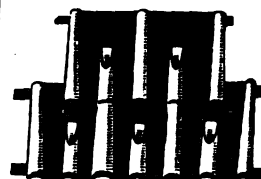


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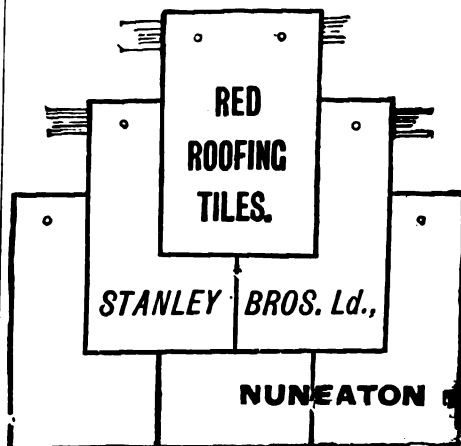
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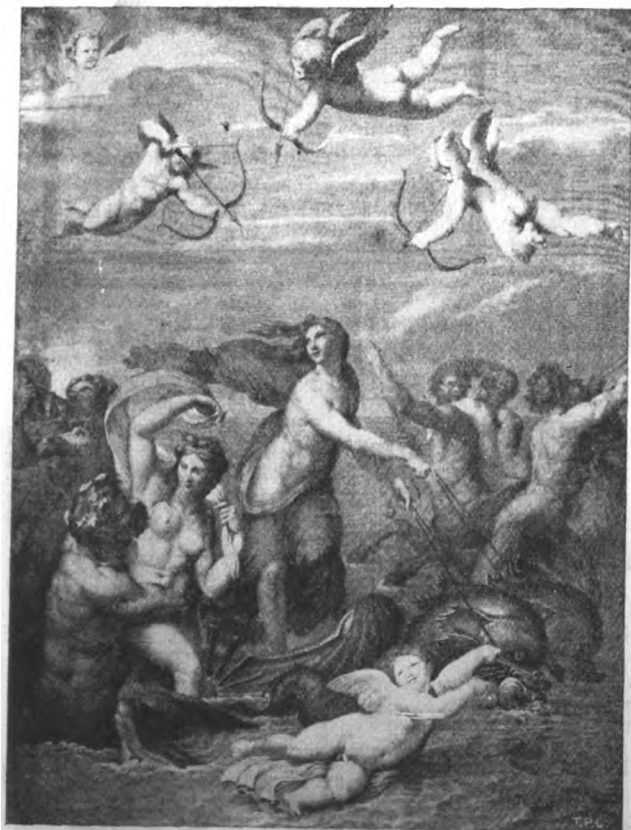


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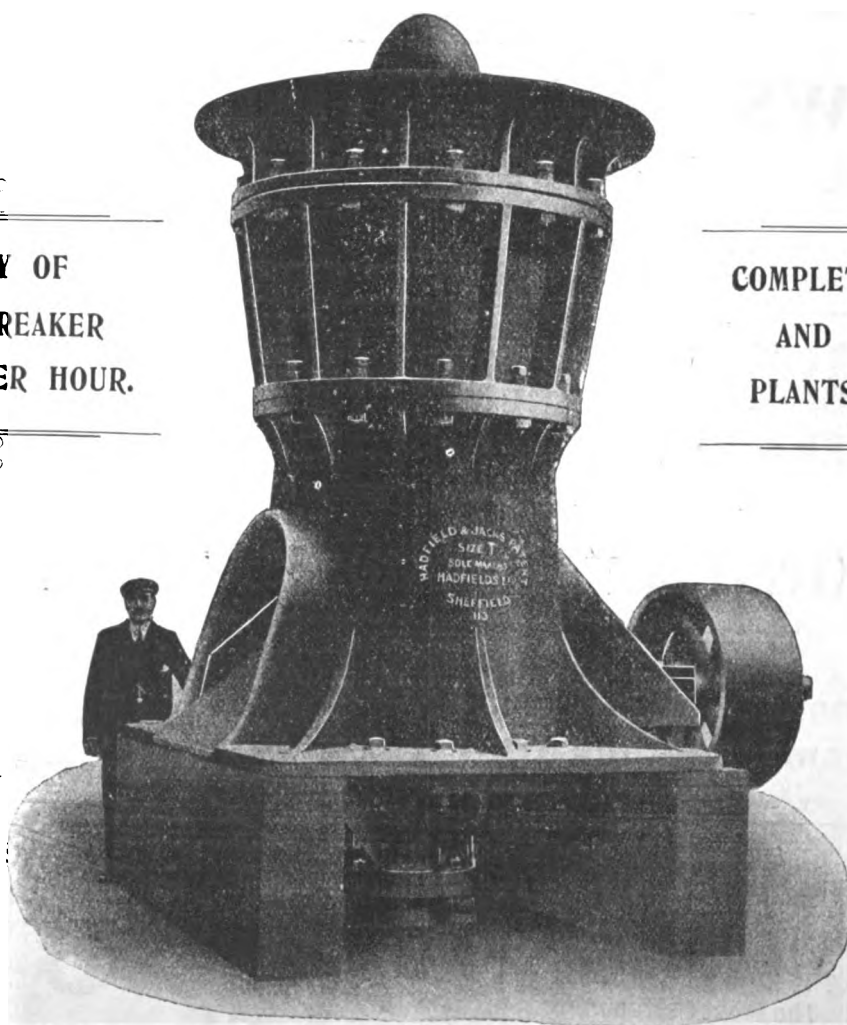
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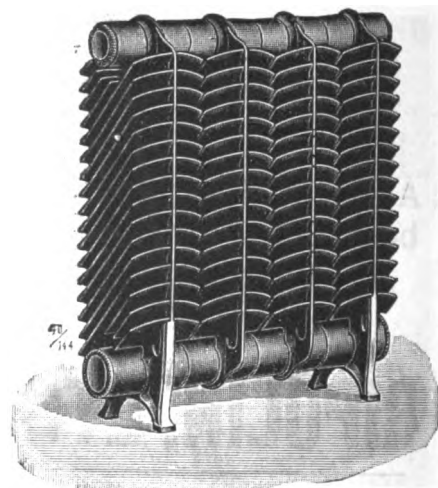
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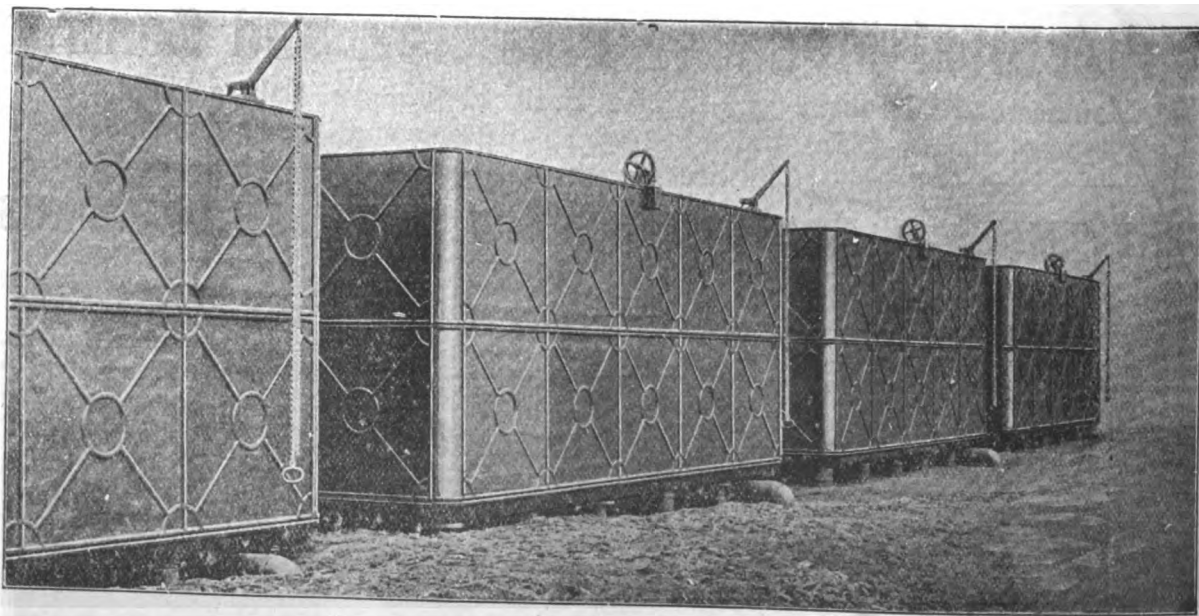
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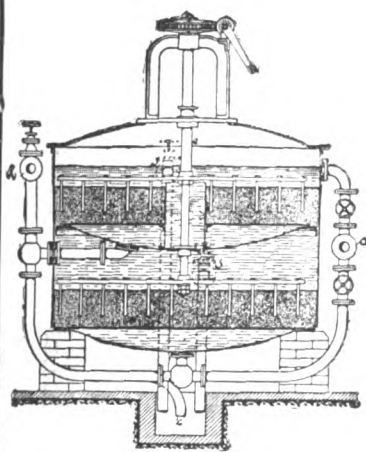
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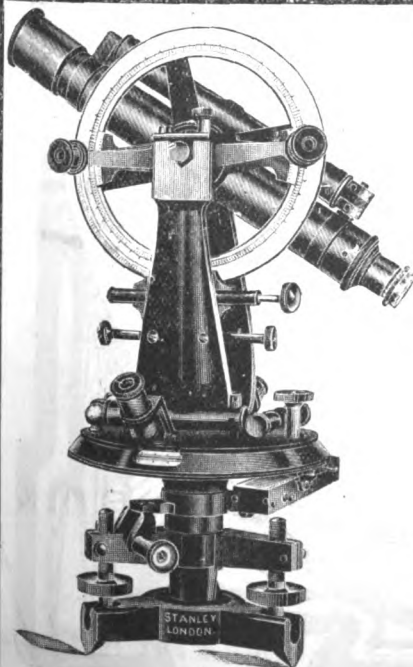
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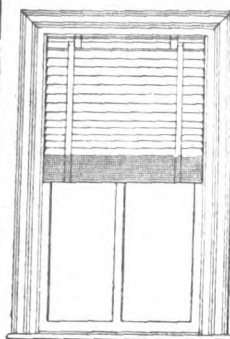
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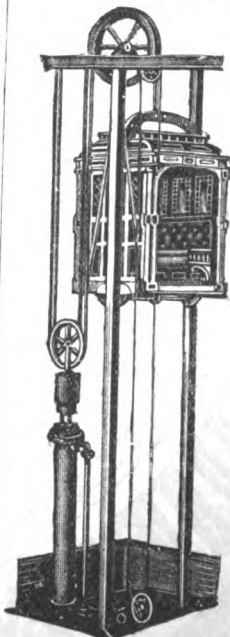
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THE  
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FRIDAY, NOVEMBER 23, 1906.

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\* \* Entered in the United States of America as second-class matter. Agents for America, The International News Co., 5 Bream's Buildings, Chancery Lane, London, England, and New York.

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

## EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further

answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

## TENDERS, ETC.

\* \* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

## COMPETITIONS OPEN.

EARLESTOWN.—Nov. 30.—The Newton-in-Makerfield Urban District Council invite competitive plans for erection of a public library, the total cost, exclusive of site, not to exceed 4,000l. Mr. C. Cole, clerk, Town Hall, Earlestown, Lancs.

GLASGOW.—Dec. 12.—The Corporation of Glasgow invite competitive designs for laying-out the estate at Riddrie, by the erection thereon of small self-contained houses. Premiums of 75l., 50l. and 25l. will be awarded. Mr. A. W. Myles, town clerk, City Chambers, Glasgow.

GOOLE.—Dec. 31.—The Goole Joint Body of Governors invite competitive designs for erection of a dual secondary school, accommodating 200 students, with provision for the conduct of technical and evening classes. Premiums of 50l. and 25l. Deposit 2l. 2s. Mr. James Wm. Johnson, clerk to the Governors, Council Offices, Goole.

IRELAND.—Dec. 31.—The Local Government Board for Ireland invite from architects the submission of designs for labourers' cottages in rural districts. Premiums of 50l., 30l. and 20l. for the three best designs. A copy of the conditions of the competition may be obtained from the Secretary of the Local Government Board, Dublin.

MONTEVIDEO.—Dec. 14.—La Comision Nacional de Caridad require competitive plans for new foundling hospital with approximate cost. Plans and report, under mottoes, and, in sealed envelope, name and address of competitor. The four selected plans will receive 212l. each, and will be asked to further compete. Further particulars from the Consulate-General for Uruguay, 5 and 6 Clement's Inn, Strand, W.C.

SUNDERLAND.—Feb. 1.—The committee of the Sunderland infirmary invite designs for a children's hospital. Premiums of 100l., 50l. and 25l. are offered. Deposit 1l. 1s. Mr. Thomas Robinson, secretary, Infirmary Offices, Bank Buildings, Sunderland.

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WOLVERHAMPTON.—Dec. 31.—The Board of Management of the Wolverhampton and Staffordshire general hospital, Wolverhampton, invite competitive designs for a nurses' home adjoining the hospital. Mr. J. Stephen Neil, house governor and secretary.

### CONTRACTS OPEN.

ACCRINGTON.—Nov. 26.—For the erection of an engine and boiler-house at Altham Bridge. Deposit 2*l.* 2*s.* Messrs. Haywood & Harrison, architects, Accrington.

ASHFORD.—Nov. 30.—For the widening of the bridge over the ditch, Beaver Road, near the sewage pumping station. Mr. William Terrill, surveyor, North Street, Ashford, Kent.

BARNWOOD.—Nov. 24.—For the erection of a block to accommodate about 170 female patients at the Second County asylum, Barnwood, near Gloucester. Deposit 3*l.* 3*s.* Messrs. Giles, Gough & Trollope, architects, 28 Craven Street, Charing Cross, London, W.C.

BELFAST.—Dec. 3.—For a stores building (two storeys) in brick, 18 feet long by 50 feet wide, with steel principal roof and steel girder supported floor; also offices, 34 feet long, making a total length of block 215 feet, at their Dundalk station, for the Great Northern Railway Company (Ireland). Deposit 2*l.* 2*s.* Mr. W. H. Mills, engineer-in-chief, Amiens Street, Dublin.

BLACKBURN.—Dec. 3.—For the erection of extensions to Accrington Road Council school, to accommodate 300 children. Deposit 2*l.* 2*s.* Messrs. Cheers & Smith, architects, 24 Richmond Terrace, Blackburn.

BOSTON.—Dec. 3.—For converting part of the fish market into a lavatory, &c., and converting the old police-station into a shop. Mr. G. E. Clarke, borough surveyor, Municipal Buildings, Boston, Lincs.

CLITHEROE.—Dec. 1.—For roofing and slating the new store shed at the Corporation depot. Mr. Arthur R. Bleazard, borough surveyor.

COWICK.—Nov. 26.—For the whole or several trades—viz. bricklayer and mason, carpenter and joiner, and plumber and glazier's work—required in the construction

of bay windows and internal alterations to the Grange, Cowick, near Snaith. Names to Messrs. Thomas Winn & Sons, architects and surveyors, 84 Albion Street, Leeds.

DEWSBURY.—Nov. 29.—For the erection of seven scullery houses at Dewsbury Moor. Messrs. J. Firth & Son, architects, Vulcan Road, Dewsbury.

DORKING.—Dec. 1.—The Urban District Council invite quotations, plans and full details for providing and erecting a house-refuse destructor capable of dealing with 60 tons weekly. Separate prices are desired for (1) machinery, including steam-raising plant; (2) without steam-raising plant; and (3) building and roadway. Mr. W. J. Hodges, clerk, 64 South Street, Dorking.

EAST ARDSLEY.—Nov. 26.—For (1) extending the urinal, converting present storeroom into w.c.'s, and other works at the East Ardsley (girls' and infant) school; (2) taking-out the present lavatory basins and wood framing, and fixing new lavatory basins, &c., in place of the old ones at the West Ardsley Blackgates schools. The West Riding Education Office, 128 Northgate, Wakefield.

EDINBURGH.—Nov. 28.—For the mason, joiner, plumber and plasterer's works of alterations to be made to property, 65-73 Henderson Row. The Burgh Engineer, City Chambers, Edinburgh.

FALMOUTH.—Nov. 27.—For the erection of verandah, sanitary conveniences and other work at Gyllyngdune. The Borough Surveyor, Municipal Buildings.

\*FERRYBRIDGE.—Dec. 3.—For the repairs to Ferrybridge bridge, on the Doncaster and Tadcaster main road, within the rural district of Pontefract. Deposit 1*l.* Mr. F. G. Carpenter, West Riding surveyor, County Hall, Wakefield.

FRYUP.—Dec. 7.—For alterations and additions to Fryup Council school, for the North Riding of Yorkshire County Council. Mr. Douglas Smith, secretary, County Hall, Northallerton.

FULWOOD.—Nov. 27.—For the erection of a public elementary school to accommodate 162 children at Fulwood, near Preston, Lancashire. Deposit 2*l.* Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

GLASGOW.—Nov. 28.—For the several works required in connection with the alterations on the northern, western

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GOTHERINGTON.—Dec. 8.—For alterations at Gotherington Council school, Gloucestershire. Mr. R. S. Phillips, surveyor to the committee, Shire Hall, Gloucester.

GUILDFORD.—Dec. 3.—For the construction of partitions and supply of iron mangers, &c., at the Corporation stables. Mr. C. G. Mason, A.M.I.C.E., borough surveyor, Bridge Street, Guildford.

HALIFAX.—Nov. 24.—For the mason, joiner, plumber, slater, steel constructor's and patent glazing works required in the erection of engineers' works. Mr. Lister Coates, architect, Central Chambers, 10 Central Street, Halifax.

HUNCOAT.—Nov. 27.—For the erection of a public elementary school to accommodate three hundred children at Huncoat, near Accrington, Lancashire. Deposit 2/. Mr. Henry Littler, county architect, 16 Ribblesdale Place, Preston.

HYDE.—Nov. 24.—For the erection of the Leigh Street Council school, to accommodate 1,200 children. Deposit 3/. 3s. Mr. Joseph Lindley, architect, Town Hall Chambers, Hyde.

IRELAND.—Dec. 1.—For the following works in connection with the erection of a new bacon factory at Roscrea, co. Tipperary:—(1) Excavations, foundations, concrete floors and walls. (2) Corrugated iron buildings, or alternatively buildings with Belfast felt roofing. Deposit 2/. The Secretary, Roscrea Bacon Factory, Roscrea.

IRELAND.—Dec. 3.—For a stores building (two storeys) in brick, 181 feet long by 50 feet wide, with steel principal roof and steel girder supported floor; also offices, 34 feet long, making a total length of 215 feet, at their Dundalk Station, for the Great Northern Railway Co. (Ireland). Deposit 2/. 2s. Mr. W. H. Mills, engineer-in-chief, Amiens Street, Dublin, or at the office of the District Engineer, Belfast.

LEYTONSTONE.—Dec. 6.—For the erection of an additional nurses' home at their infirmary, Whipps Cross Road, Leytonstone, N.E., for the Guardians of West Ham Union.

Deposit 20/. Mr. R. Banks-Martin, architect, 121 Plashet Grove, East Ham, E.

LONDON.—Nov. 28.—For the erection of an infirmary for fifty beds at the Chase Farm schools, The Ridgeway, Enfield, N., for the Guardians of Edmonton Union. Deposit 5/. 5s. Mr. Stuart Hill, architect, 106 Cannon Street, E.C.

LONDON.—Nov. 29.—For the construction of an underground convenience for men and women in Theobald's Road, and for additions to the existing underground convenience in Shaftesbury Avenue, for the Holborn Borough Council. Messrs. Gardner & Theobald, 110 Great Russell Street.

MACCLESFIELD.—Nov. 26.—For the erection of a strong room at the Union offices, Macclesfield. Messrs. Whittaker & Bradburn, architects, King Edward Street, Macclesfield.

MANCHESTER.—Dec. 5.—For the erection of the Beaver Road Municipal school, Didsbury. Deposit 2/. 2s. The Education Offices, Deansgate, Manchester.

MANSFIELD.—Nov. 26.—For the erection and completion of a ward at the infectious hospital, Southwell Road, Mansfield. Mr. R. Frank Vallance, borough surveyor, White Hart Chambers, Mansfield.

NEWTON-IN-MAKERFIELD.—Nov. 30.—For the erection of a public library at an inclusive cost of 4,000/. Mr. C. Cole, Clerk, Town Hall, Earlestown, Lancs.

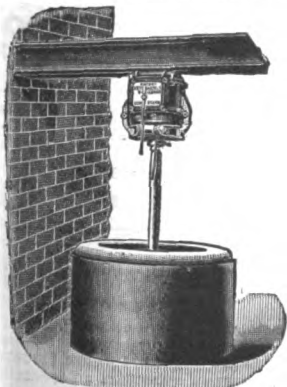
SCOTLAND.—Nov. 25.—For laying-off grounds and boundary walls, and for the mason, joiner, slater, plasterer and plumber's work of the proposed United Free Church manse, Ardrishaig. Messrs. Gillies & Todd, architects, Lochgilphead.

SCOTLAND.—Nov. 30.—For the mason, carpenter, slater, plaster, plumber, painter and glazierwork of villas to be erected in King Edward Street, Fraserburgh. Messrs. Reid & McRobbie, architects, Saltoun Chambers, Fraserburgh.

SCOTLAND.—Dec. 3.—For the construction of station buildings at Cove, Kincardineshire, for the Caledonian Railway Company. Deposit 2/. 2s. The Company's Engineer, Buchanan Street station, Glasgow, or at the office of the Company's District Engineer, General Station, Perth.

STAFFORD.—Nov. 24.—For the erection of a shop and premises in the Gaol Road. Mr. R. A. Glass, architect, 104 Wolverhampton Road, Stafford.

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**TWICKENHAM.**—Dec. 5.—For the erection of a post office. Deposit 1*l.* 1*s.* Mr. J. Rutherford, at H M. Office of Works, &c., Storey's Gate, S.W.

**WALES.**—Nov. 24.—For building a schoolroom, &c., and renovating Bethel C.M. chapel, Pembrey. Mr. Thomas Williams, Commercial Arms, Pembrey.

**WALES.**—Nov. 28.—For erection of stone and steel bridge at Glanyrafondu, near Talley, Llandilo, Carmarthen-shire. Mr. Charles H. Mounsey, county engineer and surveyor, Carmarthen.

**WALES.**—Nov. 30.—For the erection of a proposed house at Ystrad Mynach. Deposit 2*l.* 2*s.* Mr. Richard Edwards, architect and surveyor, Brynheulog, Treharris.

**WALES.**—Dec. 5.—For alterations and repairs to six cottages, 52, 53, 54, 55, 56 and 57 Gas Row, Dowlais. The Dowlais Gas and Coke Co., Gasworks, Dowlais.

**WEMMERGILL.**—Dec. 15.—For additions to and strengthening of Wemmergill bridge (stone), Yorks, on the Middleton-in-Teesdale and Brough main road. County Surveyor's Office, County Hall, Northallerton.

**WOODBURY.**—Dec. 3.—For alterations and additions to the Lodge, near Woodbury, Devon. Messrs. E. H. Harbottle & Son, architects, County Chambers, Exeter.

**WOODFORD.**—Dec. 15.—For the erection and completion of a boys' school to accommodate about 500 pupils, and for sundry alterations to the girls and infants' schools at Churchfields, Woodford, Essex, for the Essex education committee. Mr. Frank Whitmore, Chelmsford, and Mr. Arthur Hogwood, architects, 33 Great Tower Street, E.C. Names and deposit (5*l.*) before Nov. 26 to Mr. Ernest J. Bond, clerk to the local advisory committee, Woodford Green, Essex, and 95 Leadenhall Street, London, E.C.

**WREXHAM.**—Dec. 4.—For supply and erection of an iron cart-shed at the Willow Road depôt. Mr. John England, borough engineer and surveyor, Guildhall, Wrexham.

ST. MARY'S CHURCH, Peterborough, built in 1860, has been gradually sinking for some time, and it has now been decided to underpin the pillars of the south aisle down to the rock and to rebuild the north wall.

## TENDERS.

### BECKENHAM.

For supply and erection of induced-draught apparatus at electric light and destructor works. Mr. J. A. ANGELL, surveyor.

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|                                       |      |    |   |
|---------------------------------------|------|----|---|
| Baxter & Caunter . . . . .            | £900 | 0  | 0 |
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| Fraser & Son . . . . .                | 721  | 0  | 0 |
| Sturtevant Engine Co. . . . .         | 635  | 0  | 0 |
| Goddard, Massey & Warner . . . . .    | 599  | 2  | 3 |
| Heenan & Froude . . . . .             | 584  | 15 | 0 |
| Babcock & Wilcox . . . . .            | 530  | 0  | 0 |
| Musgrave & Co. . . . .                | 523  | 0  | 0 |
| Hughes & Stirling . . . . .           | 512  | 2  | 0 |
| Horsfall Destructor Co. . . . .       | 477  | 0  | 0 |
| Davidson & Co. . . . .                | 450  | 10 | 0 |
| MATTHEWS & YATES (accepted) . . . . . | 389  | 0  | 0 |

#### Steam-engine and fan.

|                                    |     |    |   |
|------------------------------------|-----|----|---|
| Fraser & Son . . . . .             | 621 | 0  | 0 |
| Crawford . . . . .                 | 599 | 0  | 0 |
| Hughes & Stirling . . . . .        | 471 | 10 | 0 |
| Babcock & Wilcox . . . . .         | 440 | 0  | 0 |
| Musgrave & Co. . . . .             | 435 | 0  | 0 |
| Horsfall Destructor Co. . . . .    | 434 | 0  | 0 |
| Goddard, Massey & Warner . . . . . | 421 | 16 | 3 |
| Davidson & Co. . . . .             | 404 | 10 | 0 |
| Matthews & Yates . . . . .         | 285 | 0  | 0 |

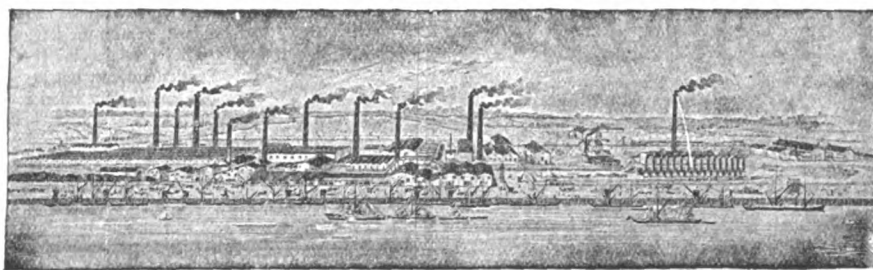
For making-up roads. Mr. JOHN A. ANGELL, surveyor.

#### Sidney Road.

|                                   |      |    |    |
|-----------------------------------|------|----|----|
| Hyde & Co. . . . .                | £958 | 0  | 0  |
| Adams . . . . .                   | 583  | 5  | 5  |
| Fry Bros. . . . .                 | 574  | 12 | 9  |
| Free & Sons . . . . .             | 556  | 10 | 8  |
| Pearce . . . . .                  | 529  | 4  | 4  |
| Woodhams & Sons . . . . .         | 524  | 15 | 0  |
| Iles . . . . .                    | 520  | 0  | 11 |
| MOWLEM & Co. (accepted) . . . . . | 501  | 7  | 10 |

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|                         |      |    |    |
|-------------------------|------|----|----|
| Hyde & Co.              | £517 | 0  | 0  |
| Adams                   | 354  | 2  | 5  |
| Fry Bros.               | 354  | 18 | 8  |
| Free & Sons             | 346  | 19 | 7  |
| Pearce                  | 320  | 6  | 7  |
| Woodhams & Sons         | 317  | 4  | 11 |
| Iles                    | 315  | 9  | 11 |
| MOWLEM & Co. (accepted) | 304  | 11 | 4  |

*Alexander Road.*

|                         |     |    |    |
|-------------------------|-----|----|----|
| Hyde & Co.              | 427 | 0  | 0  |
| Adams                   | 251 | 4  | 11 |
| Fry Bros.               | 247 | 11 | 7  |
| Free & Sons             | 266 | 11 | 0  |
| Pearce                  | 237 | 12 | 11 |
| Woodhams & Sons         | 242 | 13 | 6  |
| Iles                    | 234 | 17 | 4  |
| MOWLEM & Co. (accepted) | 230 | 13 | 10 |

**CARDIFF.**

For the construction of roads and sewers on Heathfield estate, Gabalfa. Mr. EDGAR DOWN, architect, Cardiff.

|                              |      |    |    |
|------------------------------|------|----|----|
| Shepton                      | £917 | 15 | 0  |
| Hunter & Co.                 | 890  | 19 | 4  |
| Rose                         | 790  | 15 | 5  |
| Mundy                        | 790  | 13 | 8  |
| Hatherley & Co.              | 783  | 0  | 0  |
| Ashley                       | 769  | 12 | 7  |
| Walker                       | 762  | 4  | 0  |
| Collins & Co.                | 754  | 19 | 6  |
| Brown                        | 747  | 16 | 0  |
| Thomas & Co.                 | 729  | 0  | 0  |
| Barnes, Chaplin & Co.        | 658  | 6  | 8  |
| Mackay & Davies              | 655  | 13 | 11 |
| Rees                         | 596  | 10 | 10 |
| WILLIAMS, Cardiff (accepted) | 575  | 0  | 0  |

**BIRTLEY.**

For private street works. Mr. G. W. AYTON, highway surveyor.

|                                       |        |    |   |
|---------------------------------------|--------|----|---|
| Burnett & Son                         | £2,500 | 0  | 0 |
| Carrick                               | 2,222  | 7  | 4 |
| Boiston                               | 2,062  | 7  | 1 |
| Johnson & Strong                      | 2,049  | 12 | 0 |
| Hart & Thompson                       | 1,899  | 18 | 6 |
| Young                                 | 1,860  | 13 | 3 |
| SIMPSON, Newcastle-on-Tyne (accepted) | 1,770  | 8  | 9 |

**CORNFORTH.**

For the erection of butchering premises, stabling, &c., at Old Cornforth, Durham. Mr. H. T. GRADON, architect, Durham.

|                                    |        |    |    |
|------------------------------------|--------|----|----|
| Stockton Co-operative Society      | £1,403 | 0  | 0  |
| Bell & Mann                        | 1,400  | 12 | 1  |
| Sanderson                          | 1,389  | 10 | 0  |
| Rowe                               | 1,388  | 13 | 9  |
| Hall                               | 1,361  | 9  | 10 |
| Chambers                           | 1,361  | 0  | 7  |
| Coates                             | 1,324  | 0  | 0  |
| Manners                            | 1,319  | 0  | 0  |
| Ayton                              | 1,300  | 0  | 0  |
| Denby & Co.                        | 1,293  | 0  | 0  |
| Hilton                             | 1,183  | 0  | 0  |
| Robson                             | 1,160  | 0  | 0  |
| DRAPER & SONS, Leamside (accepted) | 1,150  | 0  | 0  |
| Architect's estimate               | 1,200  | 0  | 0  |

**DEVONPORT.**

For levelling, paving and completing College Road (section 2). Mr. JOHN F. BURNS, borough surveyor.

|                            |      |    |    |
|----------------------------|------|----|----|
| Jefford & Sons             | £250 | 17 | 11 |
| DONEY, Plymouth (accepted) | 247  | 4  | 2  |
| Hortop & Co.               | 161  | 14 | 11 |

**DUDLEY.**

For extensions to the Badley Memorial Home, Bourne Street. Mr. W. WRIGHT, architect, Dudley, Staffs.

|                                     |      |    |   |
|-------------------------------------|------|----|---|
| Love & Flint                        | £156 | 10 | 0 |
| OAKLEY & COULSON, Dudley (accepted) | 155  | 5  | 0 |
| Round                               | 155  | 0  | 0 |

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| Batchelor . . . . .                     | 580  | 8  | 5 |
| Sangwin . . . . .                       | 362  | 10 | 0 |
| Brown & Son . . . . .                   | 305  | 0  | 0 |
| Tilley & Son . . . . .                  | 280  | 0  | 0 |
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| Bowes-Scott & Western . . . . .                      | 1,928  | 0  | 0 |
| Russell & Sons . . . . .                             | 1,815  | 12 | 0 |
| J. & R. Houston . . . . .                            | 1,814  | 0  | 0 |
| Wright Bros. . . . .                                 | 1,512  | 0  | 0 |
| Spencer, Ltd. . . . .                                | 1,449  | 0  | 0 |
| Lassen & Hjört . . . . .                             | 1,335  | 0  | 0 |
| Babcock & Wilcox . . . . .                           | 1,318  | 0  | 0 |
| Aiton & Co., Willesden Junction (accepted) . . . . . | 1,245  | 10 | 0 |
| Paterson Engineering Co. . . . .                     | 1,203  | 0  | 0 |
| Haste Pump Co. . . . .                               | 1,180  | 0  | 0 |
| Masson Scott & Co. . . . .                           | 1,160  | 0  | 0 |

**Contract No. 2.**

|                                  |       |   |   |
|----------------------------------|-------|---|---|
| Death & Ellwood . . . . .        | 3,440 | 0 | 0 |
| Wright Bros. . . . .             | 648   | 0 | 0 |
| Haste Pump Co. . . . .           | 550   | 0 | 0 |
| Aiton & Co. (accepted) . . . . . | 519   | 0 | 0 |
| Cort & Son . . . . .             | 398   | 0 | 0 |

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|                                             |        |   |   |
|---------------------------------------------|--------|---|---|
| VALE & SONS, Stourport (accepted) . . . . . | £1,984 | 0 | 0 |
|---------------------------------------------|--------|---|---|

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For the erection of a water-tower at the workhouse.

|                                     |      |   |   |
|-------------------------------------|------|---|---|
| SMITH, Bunwell (accepted) . . . . . | £100 | 0 | 0 |
|-------------------------------------|------|---|---|

**HORSHAM.**

For alterations and improvements to the Horsham, East Parade Council schools.

|                                                 |      |    |   |
|-------------------------------------------------|------|----|---|
| Cropley & Sons . . . . .                        | £474 | 0  | 0 |
| Rowland Bros. . . . .                           | 434  | 0  | 0 |
| Randall & Sons . . . . .                        | 430  | 0  | 0 |
| G. Potter . . . . .                             | 408  | 0  | 0 |
| Potter Bros. . . . .                            | 405  | 0  | 0 |
| Lindfield & Son . . . . .                       | 396  | 0  | 0 |
| HILLMAN & MURRELL, Horsham (accepted) . . . . . | 349  | 15 | 0 |

**HULL.**

For the erection of three shops in Jameson Street. Mr. JOSEPH H. HIRST, city architect.

|                                    |        |    |    |
|------------------------------------|--------|----|----|
| Hebblewhite & Wilson . . . . .     | £2,853 | 0  | 0  |
| Sanderson . . . . .                | 2,850  | 0  | 0  |
| Simpson & Sons . . . . .           | 2,850  | 0  | 0  |
| Jackson & Sons . . . . .           | 2,790  | 4  | 0  |
| Harper . . . . .                   | 2,766  | 0  | 0  |
| Arnott . . . . .                   | 2,751  | 11 | 10 |
| Quebell, Son & Greenwood . . . . . | 2,750  | 0  | 0  |
| Panton . . . . .                   | 2,730  | 0  | 0  |
| Houlton & Sons . . . . .           | 2,715  | 0  | 0  |
| GOATES, Hull (accepted) . . . . .  | 2,695  | 0  | 0  |

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For sewerage and sewage-disposal works. Mr. J. P. EVANS, surveyor.

|                                                   |      |    |   |
|---------------------------------------------------|------|----|---|
| Ellis . . . . .                                   | £915 | 0  | 9 |
| Green & Sons . . . . .                            | 637  | 10 | 0 |
| Ward & Tetley . . . . .                           | 592  | 5  | 3 |
| Totley . . . . .                                  | 586  | 7  | 4 |
| Craig . . . . .                                   | 574  | 18 | 8 |
| Lee & Kirk . . . . .                              | 562  | 0  | 1 |
| Thomason . . . . .                                | 554  | 7  | 6 |
| Holmes & Son . . . . .                            | 527  | 5  | 0 |
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| Hardy & Atkinson                        | 992                                      | 14 | 10 |  |
| Tutin                                   | 987                                      | 15 | 5  |  |
| Ross & Crabtree                         | 975                                      | 0  | 0  |  |
| Hobbs                                   | 952                                      | 14 | 3  |  |
| Graham Bros.                            | 953                                      | 12 | 0  |  |
| Arundel                                 | 935                                      | 16 | 0  |  |
| Parker & Sharp                          | 930                                      | 0  | 0  |  |
| Ward & Tetley                           | 929                                      | 15 | 10 |  |
| Billings & Co.                          | 917                                      | 0  | 0  |  |
| Pearson                                 | 895                                      | 13 | 0  |  |
| Dean & Co.                              | 895                                      | 5  | 2  |  |
| Morley & Son                            | 839                                      | 17 | 7  |  |
| Totty                                   | 795                                      | 13 | 0  |  |
| Schofield, Sons & Co. (accepted)        | 795                                      | 1  | 0  |  |
| Mackay & Son                            | 777                                      | 11 | 1  |  |
| O'Doherty & Son                         | 744                                      | 1  | 0  |  |

**KENDAL.**

|                                                                   |      |    |   |  |
|-------------------------------------------------------------------|------|----|---|--|
| For excavation and laying of land drains at sewage-disposal works |      |    |   |  |
| T. & W. Dirkin                                                    | £416 | 17 | 0 |  |
| Carradice                                                         | 380  | 12 | 3 |  |
| Woodburn (accepted)                                               | 324  | 4  | 2 |  |

**LINCOLN.**

|                                               |        |   |   |  |
|-----------------------------------------------|--------|---|---|--|
| For enlarging the Municipal technical school. |        |   |   |  |
| Wright, Leicester (accepted)                  | £5,220 | 0 | 0 |  |

**LONDON.**

|                                              |                                     |   |   |  |
|----------------------------------------------|-------------------------------------|---|---|--|
| For the erection of ten houses at Tottenham. | Messrs. TREACHER & SON, architects. |   |   |  |
| Irwin                                        | £3,507                              | 0 | 0 |  |
| Parrott & Isom                               | 3,355                               | 0 | 0 |  |
| Rice & Sons                                  | 3,131                               | 0 | 0 |  |
| Hale & Co. (accepted)                        | 2,775                               | 0 | 0 |  |
| Hawley (withdrawn)                           | 1,945                               | 0 | 0 |  |

**LONDON—continued.**

|                                                                                                |         |    |   |  |
|------------------------------------------------------------------------------------------------|---------|----|---|--|
| For the provision and fixing of a new boiler at the Drury Lane day industrial school, Holborn. |         |    |   |  |
| Kite & Co.                                                                                     | £250    | 0  | 0 |  |
| Turner & Co.                                                                                   | 247     | 11 | 0 |  |
| J. & F. May                                                                                    | 247     | 0  | 0 |  |
| Fraser & Son                                                                                   | 246     | 0  | 0 |  |
| R. H. & J. Pearson                                                                             | 243     | 0  | 0 |  |
| Price, Lea & Co.                                                                               | 233     | 0  | 0 |  |
| Comyn Ching & Co., Long Acre (recommended)                                                     | 204     | 0  | 0 |  |
| For supply of additional electric plant for sub-stations.                                      |         |    |   |  |
| Dick, Kerr & Co.                                                                               | £8,677  | 0  | 0 |  |
| British Westinghouse Co., London (recommended)                                                 | 7,588   | 7  | 6 |  |
| For erection of secondary school, Dawes Road, Fulham.                                          |         |    |   |  |
| Lathey Bros.                                                                                   | £32,142 | 0  | 0 |  |
| Waring-White Building Co.                                                                      | 30,304  | 0  | 0 |  |
| McCormick & Sons                                                                               | 30,270  | 0  | 0 |  |
| Downs                                                                                          | 29,983  | 0  | 0 |  |
| Holloway Bros.                                                                                 | 29,978  | 0  | 0 |  |
| Godson & Sons                                                                                  | 29,600  | 0  | 0 |  |
| Spencer, Santo & Co.                                                                           | 29,507  | 0  | 0 |  |
| Leslie & Co.                                                                                   | 29,008  | 0  | 0 |  |
| Lovatt, Ltd.                                                                                   | 28,793  | 0  | 0 |  |
| Patman & Fotheringham                                                                          | 28,683  | 0  | 0 |  |
| King & Son                                                                                     | 28,524  | 0  | 0 |  |
| Kearley                                                                                        | 28,315  | 0  | 0 |  |
| Wall, Ltd.                                                                                     | 28,021  | 0  | 0 |  |
| Grover & Son                                                                                   | 27,933  | 0  | 0 |  |
| Whitehead & Co.                                                                                | 27,865  | 0  | 0 |  |
| Lawrance & Sons                                                                                | 27,741  | 0  | 0 |  |
| Treasure & Son                                                                                 | 27,312  | 0  | 0 |  |
| Johnson & Co.                                                                                  | 27,260  | 0  | 0 |  |
| Garrett & Son                                                                                  | 26,554  | 0  | 0 |  |
| J. & M. PATRICK, Wandsworth (recommended)                                                      | 26,139  | 0  | 0 |  |

**TUNSTALL.**

|                                               |      |    |   |  |
|-----------------------------------------------|------|----|---|--|
| For lighting the market by high-pressure gas. |      |    |   |  |
| Mark Duffield & Sons, Ltd., Slough (accepted) | £123 | 15 | 0 |  |

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**POLEGATE.**

For the construction of about 410 yards run of 9-inch pipe sewers, with five manholes, at Polegate, near Hailsham.

|                                   |      |    |   |
|-----------------------------------|------|----|---|
| Soane                             | £615 | 3  | 7 |
| Miller & Selmes                   | 611  | 19 | 3 |
| Swaker                            | 491  | 3  | 5 |
| Vine                              | 469  | 1  | 5 |
| Carley                            | 418  | 15 | 9 |
| Rose & Co.                        | 400  | 13 | 7 |
| Carey                             | 395  | 10 | 8 |
| Wallis & Co.                      | 390  | 0  | 0 |
| Peerless, Dennis & Co.            | 387  | 10 | 0 |
| Wood                              | 372  | 10 | 2 |
| Young                             | 371  | 6  | 2 |
| JAMES & Co., Guildford (accepted) | 309  | 0  | 0 |

**SCOTLAND.**

For works in connection with the Westruther water supply, for the Berwickshire County Council. Mr. T. R. ATKINSON, engineer, Earliston.

|                                      |        |    |    |
|--------------------------------------|--------|----|----|
| Murray & Milne                       | £1,057 | 16 | 3  |
| Hood & Son                           | 614    | 0  | 0  |
| Flett                                | 570    | 0  | 0  |
| Jackson                              | 538    | 10 | 8  |
| Stirling & Kinniburgh                | 451    | 10 | 0  |
| Murdison                             | 441    | 0  | 0  |
| MURDISON, Earliston, N.B. (accepted) | 410    | 18 | 10 |
| Thomson                              | 233    | 18 | 0  |

**SELDOWN.**

For the erection of a mixed secondary school for 200 scholars at Seldown, Poole. Mr. W. ANDREW, architect, Parkstone.

|                           |        |   |   |
|---------------------------|--------|---|---|
| Jones & Sons              | £5,600 | 0 | 0 |
| Trask & Sons              | 5,498  | 0 | 0 |
| Jenkins & Sons            | 5,358  | 0 | 0 |
| Drake                     | 5,350  | 0 | 0 |
| A. & F. Wilson            | 5,297  | 0 | 0 |
| Burt & Vick               | 5,245  | 0 | 0 |
| Whitaker                  | 5,197  | 0 | 0 |
| George & Harding          | 5,075  | 0 | 0 |
| Baker & Percy, Parkstone* | 4,932  | 0 | 0 |
| Harris (withdrawn)        | 4,570  | 0 | 0 |

\* Accepted subject to reductions.

**SWINTON.**

For the following work in connection with their electrical undertaking, for the Swinton and Pendlebury Urban District Council.

*Accepted tenders.**Contract No. 1.*

Gerrard & Sons, sub-station buildings . . . £797 0 0

*Contract No. 2.*

Thomas, switch-boards, instruments and electrical connections . . . 238 4 6

*Contract No. 3.*

Callender's Cable and Construction Co., mains . . . 5,959 17 11

*Contract No. 4.*

Ferranti, Ltd., meters . . . 221 0 0

**WALLBOTTLE.**

For erection of school. Mr. J. WIGHTMAN DOUGLAS, architect, Newcastle-on-Tyne.

|                             |        |    |    |
|-----------------------------|--------|----|----|
| Maughan & Jordan            | £2,833 | 3  | 0  |
| McNeil & Son                | 2,499  | 0  | 0  |
| Haswell & Waugh             | 2,405  | 0  | 0  |
| Easton, Ltd.                | 2,301  | 0  | 0  |
| Anderson                    | 2,297  | 1  | 6  |
| Thirlwell & Son             | 2,294  | 12 | 0  |
| Mauchlen                    | 2,254  | 0  | 0  |
| Charlton & Henderson        | 2,253  | 8  | 7  |
| Veitch & Jordan             | 2,231  | 5  | 11 |
| Hall                        | 2,230  | 6  | 8  |
| Craven                      | 2,215  | 1  | 1  |
| Forster                     | 2,167  | 0  | 0  |
| J. & W. Lowry               | 2,156  | 0  | 0  |
| Hope                        | 2,154  | 0  | 10 |
| George                      | 2,138  | 0  | 0  |
| Middlemiss Bros.            | 2,113  | 17 | 6  |
| Jackson & Son               | 2,093  | 8  | 2  |
| Wilson                      | 2,042  | 5  | 5  |
| Henderson & Son             | 1,987  | 8  | 7  |
| Ayton                       | 1,957  | 15 | 6  |
| DAVISON, Blaydon (accepted) | 1,898  | 7  | 11 |

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For Index of Advertisers, see page x.

WEMBLEY.

For the making-up of Swinderby and part of Eagle Roads.  
Mr. CECIL R. W. CHAPMAN, surveyor.

Swinderby Road.

|                    |        |    |    |
|--------------------|--------|----|----|
| Mowlem & Co.       | £2,103 | 0  | 0  |
| Brummel            | 1,891  | 4  | 6  |
| Trueman            | 1,887  | 0  | 0  |
| Fowles             | 1,864  | 12 | 8  |
| Davies, Ball & Co. | 1,852  | 6  | 1  |
| Haynes             | 1,844  | 0  | 0  |
| Gibbons            | 1,833  | 6  | 8  |
| Bower Bros.        | 1,784  | 12 | 0  |
| Adams              | 1,780  | 17 | 3  |
| Tribe & Co.        | 1,671  | 9  | 10 |
| W. & C. French     | 1,670  | 14 | 8  |
| GIBBONS (accepted) | 1,654  | 14 | 8  |
| Free & Sons        | 1,637  | 11 | 11 |

Eagle Road.

|                    |     |    |    |
|--------------------|-----|----|----|
| Mowlem & Co.       | 453 | 0  | 0  |
| Bower Bros.        | 424 | 7  | 6  |
| Trueman            | 409 | 0  | 0  |
| Haynes             | 408 | 0  | 0  |
| Fowles             | 406 | 13 | 8  |
| Brummel            | 405 | 15 | 2  |
| Gibbons            | 404 | 3  | 11 |
| Davies, Ball & Co. | 401 | 19 | 9  |
| Adams              | 396 | 1  | 7  |
| Tribe & Co.        | 377 | 8  | 6  |
| GIBBONS (accepted) | 376 | 6  | 0  |
| Free & Sons        | 374 | 2  | 3  |
| W. & C. French     | 363 | 11 | 7  |

WILLINGTON.

For the erection of stone walls to enclose cemetery ground.  
Mr. J. H. GARDNER, surveyor, Willington, Durham.

|                                    |      |    |   |
|------------------------------------|------|----|---|
| Craggs & Miller                    | £305 | 0  | 0 |
| Robinson                           | 281  | 15 | 0 |
| Walton                             | 278  | 10 | 0 |
| Handley                            | 250  | 0  | 0 |
| HILTON, Bishop Auckland (accepted) | 246  | 19 | 9 |
| Lee & Sons                         | 245  | 0  | 0 |
| Surveyor's estimate                | 250  | 0  | 0 |

WIMBLEDON.

For the erection of new premises, Raynes Park, for the London and South-Western Bank. Mr. C. L. MORGAN, architect, 43 Cannon Street, E.C., and Haslemere.

|                                         |        |   |   |
|-----------------------------------------|--------|---|---|
| Haslemere Builders                      | £3,875 | 0 | 0 |
| Rowe & Co.                              | 3,511  | 0 | 0 |
| L. & M. Patrick                         | 3,509  | 0 | 0 |
| Gibbins & Co.                           | 3,413  | 0 | 0 |
| Lole & Co.                              | 3,399  | 0 | 0 |
| Holloway                                | 3,386  | 0 | 0 |
| Hammond                                 | 3,348  | 0 | 0 |
| Young                                   | 3,348  | 0 | 0 |
| Burgess                                 | 3,322  | 0 | 0 |
| Smith & Son                             | 3,296  | 0 | 0 |
| Turtle & Appleton                       | 3,290  | 0 | 0 |
| Whitehead & Co.                         | 3,264  | 0 | 0 |
| LAWRENCE, Kingston-on-Thames (accepted) | 3,250  | 0 | 0 |
| Architect's estimate                    | 3,500  | 0 | 0 |

(Received too late for classification.)

BARNESLEY.

For carrying-out the new sewage works.

Contract No. 3.—Construction of works.

CUNLIFFE, Birmingham (accepted) £15,050 0 0

Contract No. 2.—Septic tanks, filters and conduits.

JENNINGS & Co., Lambeth (accepted) 868 0 0

BRIDLINGTON.

For carrying-out dams, Dyke Road improvement works.

SAWDON (accepted) £867 0 0

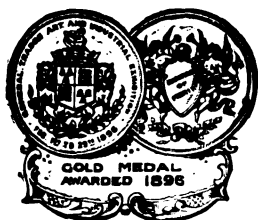
LONDON.

For the erection of business premises, Turnham Green Terrace, Chiswick, W., for Mr. Arthur Boyd. Messrs. PALGRAVE & Co., architects, 28 Victoria Street, S.W.

|                                      |        |   |   |
|--------------------------------------|--------|---|---|
| Thomas & Edge                        | £4,198 | 0 | 0 |
| McLaughlin & Harvey                  | 4,053  | 0 | 0 |
| Ward & Son                           | 3,900  | 0 | 0 |
| Smith & Son (provisionally accepted) | 3,585  | 0 | 0 |

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## TRADE NOTES.

THE Excelsior Patent Stone Company are enlarging their works at Finedon sidings by the addition of three moulding shops measuring about 70 feet square; a new locomotive-shed has also been erected to accommodate the shunting-engines. The company having lately been placed on the approved lists of manufacturers to the War Office, and being on the lists of the Admiralty as well as many other public bodies and corporations, the present additions to their works were necessary in order to cope with the general expansion of their business.

MESSRS. GEORGE MILLS & Co., of Radcliffe, the proprietors of Mills's modified "Titan" sprinkler, have received the following letter relating to the action of their sprinkler in the case of a fire which broke out in an oil store-room:—"9 Murano Place, Edinburgh: November 5, 1906. Dear sirs,—We beg to intimate that on Wednesday, August 8, a fire broke out in our store-room, and what would have been a disastrous fire to us owing to the amount of oils, &c., which we had stored in this place, was extinguished by the quick action of the 'Titan' sprinkler fitted up by your firm, the damage being so slight that we have made no claim against our insurance company. This is the first occasion on which they have come into operation, and we can only say that we are delighted with the way in which they work.—We are, yours faithfully, WM. CUMMINGS & SON."

## NEW CATALOGUE.

THE Simplex Conduit Company have sent us their new pocket price-list, which is of a compact and convenient size. The Simplex Company very naturally are much elated at the fact that the British standard specification for steel conduits for electric wiring, which has been quite recently devised, is practically the Simplex practice, which they have been issuing in their catalogues for years past.

THE members of the Bridge House Estates committee have decided the form of tender for the widening of Blackfriars Bridge.

## ELECTRIC NOTES.

MAJOR TULLOCH, Local Government Board inspector, held an inquiry at the Eastbourne town hall into an application by the Town Council to borrow 10,890*l.* for purposes of electric lighting, and also 500*l.* for the purpose of building up part of the pleasure grounds near the Redoubt.

THE Bill to be submitted to Parliament next session by the Channel Tunnel Company seeks power for the construction of a submarine railway, which at Dover is to be connected with the systems of the South-Eastern and Chatham companies and on the French side of the Channel with the Northern of France and other lines. The tunnels will be lighted and worked by electricity, and land is to be acquired near the Kent shore in the Alkham Valley for the erection of a generating station, space being likewise reserved in the same neighbourhood for the deposit of the excavated chalk.

A LOCAL GOVERNMENT BOARD inquiry was held at the Bolton town hall by Mr. H. R. Hooper, M.A., M.Inst.C.E., into the Corporation's application to borrow 20,000*l.* for electric lighting and 3,373*l.* for works of paving. In the first three years there were the following losses on the electricity:—1895, 591*l.*; 1896, 1,054*l.*; and 1897, 269*l.* The next year saw a profit of 306*l.*, and last year this was 6,109*l.* The money was wanted for mains, house service and meters. The latter was subsequently withdrawn, and the town clerk said they would purchase them out of revenue. The net profit since 1898 on electricity was 32,209*l.*, and the amount paid in aid of rates was 29,582*l.*

NOTICE has been given to the Arbroath Town Council that it is the intention of Mr. George Balfour, electrical engineer, London, to apply immediately for a provisional order in connection with his proposal to introduce the electric light in the burgh. In March last the Town Council resolved to give their support to Mr. Balfour in obtaining such an order, on the basis of an agreement then entered into with him. The works will be erected on what is known as the Shambles site in Grimsby, and the Town Council will have the power to take over the works, if they choose, at mutual valuation as a going concern either at the end of thirty years from the term of Martinmas succeeding the date of the order or at the expiry of every period of five years thereafter.

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CATHEDRAL SERIES.—MANCHESTER: THE SOUTH PORCH AND TOWER.

HOUSE, WAKEGREEN ROAD, MOSELEY.

## BUILDING AND BUILDERS.

THE American Smelting and Refining Company is erecting a model town near Trinidad, Colorado. All the buildings will be constructed entirely of concrete.

MR. WILLIAM STARK, of Fordmouth, Cobham Road, Westcliff-on-Sea, builder, who died on October 7, left estate of the gross value of 61,503*l.* 10*s.* 6*d.*, including personality of the net value of 43,718*l.* 13*s.* 7*d.*

THE East Ham Council has decided to make application for a provisional order to borrow 28,250*l.*, this being the excess money spent on the erection of municipal buildings in the borough and the cost of the proposed erection of new public health department offices.

MR. G. MACFARLANE, president of the National Federation of Building Trade Employers, and Mr. Dennis Haggerty, general secretary of the United Builders Labourers' Union, have been appointed by the Home Secretary to be additional members of the committee of inquiry into the dangers attendant on building operations.

THE Glasgow Corporation last week defeated a motion "That it be remitted to a special committee of the Corporation to consider and report on the expediency of instituting, in the public interest, where practicable, a works department of the Corporation, whose committee shall be charged with the duty of carrying out the work that at present is executed for the Corporation by private contractors."

THE Hampshire County Council have adopted the following recommendations of their education committee:—The raising of a loan of 5,700*l.* for the erection of a new infants' Council school at Eastleigh; the expenditure of 2,155*l.* for a new Council school at Lee-on-the-Solent; the borrowing

of 4,000*l.* for rebuilding Arlesford Grammar school; the raising of a loan of 600*l.* by Winchester for a head master's house at Peter Symond's school, Winchester.

THE Birmingham housing committee have decided to meet in future once in every fortnight, instead of monthly, as hitherto, in consequence of the increased work devolving upon the committee. A new sub-committee, whose duty it will be to interview owners whose property has come under official notice, was appointed. The hope is entertained that the new arrangement will facilitate the convenience of property owners, and will lead to a more equitable division of the detail work, much of which has hitherto been done by the chairman, among the members of the committee.

THE great Singer building now being built in Broadway, New York, which will rise forty-one storeys, or over 600 feet above the ground, is to have, according to the *Glasgow Herald*, a novel equipment in the shape of a huge wind anchor, by which it is claimed the skyscraper will be able to defy the severest storms. Rods 3½ inches in diameter will descend nearly 50 feet into a concrete foundation on solid rock 90 feet below the surface. They are bolted to a large anchor plate and above to a hollow column running to the top of the building. The device is attracting much attention among builders.

THE Oswestry Town Council have considered a long letter from the local branch of the Amalgamated Society of Painters and Decorators, in the course of which it was stated that the caretaker of the Corporation bath and gymnasium had been employed painting that building. They wished to protest against this, and point out how very unfair it was to properly qualified tradesmen of the town, several of whom were unemployed at the present time, if unskilled labourers were to be allowed to do skilled labour. It was contrary to the spirit of the "fair wage clause," of which members of the Council professed to be supporters. The communication was referred to the baths and gymnasium committee without comment.

IN consequence of the large number of students in attendance at the London County Council School of Building, extensions of the teaching staff are necessary. It is recommended that assistant teachers be employed at the London County Council School of Building in connection with the

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classes in architectural drawing and design, builders' quantities, and painting and decorating in the session 1906-7, for one, one and two attendances a week respectively. In order to make the stone-carving and wood-carving classes more widely known, Professor Beresford Pite, F.R.I.B.A., the director of architectural studies at the school, proposes to give a course of six free lectures at the London County Council School of Building to students and their friends, which commenced on November 19.

A CONFERENCE between the representatives of the Aberdeen Master Plumbers' Association and the operative plumbers on strike took place last week in the town house, Aberdeen, with the view to coming to some settlement on the points in dispute. The conference lasted for between two and three hours, but no decision was arrived at, the operatives stating that they would require to place the modifications on the suspension clause before their union. The modified rule is, "That employes may leave or be dismissed on three hours' notice. Work may be stopped when weather circumstances are unsuitable for the class of work engaged in." Formerly the rule was that employes could be dismissed without notice, and that work could be suspended when weather or other circumstances were unsuitable, and that the employes should be paid for the time worked. It was subsequently announced that the men would accept the proposals of the employers.

THE manager of the Glasgow City Improvement Department (Mr. Menzies) has issued notes on the operations of the department. It states that the revenue for the year ended in May 1906 was 33,413*l.*, against 28,271*l.* for the previous year. The expenditure, too, had expanded, but through the increased revenue the committee had been able to carry on their operations without any increase of the rate, which is fixed for the second year at 3*d.* per *l.*, as compared with 1*d.* for the previous year. The number of houses erected by the department during the twelve months was 159, the total number erected now altogether being 2,124. Of these 570 are one-apartment houses and sixteen are houses of larger accommodation. Three tenements of dwelling-houses for the poorest classes at Winning Row, Parkhead, consisting of thirty-six two-apartment houses, are at present in course of erection or under consideration. The cost of these is estimated at 3,446*l.*

THE Durham County Council recently conducted an inquiry as to the housing conditions prevailing at Ushworth. The complaints as to overcrowding proved to be correct. The District Council were thereupon asked to put in force the Housing of the Working Classes Act and to provide satisfactory accommodation, but they refused. The health committee reported to the County Council that they had now got to the point that they should take into their own hands the power of the District Council under the Act. The cost would be borne by the District Council. The County Council would find the money in the first place, and then would apply to the District Council to levy a rate to repay it. They proposed to build about fifty houses at a cost of about 200*l.* each. The committee were empowered to employ architects, surveyors and such other assistance as might be necessary, and to enter into contracts for the purchase of sites and the erection of houses, subject to the approval of the Council.

THE Woking Urban District Council have received the sanction of the Local Government Board for by-laws intended to facilitate the erection of cheap cottages. The new building by-laws, which the District Council are about to adopt, will permit of the erection of one-storey or bungalow dwellings being constructed of timber, provided it is not placed within 10 feet of a street, but should the street be of a less width than 30 feet, the distance has to be increased to 15 feet. The building, if it does not exceed 8,000 cubic feet, must not be within 15 feet of adjoining lands or premises. Should the building exceed 8,000 cubic feet but not 12,000 cubic feet, the distance from adjoining premises has to be increased to 25 feet, and so on in proportion to the size of the building. The upper storey of two-storey buildings may be constructed of timber or other material, provided they do not exceed two in number, and are not placed within 15 feet of adjoining lands or premises. This distance is likewise increased in proportion to the size of the building, as is the case in the one-storey buildings.

THE Bath education committee have accepted the offer of the art master, who said that the students would be prepared to work out a decoration scheme for the walls of the life-room.

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## VARIETIES.

THE Salford Guardians are going to purchase a site on the Crescent, with a view to the erection of union offices.

THE Chilian Chamber has approved the Bill providing for the reconstruction of Valparaiso, and authorising a loan of a million sterling for that purpose.

THE Poplar Guardians have decided to apply to the Local Government Board for the authorisation of a further loan of 27,000*l.* for expenses incurred in the erection of the new school premises at Hutton. The total cost is now estimated at 171,000*l.*

THE Bognor Urban Council are about to make application to the Local Government Board for sanction to borrow 950*l.* for the purpose of widening and improving the entrance to the pier, and a further sum of 865*l.* for the erection of an enlarged landing-stage at the head of the pier.

No fewer than three metropolitan theatres will be submitted for sale by auction at an early date, these being the Imperial at Westminster, built six years ago at great expense for Mrs. Langtry; the Greenwich theatre, and the Lyceum, with which Sir Henry Irving was so long associated.

THE Bank of England have purchased freehold land nearly three-quarters of an acre in extent at the corner of Content Street and Rodney Road, Walworth. Here the Governors propose at an early date to erect a building for the storage of papers and records.

A VISITOR to Hastings in the summer went on to the pier and leant over the railing. A freshly painted pipe, of which no warning was posted, left wide red marks on his coat. At the Hastings County Court his Honour Judge Scully awarded him 1*l.* damage and 1*s.* costs against the Pier Company.

THE Lancashire County Council road from Preston to Blackpool was opened on Monday. The road has decreased the distance between Preston and Blackpool to 17½ miles, and is the longest, largest and costliest work undertaken by the Lancashire main roads and bridges committee. The cost has been close upon 30,000*l.*

THE Harbour Commissioners of Quebec are agitating for extensions and improvements to the port in the way of new docks, wharf sheds and cargo-handling apparatus. The

plans for the proposed work have already been prepared, and show an immense and complete range of port equipments, which, it is estimated, will cost at least 5,000,000 dollars.

A SPECIAL meeting of the Warrington Town Council passed a resolution by a large majority deciding to settle the action brought against the Corporation by Colonel Edelsten, by carrying out the agreement made with him by the late mayor for the purchase of his mill for 8,000*l.* for street improvement purposes. The settlement was opposed by the non-traders.

THE higher education committee of the Cheshire County Council have offered the Corporation of Congleton 1,000*l.* towards the building and equipment of a technical institute for evening classes for Congleton and district. The Corporation have selected a site for the new buildings in Park Lane, and will find the balance of the cost out of an education rate of 1*d.* in the pound.

A SPECIAL committee of the Tarvin Rural District Council in Cheshire was recently appointed to consider what building by-laws, if any, were suitable for adoption. The majority concluded that the expense necessary for their enforcement would not be counterbalanced by the advantages. It has therefore been resolved to continue in their independence.

THE Hull City Council have adopted the report of the abattoir committee, according to which they had entered into contracts for the purchase of properties in the neighbourhood of Madley Street and Strickland Street for a site for an abattoir, and they asked for powers to deal with the three owners of property with whom negotiations had failed. The scheme is estimated to cost 50,000*l.*

DUNDEE gas committee recommend the Town Council to apply, in the provisional order, for powers which will enable the department to undertake the lighting of closes and common stairs. It is proposed that the work of lighting and extinguishing such lights should be undertaken by Corporation employes, and that the gas should be provided, in the first instance, at the cost of the rates.

THE application of the Littlehampton Urban Council for sanction to borrow 10,000*l.* for works of sewerage in the

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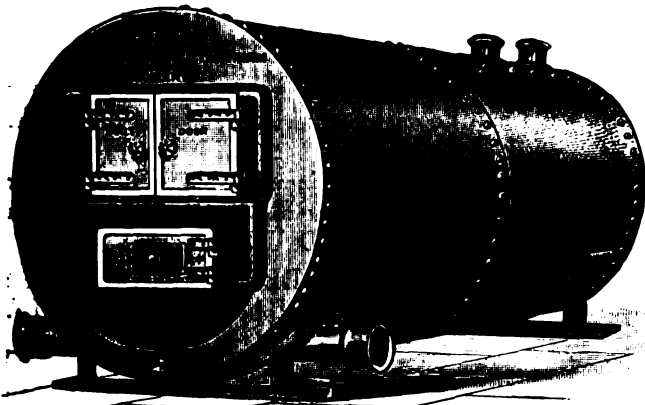
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For Index of Advertisers, see page x.

parish of Wick, contiguous to Littlehampton, was the subject of an inquiry conducted at Littlehampton by Mr. E. S. Fawcett, M.I.C.E., an inspector of the Local Government Board. In the course of the proceedings a petition against the scheme signed by seven out of fifteen members of the Council was put in.

THE Dundee and Arbroath Joint Railway directors have resolved to apply at once for Parliamentary powers to construct a new railway station at Arbroath, and also for power to extend their lines at Dundee harbour. The directors have considered that it would not be judicious to include the Methil harbour scheme with the Arbroath station, as the former is likely to be rather controversial, while there is no likelihood of opposition to the Arbroath railway station.

THE Southport, Birkdale and West Lancashire Water Board have decided, with the sanction of the Skelmersdale Urban District Council, to apply to Parliament for power to purchase the Scarth Hill water undertaking, which at present supplies Skelmersdale. The price agreed upon by the two authorities to be paid for the pumping station and the mains connected therewith is 22,500*l.*; of that sum 17,000*l.* is to remain on mortgage with the Board at 3 per cent. for a term of thirty years.

At the Alexandra Dock extension works, Newport, the offices of the contractors (Messrs. Eaton Gibb & Son), together with the stores and workshops, have been removed to a site about 250 yards distant from their original position. This was rendered necessary by an alteration in the line of the south slope of the dock. Instead of adopting the usual plan of removing the corrugated iron structures piecemeal and re-erecting them, the contractors removed the entire buildings by lifting them bodily with cranes.

A CONFERENCE of authorities concerned in the protection of the Rottingdean road, near Brighton, from the inroads of the sea have adopted the scheme of the East Sussex county surveyor, who advised the construction of groynes between Roedean sewer ventilating shaft and Rottingdean, at a cost of 5,000*l.*, and the trimming of the cliffs at a further cost of 3,000*l.* Efforts are to be made to obtain an extension of time in order to allow of notice being lodged of the necessary Parliamentary Bill for the ensuing session.

THE first complete year's operations of the Birmingham Rowton Houses Company, Ltd., has resulted in a profit out of which the directors are able to declare a dividend. The accounts, after making ample provision for repairs and renewals, show a profit for the year of 2,091*l.* 5*s.* This, with the profit brought forward from the previous seven months' trading of 440*l.* 16*s.* 11*d.*, makes an available balance of 2,532*l.* 1*s.* 11*d.*, which the directors propose to appropriate as follows:—(a) To pay a dividend at the rate of 3 per cent., free of income-tax; (b) to place to reserve 500*l.*; (c) to carry forward to next year's account 572*l.* 2*s.* 11*d.*

THE improvement of the railway facilities at Scarborough has been definitely decided upon. The total estimated outlay is 34,000*l.* It is proposed to lay additional lines of metals as far as Seamer, to widen the Westbourne Grove ("Five Arches") bridge, and to erect an island platform a little distance to the west of the tunnel leading to the Scarborough and Whitby coast line. The estimated cost of these works is 22,000*l.* It is also proposed to spend 12,000*l.* or 15,000*l.* in making sidings beyond the present goods yard in what was formerly known as Gallows Close for the accommodation of empty excursion trains.

THE Brighton education committee have been informed that the plans for the enlargement of the Hanover Terrace schools did not comply with the borough by-laws in respect of air space, and also that the offices being in such close proximity to the school buildings are likely to be dangerous to the health of both scholars and teachers. In consequence it has been agreed that it be an instruction to the sites and works committee that the site of another cottage in Coleman Street be thrown into the playground of the girls' school, so that new offices could be placed 20 feet instead of 5 feet from the south end of the new covered playground.

At the town hall, Mansfield, Mr. R. H. Hooper, an inspector of the Local Government Board, held an inquiry into applications from the Town Council for sanction to loans—13,500*l.* for the gas undertaking and 8,000*l.* for the electricity works. The inspector pointed out that there was no need for the excess expenditure which had taken place, and he refused to allow a number of items in both applications. A number of items of small cost, under 10*s.*, included in the electricity committee's desired loan, he said,

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ought certainly to be paid for out of revenue. If they charged every possible item of expenditure to capital account the undertaking could not succeed; it would become over-capitalised. He hoped that expenditures in excess of powers would stop.

THE Corporation of Dublin officially announce that they have applied to the Local Government Board for Ireland for their sanction to loans of 9,000*l.* and 134,842*l.* 8*s.* 6*d.* for the purposes respectively of completing the Bride's Alley area improvement scheme under the Housing of the Working Classes Acts, and providing an additional storage reservoir at Roundwood in connection with the water supply to the city. The balances of the outstanding loans contracted by the Corporation under the Sanitary Acts and the Public Health (Ireland) Act, 1878, exceed the assessable value for one year of the premises within the district in respect of which such moneys may be borrowed. The Local Government Board have directed their chief engineering inspector, Mr. P. C. Cowan, M.Inst.C.E., to hold a local inquiry in the matter at the city hall, Dublin, on December 6.

A BIG area of peat has been discovered on the upper part of the bank of Swansea's new reservoir at Cray. The works manager, in reporting the existence of a bed of about 12,000 cubic yards on the bank, a few feet above the present level of the water, advises its removal at a cost of 75*o*/. A smaller bed was discovered some weeks ago, and as a discolouration of the water was attributed to its presence it was removed. The Corporation engineer, however, denies that the first bed was removed because of the discolouration, although the fact of the discolouration is not denied, nor is the further fact that the discolouration has since the removal disappeared. That bed, he said, was removed for soiling purposes at a cost of 50*o*/. The new peat bed is not a bit injurious, he says, and if the Corporation follow his advice they will leave it alone. At Edinburgh waterworks a peat bed 450 acres in extent was discovered, but it was not thought worth while to remove it. The recent discovery at Cray is above the present water level, underneath the grass, and about a yard deep.

THE difficulty working people have of securing a house in Burnley was shown at the Burnley County Court, when six tenants of cottages were sued for arrears of rent, and

ejection orders were applied for. Owing to the prosperous state of the cotton trade operatives' cottages are in great demand, and in almost every case the defendants complained that they could not get another house. Judge Bompas said:—"I cannot help that, I am afraid. You cannot stop in this house if it does not belong to you, and you have had proper notice. I am afraid you will have to go out, and if you cannot go anywhere else you will have to go to the workhouse. In England we have built these workhouses in order that no one may be able to say they have nowhere to sleep. It is no disgrace to go into the workhouse if the reason is that there is no other place to go to. It is a disgrace only when you go there and you could be doing your work." Later the Judge said, "It is very sad there should be any want of premises, and someone ought to try and get premises for these people, but I do not know whose business it is." Ejection orders were made in all cases.

### THE PLUMBERS' COMPANY.

THE Lord Mayor was the chief guest at the annual meeting of the Plumbers' Company held at the Haberdashers' Hall. Among the guests were the Right Hon. Sir Horace Plunkett, K.C.V.O., F.R.S., Sir Hugh Owen, G.C.B., Sir Douglas Powell, K.C.V.O., Sir Shirley Murphy, Sir Fredk. Pollock, Bart., K.C.V.O., Sir Alfred de Brock Porter, K.C.B., Sir Martin Conway, M.A., F.S.A., Mr. Alpheus Morton, M.P., Mr. R. L. Morant, C.B., Sir Samuel Provis, K.C.B., and a number of metropolitan and provincial mayors and presidents of architectural and engineering, educational and other bodies, as well as the presidents of the Associations of Master and Operative Plumbers.

The Master of the Plumbers' Company, replying to the toast of the Worshipful Company of Plumbers, referred specially to the ever extending work of the Plumbers' Company, whose operations had extended to far cities of the Empire. Important changes had been introduced during the past year in consolidating and making more efficient the Company's system of education and registration. Nearly 2,000 new men had been admitted to the class examinations and the register. He, however, warned all whom it concerned against setting aside the teaching

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of use and experience. The word "change" did not always spell "reform." He referred to the great traditional craftsmanship of the past which had resulted from a proper system of apprenticeship, and strongly advocated its revival. The Plumbers' Company aimed at union between all the forces which made for the same end, the safeguarding and improvement of the national health. They brought together health and water authorities, the professional classes and the plumber, and instituted a working arrangement which only needed legislative sanction to make it a complete protection to the genuine craftsman and the citizen.

He referred especially to the important labours of the joint committee on water regulations, which had been engaged in codifying water by-laws and standardising fittings, and whose important conclusions were only awaiting adoption by the Local Government Board. The Company took also a great interest in the industrial education committee of the conference sitting under Lord Selby's presidency, and from whose labours they looked for important results. The question of the training in craftsmanship of the artisan was the most serious and far-reaching which faced the country at the present moment. The Plumbers' Company believed in a system of apprenticeship adapted to modern needs, and the Operative Plumbers' Association was at one with them. He advocated an allied effort on the part of the National Union of Teachers, educational authorities and the workmen's unions to solve this question.

The Company set craftsmanship and citizenship, both dependent upon training, in the forefront, and he made an earnest appeal to the trades unions to set up a high standard of craftsmanship as their chief aim. If they did so, all the rest they stood for would follow, and the mists and misunderstandings which surrounded trades unionism would be dispelled.

#### ENGINEERING FELLOWSHIP.

THE second award of the Vulcan Fellowship (founded by the Vulcan Boiler and General Insurance Company) will be made this session of Manchester University. Applications should be made to the Registrar on or before December 10.

The Fellowship is of the annual value of 120*l.*, and will

be awarded by the Senate. The object of the Fellowship is the encouragement of advanced study and research in mechanical and electrical engineering, and every Fellow shall be required to devote the whole of the time during which he continues to hold the Fellowship to the pursuit under the direction of the Professor of Engineering of such study or research in the University, or, if a graduate in the University of Manchester, either in the University or other place sanctioned by the Senate.

The Fellowship is open to graduates of the University of Manchester, or of other universities who can furnish satisfactory evidence of being able to pursue original research. Election is in the first instance made for one year, but the Fellowship may, at the discretion of the Senate, be renewed for a second year if on the report of the Professor of Engineering its holder has made satisfactory progress with his research. If for special reasons it is thought desirable, the Senate may renew the Fellowship for a third year on the report of the Professor of Engineering that it is desirable to do so.

Fellows are required at the end of their tenure to present a report of the work done by them, such report to be laid before the Senate and Council, and to be submitted to the donors of the Fellowship. No award will be made in the absence of a suitable candidate, but if no award is made in any year the amount of the Fellowship may be applied, at the discretion of the Council, for an additional Fellowship in another year. The Fellow may, with the approval of the Senate, give an occasional course of lectures or demonstrations, or assist occasionally in the teaching of the University, but he may not hold any salaried office therein.

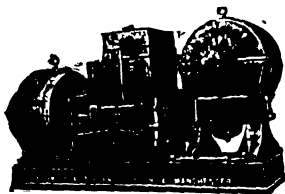
#### LONDON COUNTY COUNCIL HOUSING, 1905.

A RETURN by the housing of the working classes committee of the London County Council shows that during the year 1905 there were provided in houses of the working class in London 26,076 new rooms, and in certain suburban districts described as "extra-London" 36,874 new rooms, making a total of 62,950. The total number of rooms demolished was 12,013, of which 8,708 were in the central area. The net addition was therefore 50,937.

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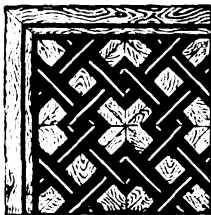
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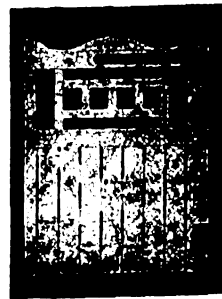
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The net addition to the number of rooms in the whole area was 53,499, 59,009 and 51,566 in the years 1902, 1903 and 1904 respectively. In the county of London the net addition was considerably less than in previous years owing to the unusually large number of houses demolished, the greater part of the new accommodation to replace this loss, so far as it has resulted from the exercise of statutory powers, having already been provided in previous years. It is worthy of note that of the 36,874 rooms added in the extra-London area, no fewer than 15,006 are situated in the eastern section, comprising East Ham, Leyton, Walthamstow, Wanstead and West Ham.

The extent to which the new accommodation for the working classes has sufficed to meet the increase in the working-class population is a matter which cannot be ascertained with any great degree of accuracy. Upon consideration of the number of persons occupying the Council's dwellings it is found that an average of one and a half persons per room is a reasonable figure to take for accommodation provided within the county area, and an average of one and a quarter persons per room may be taken as a general basis in the extra-London area. If this basis be adopted it may be stated that in the whole area accommodation for 67,248 persons has been added in the course of the year, as compared with 71,317, 79,130 and 69,212 in 1902, 1903 and 1904 respectively. If the population increased in the same ratio as in the decennium 1891-1901, the increase would be 100,852 persons of all classes, although it is believed that an estimate on this basis shows a larger increase than has actually taken place. On the assumption that the increase in the working-class population amounted to two-thirds of the total, such increase would be 67,235 persons on the basis of the decennial period for the whole area, or 60,109 persons on the basis of the last quinquennial period for London and the decennial period for extra-London, whereas accommodation for 67,248 persons has been provided.

With few exceptions there has been very little variation in the rents from year to year, but the figures in the return give some indication of a tendency in the rents in the central area to decrease, and in the rest of London and the extra-London districts to increase.

## CONSTRUCTION OF EDINBURGH TRAMWAYS

JUDGMENT was given in an action before Lord Salvesen by Dick, Kerr & Company, Ltd., Abchurch Yard, Cannon Street, London, against the Corporation of Edinburgh, for declarator that the defenders were bound to join with them in submitting a claim of 1,351*l.* 12*s.* 4*d.* to the final sentence and decree arbitral of the President for the time being of the Institution of Civil Engineers. The sum named was the price of material supplied for the construction of the cable tramways. The pursuers contended that the claim being for tramway works should be sent to arbitration. The defenders stated that the contract was at an end, and that there was nothing to send to arbitration, the claim having been finally discharged.

Lord Salvesen repelled these defences, granted declarator as craved, and sisted the action to wait the result of the arbitration, and found the Corporation liable in expenses. According to the *Scotsman*, his Lordship said it was an unusual form of action, but it was explained to him that the pursuers had been unable to approach the arbiter with a view to asking him to take up the reference, as the principal contract containing the arbitration clause founded on was in the hands of the defenders, who refused to give it up. No objection was taken to the competency of the action by the defenders. The pursuers executed the work of constructing the cable tramways in certain of the streets of Edinburgh under a series of contracts. These contracts contained two arbitration clauses. They were both of a very wide character, and it was difficult to see how the clause of reference contained in clause 4 of the general conditions could be enlarged. The defenders, nevertheless, pleaded that the claim which the pursuers desired to have referred did not fall within the reference. The claim itself was for the price of certain materials which the pursuers ordered in connection with their contracts for structural work, and which, owing to alterations on the original plans or otherwise, had been left over as being in excess of the amount actually required, and were now said to be of no value except for scrap. That claim might or might not be well founded, but with the merits of the claim he had nothing to do if the parties had contracted that that should be decided by an arbiter. In his Lordship's opinion

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the claim was clearly a "charge or account connected with the contract," and as every difference relating to such, whether arising during the progress of the contract or after its completion was referred, it could not be said that the reference was merely executorial of the contract. The defenders, however, contended that all claims of that nature were made the subject of special reference to the Corporation engineers in terms of the first head of the general conditions of the contract, which provides *inter alia* that they "may make such feasible alterations in the works during its progress as they may deem necessary," and in all cases where "such alterations affect the cost of the work the Corporation engineer shall determine whether they add to or reduce the cost, as well as the amount which shall on that account be added to or deducted from the contract price." They argued that on the face of it the claim was one which arose from an alteration of the contract, and that the Corporation engineers were supreme as to the amount which should on that account be added to the contractor's claim. His Lordship expressed no opinion as to whether that clause might be founded on as a defence on the merits, but it certainly was not, in his opinion, a clause of reference. One of the things which the parties expressly referred under one of the arbitration clauses proper was making claim for extra work, but such a reference would be meaningless if that fell to be finally decided by the Corporation engineers. He would say no more on the construction of article 1 itself, because that, too, was a matter that fell within the reference. The defenders further pleaded that the pursuers' claim was barred by its having been discharged on May 29, 1903. The averments on which that defence rested involved questions of fact about which the parties were entirely at variance. If the defendants had produced a tested discharge of the very claim sued on, he supposed the Court would have been entitled to proceed on such a discharge and not have passed on a discharged claim to the arbiter for his decision. But that was very far from being the state of matters, as it was plain the alleged discharge (assuming it was relevantly averred) could not be instructed without an allowance of proof. Mr. Cooper accordingly boldly asked for a proof of his averments, on the ground that the question of whether the claim had been discharged was not one which was remitted to the arbiter. He was unable to cite any

authority in support of that demand, and his Lordship saw no principle which compelled him to follow so unusual a course. A defence to the effect that a claim which was sued for was in whole or in part discharged appeared to him to be a defence on the merits, and was therefore one which fell within the jurisdiction of the arbiter. To hold otherwise would involve extraordinary consequences. According to the defenders' contention, the Court would have to ascertain by inquiry whether the claim had been discharged, an inquiry which might in many cases involve a consideration of the nature of the claim itself, while the arbiter might hold in the end that no claim existed which required to be discharged. Conversely if the claim were referred, the arbiter on the same reasoning could not consider as part of the defence that it had been expressly or implicitly discharged in whole or in part; but would have to give his decision on the merits of the claim without reference to the question whether it still subsisted. The sound view appeared to his Lordship to be that the parties had simply substituted for the Court a private tribunal of their own which was to settle the enumerated disputes exactly as the Court would have settled them but for the clause of reference. He accordingly proposed to repel the first, third and fourth pleas in law for the defenders. It followed that the pursuers were entitled to decree in terms of the leading conclusions of the action. *Quoad ultra* he would sist the cause to await the decision of the arbiter; so that if the pursuers were successful before him, they might be enabled to enforce payment of any sum awarded by means of the present action.

#### THE INSTITUTION OF CIVIL ENGINEERS.

At the ordinary meeting on Tuesday, November 13, Sir Alexander Kennedy, LL.D., F.R.S., president, in the chair, the paper read was "Single-Phase Electric Traction," by C. F. Jenkin, B.A., Assoc.M.Inst.C.E. The following is an abstract of the paper:—

A paper on "Electric Traction on Railways," by Messrs. Mordey and Jenkin, was read before the Institution in 1902. The object of the present paper is first to bring the previous account of the different systems up to date, and to show

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how far the conclusions then arrived at have to be modified in the light of recent experience; and then to describe the equipment required for single-phase working and to discuss the different problems which arise in connection with it.

Little advance has been made in continuous current working. The voltages have risen a little and a few cases are mentioned where pressures of 1,000 and 3,000 volts are in use. The principal advances in three-phase working have been the completion of the Zossen experiments, the opening of the Valtellina line, and the adoption of three-phase working for the Simplon Tunnel. The importance of the experience gained on these lines is pointed out.

A list is given of a number of single-phase lines now running and under construction. The history of the introduction of the single-phase motors which have made this advance possible is briefly related. It is shown that experience has confirmed Messrs. Mordey and Jenkin's conclusion that the single-phase is the only system which can satisfy all the requirements of a general system. A general explanation is given of single-phase traction motors, and the two types now most in use are described—the compensated series and compensated repulsion motors. Their relative merits and the methods of control are discussed, and particulars are given of the contractors and the magnets which operate them. A table is given showing the limits of voltage at which flickering is visible with glow-lamps on a low-periodicity supply.

The permanent-way equipment is then described, a method of calculation being given for finding the drop of voltage in any parts of the circuit. Illustrations taken from numerous tests made on an actual railway are given, confirming the theoretical calculations.

The advantages of high pressure and low periodicity are dwelt on, methods for reducing the drop in the rails are described, and the hope is expressed that large drops will be allowed. Electrolysis, danger from shocks, and interference with telegraph and telephone-lines are discussed, with examples of methods which have been successfully used for avoiding them. Automatic signalling is shown to be possible without a fourth rail. The mechanical design of the overhead construction is dealt with, four main types being described. The advantages of the newer methods for overcoming the effects of temperature, wind, &c., are pointed

out. Suitable insulators and safety-devices, also special work through bridges, &c., are illustrated. Collector-bows are discussed and the various designs are described, their suitability for high speeds being the most important point. The difficulties of design of single-phase generators are briefly mentioned, and the possibility of using two-phase and three-phase generators is discussed, with examples.

### THE BULFORD HUT BARRACKS.

THE committee of public accounts in their report to Parliament, comment on the fact that in the Southern District, at Bulford, the Army Council carried out certain considerable works without offering the contracts for competition and without consulting the Treasury upon this unusual procedure. This occurred in the erection of certain hut barracks, and in the case of some accommodation for the mounted infantry.

In the case of the huts, the General Officer Commanding placed before the Army Council the following reasons for the adoption of the course proposed:—"The reasons are that we have an existing contract with Messrs. Playfair & Toole; that this is coming to an end, and they therefore have staff and plant they can at once turn to account; that we can give them an order under this contract without the delay of printing fresh bills of quantities, specifications, &c., and issuing forms of tender to all the firms on the approved list; that we can give the orders piecemeal as we settle the details for each class of hut. . . ." As the addition to the contract already given was only about 11 per cent. your committee, if Treasury consent had been obtained, might have allowed this matter to pass. The case of the mounted infantry buildings is more serious; the original contract was for 28,150*l.* and the new contract was for 42,000*l.* The reasons advanced by the General, which had weight before, cannot be considered adequate when the new work, instead of being an addition of 11 per cent. to the original contract, is no less than 150 per cent. Here a contractor, by taking a small contract, gets upon the ground, and then, to the exclusion of every other firm, he tenders first for a smaller work and then for a much larger one. These contracts

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were authorised by the Secretary of State, who considered that the urgent needs of the service outweighed the admitted financial objection. Your committee cannot accept this view, and must record their opinion that if the need was very urgent it could have been so strongly placed before the Treasury that the approval of that Department could have been secured. It is possible that this was a service which would have been unduly delayed had it waited for the direct sanction of Parliament by inclusion in the schedule of the Military Works Loans Bill for the ensuing year, but Parliament having provided this special machinery of Treasury sanction to meet such cases of urgency, any departure from the authorised practice is open to the severest criticism.

#### A BURGH ENGINEER'S CLAIM.

THE record has been closed in the Court of Session, according to the *Dundee Advertiser*, in the action raised before Lord Ardwall at the instance of Mr. William Mackison, civil engineer and architect, Dundee, against the Lord Provost, Magistrates and Councillors of the burgh of Dundee. The purpose of the action is to recover 49,601*l.*, restricted to 15,000*l.*, for extra work which the pursuer alleges he performed during his term of office, which began in 1868. The pursuer's statement was published on September 21.

The defenders plead, among other pleas, that the pursuer's averments are irrelevant and insufficient, or, at all events, are too vague and wanting in specification to be remitted to probation. They also plead that the pursuer is barred by delay and acquiescence, and that the sums claimed have prescribed and can be proved only by his writ or oath; further, that the work in respect of which the pursuer sues was included within the duties of his office as burgh engineer, and is covered by the salary duly paid to him as such. It is denied that the pursuer was employed by the defenders to perform work outwith his duties as surveyor of police. It is admitted that during his tenure of office as surveyor of police he performed, as it was his duty to do, the engineering work necessary in connection with the preparation and execution of various local Parliamentary measures and of various public construction works. Some

of the work authorised during his tenure of office is at present being carried on as part of the ordinary work of the burgh engineer's department. The preparation and revision of clauses in Bills formed no part of the pursuer's duties, being undertaken in the office of the town clerk, and the pursuer was consulted only with regard thereto in so far as engineering matters within his province were concerned. The defenders deny that the pursuer was employed by the defenders and their predecessors with regard to the Bills and Acts enumerated and the various public works carried out by them during the pursuer's tenure of office, on the footing that he was to be paid for such work over and above his official salary, or that any such agreement was ever entered into. All work of the kind referred to performed by pursuer during his tenure of office was within the ordinary scope of his duties as surveyor of police, and was so regarded by him and them all along. Further, it was the regular practice of the pursuer to render to the treasurer in connection with each work, for inclusion in the expenses thereof, an account of the proportion of the salaries of himself and his staff which he deemed applicable thereto, and he at no time suggested that he reserved further claims to remuneration as against any of these undertakings. It was essential that the defenders should be informed of the total outlay, including engineer's charges, involved in each of their public undertakings in order that their borrowing powers and assessments might be adjusted accordingly, and the defenders relied on the accounts rendered by pursuer as disclosing all charges of an engineering character effeiring to each undertaking. The defenders gave detailed replies and explanations as to the specific items mentioned by the pursuer. They deny that they have ever recognised or admitted liability to pay the pursuer any sum over and above his official salary in respect of the work specified, and that he ever formulated his claims or pressed for a settlement until shortly before the raising of this action. They say that by the tramway minute of October 18, 1900, they directed that the work in question should be carried out in the pursuer's department as part of the ordinary work thereof and in conformity with the defenders' practice in similar cases.

The case was sent to the procedure roll.



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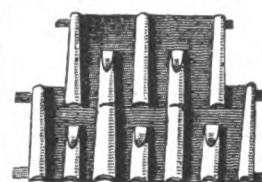


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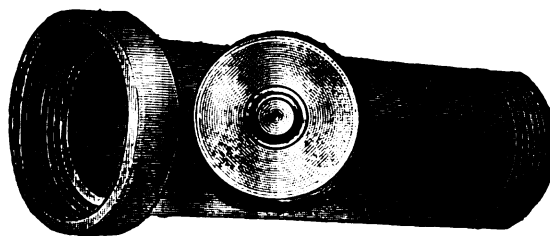
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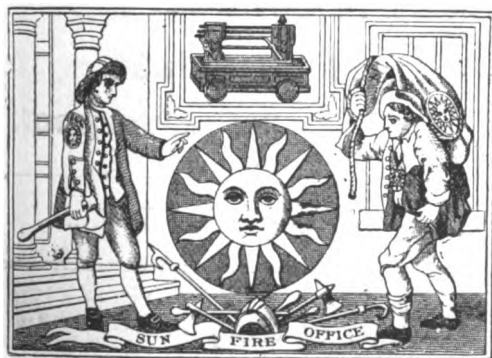
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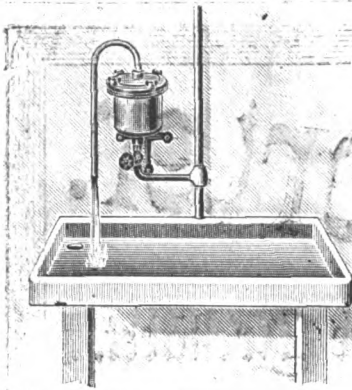
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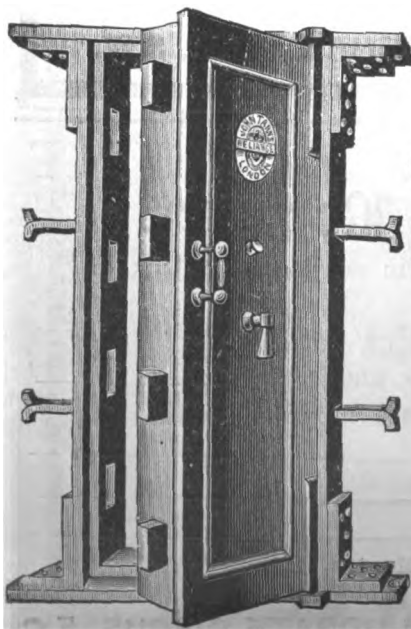
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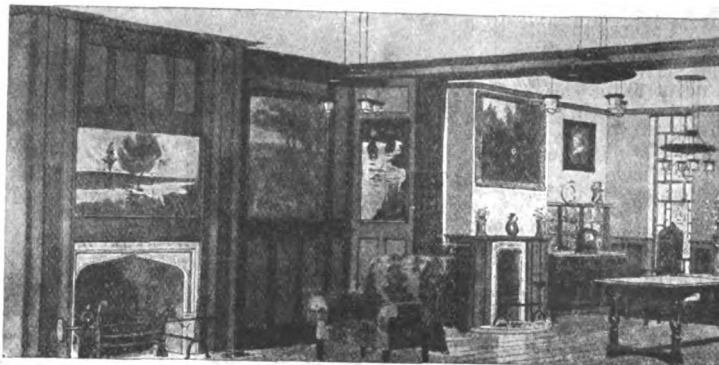
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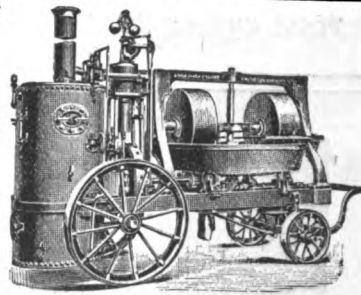
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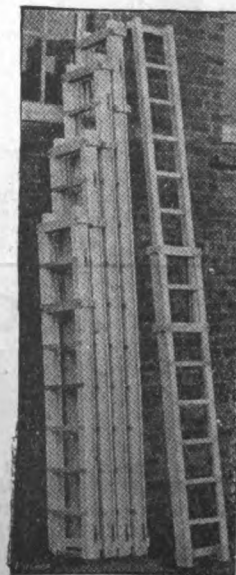
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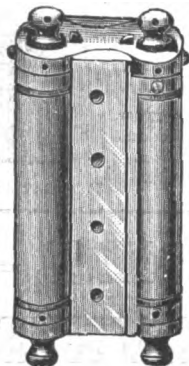
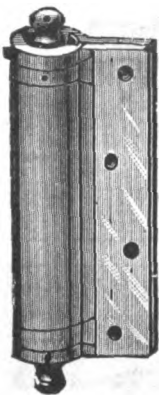
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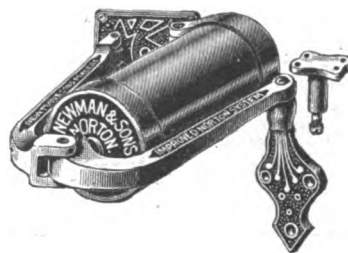
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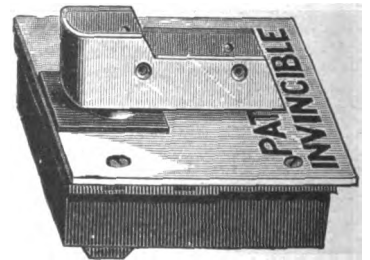
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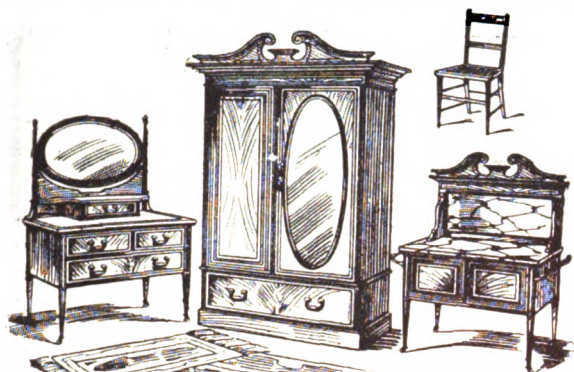
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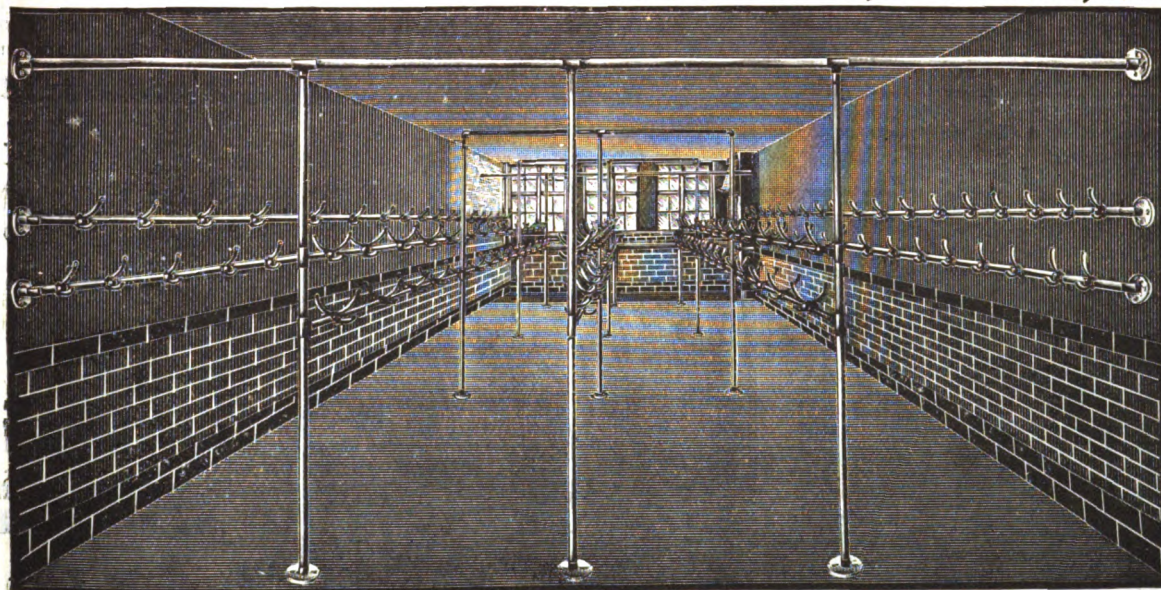
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# THE Architect and Contract Reporter.

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Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus, London, England.

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As Westminster has become one of the most important centres of the professions of Architecture and Civil Engineering, arrangements have been made by Messrs. GILBERT WOOD & CO., Ltd., to establish Branch Offices in that district at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. becoming the representatives for all business purposes.

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

## EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

## TENDERS, ETC.

\*\* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

## COMPETITIONS OPEN.

GLASGOW.—Dec. 12.—The Corporation of Glasgow invite competitive designs for laying-out the estate at Riddrie, by the erection thereon of small self-contained houses. Premiums of 75/., 50/., and 25/., will be awarded. Mr. A. W. Myles, town clerk, City Chambers, Glasgow.

GOOLE.—Dec. 31.—The Goole Joint Body of Governors invite competitive designs for erection of a dual secondary school, accommodating 200 students, with provision for the conduct of technical and evening classes. Premiums of 50/., and 25/., Deposit 2/., 2s. Mr. James Wm. Johnson, clerk to the Governors, Council Offices, Goole.

GRIMSBY.—For the erection of a Congregational church, school and manse at an estimated cost of 8,200/., Premiums 25, 15 and 10 guineas. Sir W. Alfred Gilder, F.R.I.B.A., assessor, Hull. Deposit 2/., 2s. Further particulars, Mr. E. L. Bridge, Fish Docks, Grimsby.

IRELAND.—Dec. 31.—The Local Government Board for Ireland invite from architects the submission of designs for labourers' cottages in rural districts. Premiums of 50/., 30/., and 20/., for the three best designs. A copy of the conditions of the competition may be obtained from the Secretary of the Local Government Board, Dublin.

MONTEVIDEO.—Dec. 14.—La Comision Nacional de Caridad require competitive plans for new foundling hospital with approximate cost. Plans and report, under mottoes, and, in sealed envelope, name and address of competitor. The four selected plans will receive 212/., each, and will be asked to further compete. Further particulars from the Consulate-General for Uruguay, 5 and 6 Clement's Inn, Strand, W.C.

SUNDERLAND.—Feb. 1.—The committee of the Sunderland infirmary invite designs for a children's hospital. Premiums of 100/., 50/., and 25/., are offered. Deposit 1/., 1s. Mr. Thomas Robinson, secretary, Infirmary Offices, Bank Buildings, Sunderland.

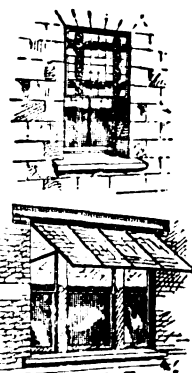
WOLVERHAMPTON.—Dec. 31.—The Board of Management of the Wolverhampton and Staffordshire general hospital, Wolverhampton, invite competitive designs for a nurses' home adjoining the hospital. Mr. J. Stephen Neil, house governor and secretary.

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**CONTRACTS OPEN.**

**BELFAST.**—Dec. 3.—For a stores building (two storeys) in brick, 18 feet long by 50 feet wide, with steel principal roof and steel girder supported floor; also offices, 34 feet long, making a total length of block 215 feet, at their Dundalk station, for the Great Northern Railway Company (Ireland). Deposit 2/ 2s. Mr. W. H. Mills, engineer-in-chief, Amiens Street, Dublin.

**BLACKBURN.**—Dec. 3.—For the erection of extensions to Accrington Road Council school, to accommodate 300 children. Deposit 2/ 2s. Messrs. Cheers & Smith, architects, 24 Richmond Terrace, Blackburn.

**BOSTON.**—Dec. 3.—For converting part of the fish market into a lavatory, &c., and converting the old police-station into a shop. Mr. G. E. Clarke, borough surveyor, Municipal Buildings, Boston, Lincs.

**BURNLEY.**—Dec. 22.—For the erection of proposed technical school in Ormerod Road. Deposit 1/ 1s. Mr. G. H. Pickles, borough engineer, Town Hall.

**CARLISLE.**—Dec. 1.—For enlarging and improving the laundry block, for the committee of the Carlisle fever hospital or house of recovery. Mr. John Little, civil and sanitary engineer, Eaglesfield Abbey Rooms, Castle Street, Carlisle.

**CLITHEROE.**—Dec. 1.—For roofing and slating the new store shed at the Corporation depôt. Mr. Arthur R. Bleazard, borough surveyor.

**COVENTRY.**—Dec. 4.—For enclosing the corridor leading from the nurses' home to the new infirmary, for the Guardians. Mr. T. F. Tickner, architect, High Street Chambers, Coventry.

**DORKING.**—Dec. 1.—The Urban District Council invite quotations, plans and full details for providing and erecting a house-refuse destructor capable of dealing with 60 tons weekly. Separate prices are desired for (1) machinery, including steam-raising plant; (2) without steam-raising plant; and (3) building and roadway. Mr. W. J. Hodges, clerk, 64 South Street, Dorking.

**DROITWICH.**—Dec. 4.—For the erection of a post office at Droitwich. Deposit 1/ 1s. H.M. Office of Works, &c., Storey's Gate, London, S.W.

**FAREHAM.**—Dec. 13.—For the erection of a school building and offices, master's house, drainage, roadmaking, fencing, &c., for the Governors of Price's Charity. Deposit 5/ Mr. Wilberforce Cobbett, architect, Fareham, Hants.

**FERRYBRIDGE.**—Dec. 3.—For the repairs to Ferrybridge bridge, on the Doncaster and Tadcaster main road, within the rural district of Pontefract. Deposit 1/ Mr. F. G. Carpenter, West Riding surveyor, County Hall, Wakefield.

**FRYUP.**—Dec. 7.—For alterations and additions to Fryup Council school, for the North Riding of Yorkshire County Council. Mr. Douglas Smith, secretary, County Hall, Northallerton.

**GLASGOW.**—Dec. 6.—For the following works, viz.:—(1) Digger, mason and brick; (2) carpenter, joiner, glazier and ironmongery; (3) plumber and gasfitter; (4) slater and rough-cast; and (5) lath and plaster required in the erection of a house and an addition to the caretaker's house at Bella-houston Park, for the Corporation. The Office of Public Works, 64 Cochrane Street.

**GOTHERINGTON.**—Dec. 8.—For alterations at Gotherington Council school, Gloucestershire. Mr. R. S. Phillips, surveyor to the committee, Shire Hall, Gloucester.

**GRANGE-OVER-SANDS.**—Dec. 3.—For the erection of a pair of semi-detached houses at the corner of Fell Road and Charney Road. Messrs. Settle & Brundrit, architects, Ulverston and Barrow-in-Furness.

**GUILDFORD.**—Dec. 3.—For the construction of partitions and supply of iron mangers, &c., at the Corporation stables. Mr. C. G. Mason, A.M.I.C.E., borough surveyor, Bridge Street, Guildford.

**HARBORNE.**—Dec. 10.—For the erection of a fire station at Harborne, Birmingham. Deposit 5/ Mr. Henry E. Stilgoe, city engineer and surveyor, Council House, Birmingham.

**HEXHAM.**—Dec. 3.—For the restoration and completion of nave of Hexham abbey church, Hexham, Northumberland. Names to Mr. Temple Moore, architect, 37 Old Queen Street, Westminster, London, S.W.

**HOLBROOK.**—Dec. 3.—For carrying out repairs and alterations to the mill bridge in the parish of Holbrook, for the Samford Rural District Council. Mr. W. C. Whiting, district surveyor, East Bergholt.

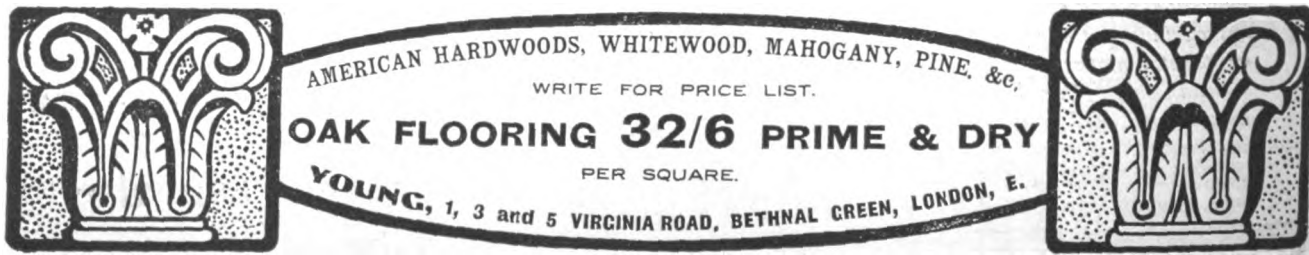
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**IRELAND.**—Dec. 3.—For a stores building (two storeys) in brick, 181 feet long by 50 feet wide, with steel principal roof and steel girder supported floor; also offices, 34 feet long, making a total length of 215 feet, at their Dundalk Station, for the Great Northern Railway Co. (Ireland). Deposit 2*l.* 2*s.* Mr. W. H. Mills, engineer-in-chief, Amiens Street, Dublin, or at the office of the District Engineer, Belfast.

**KESTEVEN.**—Dec. 5.—For the erection of a Council school in Sleaford for 630 children. Deposit 1*l.* Mr. W. B. Purser, county surveyor's office, Grantham.

**LEYTONSTONE.**—Dec. 6.—For the erection of an additional nurses' home at their infirmary, Whipps Cross Road, Leytonstone, N.E., for the Guardians of West Ham Union. Deposit 20*l.* Mr. R. Banks-Martin, architect, 121 Plashet Grove, East Ham, E.

**LONDON.**—Dec. 4.—For the erection of a sanitary convenience at Amersham Road, New Cross, for the Deptford Borough Council. The Borough Surveyor's Office, Town Hall, New Cross Road, S.E.

**MATLOCK.**—Dec. 3.—For the erection of a boarding-house at Matlock Bank. Names to Mr. D. M. Wildgoose, architect, Edge Road, Matlock.

**MANCHESTER.**—Dec. 4.—For proposed alterations at the Union offices, All Saints, for the Guardians of Chorlton Union. Deposit 1*l.* 1*s.* Messrs. Charles Clegg & Son, architects, 21 Spring Gardens, Manchester.

**MANCHESTER.**—Dec. 5.—For the erection of the Beaver Road Municipal school, Didsbury. Deposit 2*l.* 2*s.* The Education Offices, Deansgate, Manchester.

**MORECAMBE.**—Dec. 3.—For coalhouse for the Bare Council school. Mr. Thos. Barrow, secretary, Education Office, Morecambe.

**NORTH SHIELDS.**—Dec. 10.—For pulling-down existing buildings in Norfolk Street, and erecting and completing

new committee-rooms and offices, for the Corporation of Tynemouth. Deposit 2*l.* 2*s.* Mr. John F. Smillie, borough surveyor, Tynemouth.

**ROMFORD.**—Dec. 4.—For the erection of a home for twenty nurses and connecting corridor at the infirmary, for the Guardians. Deposit 3*l.* 3*s.* Mr. James Kennedy, architect, 25 Bedford Row, London, W.C.

**RUSTINGTON.**—Dec. 17.—For the erection of two cottages at Rustington, Sussex. Mr. H. G. Heal, surveyor, Worthing, and Beach Road, Littlehampton.

**SAFFRON WALDEN.**—Dec. 15.—For the erection of a manual instruction building, for the Governors of King Edward the VI. Grammar school. Messrs. Ackland, Son & Bailey, Saffron Walden.

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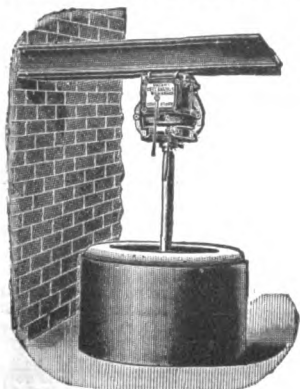
**SCOTLAND.**—Dec. 6.—For mason and brickwork, carpenter and joiner, plumber, slater, plaster and cement, glazier, painter and smith's work of parish school to be erected at Airth. Mr. James Strang, architect, Vicar Street, Falkirk.

**SCOTLAND.**—Dec. 10.—For the mason, carpenter, slater, plasterer, painter, glazier, plumber and water-heating works of classrooms to be erected at the public school, Kingussie. Mr. Alexander Cattanach, architect, The Laurels, Kingussie.

**SCOTLAND.**—Dec. 12.—The Commissioners of H.M. Works and Public Buildings invite separate tenders for the execution of (1) excavator, mason and bricklayer's work; (2) carpenter and joiner's work; (3) ironfounder, smith and ironmonger's work; (4) slater's work; (5) plasterer's work; (6) plumber and gasfitter's work; (7) painter, paper-hanger and gilder's work; (8) glazier's work; (9) blind-maker and bellhanger's work in connection with ordinary works and repairs to buildings in their charge in (1) Edinburgh, (2) Glasgow, (3) Aberdeen, for three years from January 1. Deposit 10*s.* for each schedule. Mr. W. T. Oldrieve, H.M. Office of Works, Edinburgh.

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**WALES.**—Dec. 5.—For alterations and repairs to six cottages, 52, 53, 54, 55, 56 and 57 Gas Row, Dowlais. The Dowlais Gas and Coke Co., Gasworks, Dowlais.

**WALES.**—Dec. 8.—For rebuilding of Bethania Welsh Baptist chapel, Maesteg. Deposit 1*l.* 1*s.* Mr. W. Beddoe Rees, architect, 3 Dumfries Place, Cardiff.

**WALES.**—Dec. 13.—For the erection of two cottage homes at Bargoed, in the parish of Gelligaer, for the Merthyr Tydfil Board of Guardians. Mr. Thomas Roderick, architect, Clifton Street, Aberdare.

**WENMERGILL.**—Dec. 15.—For additions to and strengthening of Wemmergill bridge (stone), Yorks, on the Middleton-Teesdale and Brough main road. County Surveyor's Office, County Hall, Northallerton.

**WOODBURY.**—Dec. 3.—For alterations and additions to the Lodge, near Woodbury, Devon. Messrs. E. H. Harbottle & Son, architects, County Chambers, Exeter.

**WOODFORD.**—Dec. 15.—For the erection and completion of a boys' school to accommodate about 500 pupils, and for sundry alterations to the girls and infants' schools at Churchfields, Woodford, Essex, for the Essex education committee. Mr. Frank Whitmore, Chelmsford, and Mr. Arthur Hogwood, architects, 33 Great Tower Street, E.C. Names and deposit (5*l.*) before Nov. 26 to Mr. Ernest J. Bond, clerk to the local advisory committee, Woodford Green, Essex, and 95 Leadenhall Street, London, E.C.

**WORCESTER.**—Dec. 25.—For the erection of warehouse and offices, for Kays, Ltd. Deposit 2*l.* 2*s.* Messrs. Simpson & Ayrton, architects, 3 Verulam Buildings, Gray's Inn Road, London, W.C.

**WREXHAM.**—Dec. 4.—For supply and erection of an iron cart-shed at the Willow Road depot. Mr. John England, borough engineer and surveyor, Guildhall, Wrexham.

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"FOOTHOLD" PAVING SLABS  
CRANITIC "IN SITU"  
ARTIFICIAL STONE  
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Contractors to H.M. Government,  
Ponders End, London, N.

SUPPLEMENT

**BARNESLEY**—continued.

|                       |         |    |    |
|-----------------------|---------|----|----|
| Byroms                | £18,071 | 0  | 0  |
| Ward & Tetley         | 17,511  | 19 | 3  |
| Lock, Andrews & Price | 17,358  | 18 | 8  |
| G. Mackay & Son       | 17,199  | 16 | 7  |
| J. Mackay             | 17,079  | 0  | 5  |
| Mellor                | 17,052  | 8  | 9  |
| Cottle                | 16,888  | 12 | 10 |
| Buckley               | 16,435  | 17 | 10 |
| Moffatt               | 16,221  | 14 | 11 |
| Bentley               | 15,951  | 5  | 6  |
| Braithwaite & Co.     | 15,360  | 4  | 5  |
| Waring & Sons         | 15,241  | 7  | 11 |
| Cunliffe              | 15,050  | 3  | 9  |

*Septic tanks and rectangular filters.*

|                       |        |    |    |
|-----------------------|--------|----|----|
| Scott & Son           | 33,487 | 12 | 0  |
| Holmes & Sons         | 27,068 | 8  | 0  |
| Jones Bros.           | 26,126 | 4  | 2  |
| Neal, Ltd.            | 25,498 | 7  | 4  |
| Unwin                 | 24,850 | 9  | 6  |
| Taylor                | 24,023 | 7  | 10 |
| Johnson & Langley     | 23,528 | 5  | 6  |
| J. & T. Binns         | 23,063 | 6  | 6  |
| Crawford              | 22,747 | 17 | 6  |
| Craig                 | 23,213 | 3  | 9  |
| Lawson                | 22,013 | 4  | 10 |
| Taylor & Sons         | 21,168 | 7  | 1  |
| Byroms                | 20,684 | 0  | 0  |
| Parker & Sharpe       | 20,479 | 9  | 0  |
| Lock, Andrews & Price | 20,270 | 9  | 8  |
| G. Mackay & Son       | 20,142 | 4  | 10 |
| Ward & Tetley         | 19,639 | 18 | 5  |
| Cottle                | 19,595 | 17 | 9  |
| Mellor                | 19,507 | 5  | 2  |
| J. Mackay             | 19,370 | 15 | 8  |
| Buckley               | 19,010 | 18 | 6  |
| Moffatt               | 18,292 | 14 | 6  |
| Bentley               | 18,053 | 16 | 8  |
| Cunliffe              | 17,260 | 7  | 3  |
| Braithwaite & Co.     | 17,228 | 8  | 6  |
| Waring & Sons         | 17,168 | 18 | 5  |

**BRIGHTON.**

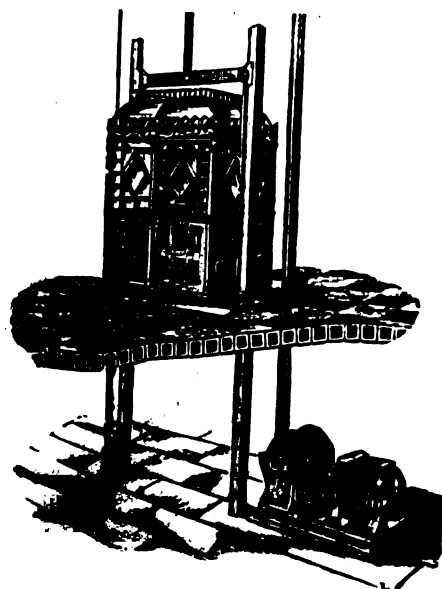
|                                                                                |      |    |   |
|--------------------------------------------------------------------------------|------|----|---|
| For the erection of greenhouse at waterworks. Mr. A. Weller, borough surveyor. |      |    |   |
| Iles                                                                           | £285 | 0  | 0 |
| Penfold                                                                        | 226  | 0  | 0 |
| Boulton & Paul                                                                 | 224  | 0  | 0 |
| Saunders Bros.                                                                 | 216  | 0  | 0 |
| Salter & Evershed                                                              | 199  | 0  | 0 |
| Nye                                                                            | 198  | 17 | 0 |
| J. & W. Simmonds                                                               | 189  | 0  | 0 |
| Gates & Sons                                                                   | 187  | 10 | 0 |
| W. & T. Garrett                                                                | 184  | 0  | 0 |
| Longley & Co.                                                                  | 175  | 0  | 0 |
| BARNES & SONS, Brighton (accepted)                                             | 175  | 0  | 0 |
| Loasby & Salmon                                                                | 145  | 0  | 0 |

**CARDIFF.**

|                                                                                                             |        |   |   |
|-------------------------------------------------------------------------------------------------------------|--------|---|---|
| For conversion of 4 St. John's Square, Cardiff, into club premises. Mr. W. H. D. CAPLE, architect, Cardiff. |        |   |   |
| Bond                                                                                                        | £1,945 | 0 | 0 |
| Shepton & Sons                                                                                              | 1,795  | 0 | 0 |
| Beames                                                                                                      | 1,545  | 0 | 0 |
| Turner & Sons                                                                                               | 1,522  | 0 | 0 |
| Hallett                                                                                                     | 1,500  | 0 | 0 |
| Beavan                                                                                                      | 1,496  | 0 | 0 |
| Denby & Co.                                                                                                 | 1,495  | 0 | 0 |
| Davies                                                                                                      | 1,449  | 0 | 0 |
| Gough Bros.                                                                                                 | 1,446  | 0 | 0 |
| Williams                                                                                                    | 1,400  | 0 | 0 |
| SMALL, Cardiff (accepted)                                                                                   | 1,330  | 0 | 0 |

**COLCHESTER.**

|                                                                                                                                                                                                                                                                                    |         |    |    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|----|
| For the foundations of the main building at Mile End, near Colchester, for the Essex county lunatic asylum. Messrs. F. WHITMORE, county architect, and W. H. TOWN, joint architect, Chelmsford. Quantities by Messrs. R. L. CURTIS & SONS, 11 and 12 Finsbury Square, London, E.C. |         |    |    |
| Redhouse, sen.                                                                                                                                                                                                                                                                     | £29,301 | 11 | 6  |
| Lock                                                                                                                                                                                                                                                                               | 28,494  | 15 | 4  |
| J. & T. Binns                                                                                                                                                                                                                                                                      | 26,849  | 4  | 11 |
| Double                                                                                                                                                                                                                                                                             | 26,585  | 1  | 8  |

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"HEAPED" FIRE**

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Can be adapted to any Fireplace.  
Simple. Economical. Labour-Saving.  
No Ashes Fall on Hearth.  
BRONZE MEDAL, Sanitary Exhibition, 1906.  
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## COLCHESTER—continued.

|                            |         |    |    |
|----------------------------|---------|----|----|
| Macdonald . . . . .        | £26,146 | 0  | 0  |
| Perry & Co. . . . .        | 25,989  | 0  | 0  |
| Hill . . . . .             | 25,600  | 0  | 0  |
| Chambers . . . . .         | 25,599  | 0  | 0  |
| Potter & Co. . . . .       | 25,500  | 0  | 0  |
| Davies, Ball & Co. . . . . | 25,062  | 0  | 0  |
| Pedrette & Co. . . . .     | 25,000  | 0  | 0  |
| Kirk & Randall . . . . .   | 24,700  | 0  | 0  |
| Bowen & Sons . . . . .     | 24,567  | 0  | 0  |
| Kenny . . . . .            | 24,551  | 0  | 0  |
| Allen & Sons . . . . .     | 24,500  | 0  | 0  |
| Everett & Son . . . . .    | 24,350  | 0  | 0  |
| Higgs & Hill . . . . .     | 24,124  | 0  | 0  |
| Watson . . . . .           | 24,000  | 0  | 0  |
| Bell & Son . . . . .       | 23,595  | 0  | 0  |
| McCormick & Sons . . . . . | 23,456  | 0  | 0  |
| Willcock & Co. . . . .     | 23,378  | 0  | 0  |
| Jackson & Co. . . . .      | 23,168  | 0  | 0  |
| Evans . . . . .            | 23,000  | 0  | 0  |
| Manders . . . . .          | 22,949  | 0  | 0  |
| Kerr & Co. . . . .         | 22,783  | 1  | 4  |
| Youngs & Sons . . . . .    | 22,750  | 0  | 0  |
| Lovatt, Ltd. . . . .       | 22,697  | 0  | 0  |
| Neal & Co. . . . .         | 22,684  | 18 | 10 |
| Coles . . . . .            | 22,567  | 0  | 0  |
| Blackwell & Co. . . . .    | 22,340  | 0  | 0  |
| Wall, Ltd. . . . .         | 22,320  | 0  | 0  |
| Wallis & Sons . . . . .    | 22,200  | 0  | 0  |
| Harris & Son . . . . .     | 22,200  | 0  | 0  |
| Godson & Sons . . . . .    | 21,987  | 0  | 0  |
| Grimwood & Sons . . . . .  | 21,850  | 0  | 0  |
| Zadig & Co. . . . .        | 21,843  | 0  | 0  |
| Foster & Dicksee . . . . . | 21,823  | 0  | 0  |
| Moffatt . . . . .          | 21,721  | 13 | 7  |
| Cunliffe . . . . .         | 21,675  | 0  | 0  |
| Johnson & Co. . . . .      | 21,622  | 0  | 0  |
| Rowbotham . . . . .        | 21,620  | 0  | 0  |
| Kerridge & Shav . . . . .  | 21,593  | 0  | 0  |
| Fasey & Son . . . . .      | 21,577  | 2  | 3  |
| Parnell & Co. . . . .      | 21,499  | 0  | 0  |
| Leslie & Co. . . . .       | 21,326  | 0  | 0  |
| Wilson & Sons . . . . .    | 21,329  | 18 | 4  |

## COLCHESTER—continued.

|                                     |         |   |   |
|-------------------------------------|---------|---|---|
| Spencer, Santo & Co. . . . .        | £21,200 | 0 | 0 |
| Parkington & Sons . . . . .         | 21,000  | 0 | 0 |
| Moran & Sons . . . . .              | 20,995  | 0 | 0 |
| Lowe & Sons . . . . .               | 20,990  | 0 | 0 |
| Hawkins & Co. . . . .               | 20,938  | 0 | 0 |
| Minter . . . . .                    | 20,888  | 0 | 0 |
| Grimwood & Sons . . . . .           | 20,877  | 0 | 0 |
| Armitage & Hodgson . . . . .        | 20,836  | 0 | 0 |
| F. & E. Davey . . . . .             | 20,587  | 0 | 0 |
| Wood & Sons . . . . .               | 20,234  | 4 | 9 |
| Bennett . . . . .                   | 20,200  | 0 | 0 |
| Moss & Co. . . . .                  | 20,154  | 0 | 0 |
| Pethick & Co. . . . .               | 19,977  | 0 | 0 |
| Hunt & Co. . . . .                  | 19,943  | 0 | 0 |
| Willet . . . . .                    | 19,750  | 0 | 0 |
| Hammond & Sons . . . . .            | 19,563  | 0 | 0 |
| F. & A. Willmott . . . . .          | 19,544  | 0 | 0 |
| Oak Building Co. . . . .            | 19,394  | 0 | 0 |
| Muirhead & Co. . . . .              | 19,299  | 0 | 0 |
| King & Son . . . . .                | 19,080  | 0 | 0 |
| Thurman . . . . .                   | 18,999  | 0 | 0 |
| CHESSUM & SONS (accepted) . . . . . | 18,939  | 0 | 0 |

## DARTFORD.

For repairs to Gore Farm hospital.

|                                                 |      |    |   |
|-------------------------------------------------|------|----|---|
| Truman . . . . .                                | £199 | 0  | 0 |
| Road Maintenance and Stone Supply Co. . . . .   | 114  | 19 | 0 |
| Miskin, Ltd., Gravesend (recommended) . . . . . | 100  | 0  | 0 |

## EBBW VALE.

For the erection of house and surgery at Cwm. Mr. HARRY WATERS, architect, Waengoch, Beaufort.

|                                             |      |    |   |
|---------------------------------------------|------|----|---|
| Leadbeter . . . . .                         | £938 | 10 | 0 |
| Evans & Co. . . . .                         | 720  | 0  | 0 |
| Williams & Rogers . . . . .                 | 570  | 0  | 0 |
| DAVIS & SON, Ebbw Vale (accepted) . . . . . | 555  | 0  | 0 |
| Rowlands & Davies . . . . .                 | 552  | 0  | 0 |

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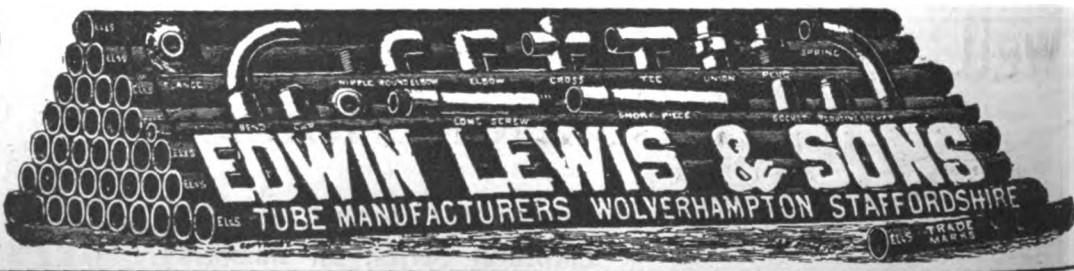
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[2]

In **BRASS, BRONZE, and other Alloys.**



**EBBW VALE—continued.**

|                                                        |         |      |
|--------------------------------------------------------|---------|------|
| For the erection of Council schools at Willowtown. Mr. |         |      |
| HARRY WATERS, architect, Waengoch, Beaufort.           |         |      |
| Davis & Son                                            | £21,017 | 0 0  |
| Hughes & Stirling                                      | 17,200  | 0 0  |
| Smith                                                  | 17,150  | 0 0  |
| Stephens, Bastow & Co.                                 | 16,989  | 0 0  |
| Powell                                                 | 16,860  | 6 0  |
| Vaughan                                                | 16,700  | 0 0  |
| Bowers & Co.                                           | 16,490  | 0 0  |
| Newcombe                                               | 16,150  | 0 0  |
| Rowlands & Davies                                      | 16,099  | 0 0  |
| Charles                                                | 15,750  | 0 0  |
| Colborne                                               | 15,635  | 11 0 |
| Davies & Son                                           | 15,600  | 0 0  |
| Jenkins                                                | 15,560  | 0 0  |
| Davies                                                 | 15,244  | 0 0  |
| Evans & Co.                                            | 15,217  | 0 0  |
| Morgan                                                 | 15,138  | 0 0  |
| WILLIAMS & SON, New Tredegar (accepted)                | 13,894  | 0 0  |

**EVESHAM.**

For construction of sewerage works at Badsey. Messrs.  
WILLCOX & RAIKES, engineers, Birmingham.  
Contract No. 1.

|                        |        |       |
|------------------------|--------|-------|
| Byard & Sons           | £3,030 | 0 0   |
| Sutherland & Thorpe    | 2,800  | 0 0   |
| Moffatt                | 2,610  | 7 3   |
| Roberts                | 2,600  | 0 0   |
| Blackwell & Co.        | 2,325  | 12 5  |
| Lock, Andrews & Price  | 2,309  | 13 11 |
| Mason                  | 2,303  | 0 0   |
| Jewell                 | 2,290  | 0 0   |
| Cunliff                | 2,250  | 0 0   |
| Pollard & Co.          | 2,229  | 10 5  |
| Cottle                 | 2,215  | 5 9   |
| Curral, Lewis & Martin | 2,154  | 0 0   |
| Rayner                 | 2,135  | 0 0   |
| White                  | 2,115  | 0 0   |
| Buckley                | 2,109  | 13 7  |
| Macdonald              | 2,108  | 0 0   |
| Meredith Bros.         | 2,088  | 10 0  |
| Chick, Carden & Co.    | 2,085  | 2 8   |

**EVESHAM—continued.**

|                                   |        |      |
|-----------------------------------|--------|------|
| Morgan                            | £2,054 | 19 0 |
| Meredith                          | 2,025  | 0 0  |
| Rowell & Sons                     | 2,021  | 7 11 |
| Morley & Sons                     | 2,018  | 15 9 |
| Reading                           | 2,000  | 0 0  |
| J. & A. Brazier                   | 2,000  | 0 0  |
| Hewitt & Sons                     | 1,999  | 19 9 |
| Johnson Bros.                     | 1,990  | 0 0  |
| VALE & SONS, Stourport (accepted) | 1,984  | 10 0 |
| Egan & Sons                       | 1,962  | 2 0  |
| Westwood                          | 1,937  | 13 0 |

**GREENWICH.**

For the erection of sorting office at Greenwich, for H.M.  
Office of Works, &c.

|                     |        |     |
|---------------------|--------|-----|
| Dolman & Mathews    | £4,292 | 0 0 |
| Quartermen          | 3,817  | 0 0 |
| Leslie & Co.        | 3,470  | 0 0 |
| Streather           | 3,339  | 0 0 |
| Sharpington         | 3,248  | 0 0 |
| Smith & Sons        | 3,230  | 0 0 |
| McKay               | 3,228  | 0 0 |
| Martin, Wells & Co. | 3,200  | 0 0 |
| Thomas & Edge       | 3,185  | 0 0 |
| Holloway            | 3,162  | 0 0 |
| Wallis              | 3,156  | 0 0 |
| Fitch & Cox         | 3,155  | 0 0 |
| Hollingsworth       | 3,153  | 0 0 |
| McLaughlin & Harvey | 3,146  | 0 0 |
| Webster & Son       | 3,141  | 0 0 |
| E. & T. Thorne      | 3,127  | 0 0 |
| Mills               | 3,126  | 0 0 |
| Barker & Co.        | 3,057  | 0 0 |
| Johnson & Co.       | 3,045  | 0 0 |
| Williams            | 3,025  | 0 0 |
| Groves              | 3,000  | 0 0 |
| Garrett & Son       | 2,999  | 0 0 |
| Nightingale         | 2,986  | 0 0 |
| Galbraith Bros.     | 2,985  | 0 0 |
| Hyde                | 2,906  | 0 0 |
| Edwards & Medway    | 2,760  | 0 0 |
| Lonsdale            | 2,659  | 0 0 |

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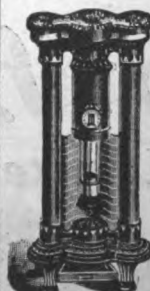
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For Index of Advertisers, see page x.

**HULL.**

For offices and store, St. Andrew's dock. Messrs. FREEMAN, SON & GASKELL, architects, Carr Lane, Hull.

|                                 |      |    |   |
|---------------------------------|------|----|---|
| Robinson                        | £859 | 10 | 0 |
| Jackson & Son                   | 822  | 7  | 0 |
| Boyes & Oliver                  | 807  | 0  | 0 |
| Houlton & Son                   | 790  | 0  | 0 |
| Lison                           | 773  | 4  | 3 |
| Simpson & Son                   | 750  | 0  | 0 |
| Southern                        | 750  | 0  | 0 |
| Kay                             | 740  | 0  | 0 |
| Knowles                         | 740  | 0  | 0 |
| Harper                          | 734  | 10 | 0 |
| Quibell, Son & Greenwood        | 724  | 5  | 6 |
| Trains                          | 722  | 14 | 0 |
| Hebblewhite & Wilson            | 715  | 7  | 0 |
| Scorrier                        | 711  | 6  | 0 |
| Goates                          | 709  | 0  | 0 |
| MORRELL & SONS, Hull (accepted) | 707  | 17 | 0 |

**LEATHERHEAD.**

For works in Highlands Road. Mr. C. OSENTON, surveyor.

|                |        |   |   |
|----------------|--------|---|---|
| James & Co.    | £1,198 | 0 | 0 |
| Free & Son     | 1,020  | 0 | 0 |
| E. & E. Iles   | 900    | 0 | 0 |
| Kavanagh & Co. | 887    | 0 | 0 |
| Trimm          | 871    | 0 | 0 |
| Franks         | 853    | 0 | 0 |
| Rayner         | 845    | 0 | 0 |
| May            | 789    | 0 | 0 |

**LINCOLN.**

For additions to the municipal technical school. Messrs. W. WATKINS & SON, architects, Lincoln.

|                              |        |    |   |
|------------------------------|--------|----|---|
| Baines                       | £6,375 | 0  | 0 |
| Barlow & Co.                 | 6,290  | 0  | 0 |
| Hutchinson & Son             | 6,250  | 0  | 0 |
| Wright & Son                 | 6,097  | 0  | 0 |
| H. S. & W. Close             | 5,835  | 0  | 0 |
| Brown & Son                  | 5,497  | 10 | 0 |
| WRIGHT, Leicester (accepted) | 5,220  | 0  | 0 |

**ILFORD.**

For covering with reinforced concrete the septic tanks, &c., at outfall works. Mr. H. SHAW, engineer and surveyor. JACKSON, Barking (accepted). £5,971 19 2

**LONDON.**

For electric-light installations at Hornsey Rise and Plumstead fire stations, for the London County Council.

*Hornsey sub-station.*

|                                                  |      |    |   |
|--------------------------------------------------|------|----|---|
| Defries & Sons                                   | £234 | 0  | 0 |
| Blackburn, Starling & Co.                        | 233  | 0  | 0 |
| Barlow & Young                                   | 208  | 0  | 0 |
| Sunderland & Co.                                 | 194  | 0  | 0 |
| Dawson, Ltd.                                     | 192  | 5  | 0 |
| Taylor & Co.                                     | 186  | 12 | 0 |
| Barker & Co.                                     | 177  | 0  | 0 |
| Suter & Co.                                      | 175  | 0  | 0 |
| Clark & Co.                                      | 171  | 0  | 0 |
| Durell & Co.                                     | 165  | 0  | 0 |
| Grant & Taylor                                   | 161  | 0  | 0 |
| Coleby & Co., Cavendish Square, W. (recommended) | 160  | 0  | 0 |

*Plumstead sub-station.*

|                              |     |    |   |
|------------------------------|-----|----|---|
| Blackburn, Starling & Co.    | 220 | 0  | 0 |
| Defries & Sons               | 216 | 0  | 0 |
| Barlow & Young               | 198 | 0  | 0 |
| Dawson, Ltd.                 | 188 | 2  | 0 |
| Sunderland & Co.             | 181 | 0  | 0 |
| Taylor & Co.                 | 174 | 7  | 0 |
| Suter & Co.                  | 165 | 0  | 0 |
| Barker & Co.                 | 164 | 14 | 0 |
| Clark & Co.                  | 159 | 0  | 0 |
| Durell & Co.                 | 159 | 0  | 0 |
| Coleby & Co.                 | 157 | 0  | 0 |
| Grant & Taylor (recommended) | 141 | 0  | 0 |

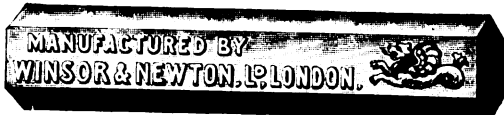
For reconstruction of King's Arms bridge, Southgate, for the Metropolitan Water Board.

|                           |        |   |   |
|---------------------------|--------|---|---|
| Mowlem & Co.              | £1,275 | 0 | 0 |
| Aird & Sons               | 1,075  | 0 | 0 |
| Dowra & Son (recommended) | 998    | 4 | 0 |

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## LONDON—continued.

For the erection of a police-station at Shadwell. Mr. J. DIXON BUTLER, surveyor to the Metropolitan Police, New Scotland Yard, S.W. Quantities by Messrs. THURGOOD, SON & CHIDGEY, Charing Cross Chambers, Duke Street, Adelphi, S.W.

|                       |         |   |   |
|-----------------------|---------|---|---|
| Ansell                | £13,750 | 0 | 0 |
| H. Lovatt, Ltd.       | 13,132  | 0 | 0 |
| Mowlem & Co.          | 13,099  | 0 | 0 |
| Clark & Bracey        | 13,069  | 0 | 0 |
| Lathey Bros.          | 12,740  | 0 | 0 |
| Lascelles & Co.       | 17,715  | 0 | 0 |
| Dove Bros.            | 12,693  | 0 | 0 |
| Killby & Gayford      | 12,667  | 0 | 0 |
| Holloway Bros.        | 12,658  | 0 | 0 |
| Godson & Sons         | 12,632  | 0 | 0 |
| F. & H. F. Higgs      | 12,591  | 0 | 0 |
| Grover & Son          | 12,483  | 0 | 0 |
| Patman & Fotheringham | 12,433  | 0 | 0 |
| Chessum & Son         | 12,347  | 0 | 0 |
| Lawrance & Sons       | 12,146  | 0 | 0 |

For the erection of school, Mitcham Lane, Wandsworth.

|                                        |         |   |    |
|----------------------------------------|---------|---|----|
| Appleby & Sons                         | £21,605 | 0 | 0  |
| L. H. & R. Roberts                     | 21,247  | 0 | 0  |
| W. Smith & Son                         | 21,134  | 0 | 0  |
| F. & H. F. Higgs                       | 21,038  | 0 | 0  |
| J. Smith & Sons                        | 20,895  | 0 | 0  |
| Lawrance & Sons                        | 20,126  | 0 | 0  |
| Longley & Co.                          | 19,978  | 2 | 10 |
| Greenwood, Ltd.                        | 19,820  | 0 | 0  |
| Holloway                               | 19,724  | 0 | 0  |
| Holliday & Greenwood                   | 19,691  | 0 | 0  |
| J. & C. Bowyer                         | 19,640  | 0 | 0  |
| Kirk & Randall                         | 19,492  | 0 | 0  |
| Garrett & Son                          | 19,307  | 0 | 0  |
| Martin, Wells & Co.                    | 19,302  | 0 | 0  |
| Whitehead & Co.                        | 19,255  | 0 | 0  |
| Lawrence & Son                         | 18,984  | 0 | 0  |
| Johnson & Co.                          | 18,950  | 0 | 0  |
| J. & M. Patrick                        | 18,899  | 0 | 0  |
| Wallis & Sons, Maidstone (recommended) | 18,867  | 0 | 0  |

## LONDON—continued.

For rebuilding Hampstead Road bridge.

|                         |        |    |    |
|-------------------------|--------|----|----|
| Ewart                   | £9,773 | 2  | 10 |
| Perry & Co.             | 8,660  | 0  | 0  |
| Wall, Ltd.              | 8,611  | 12 | 6  |
| Dickson                 | 8,590  | 3  | 9  |
| Pedrette & Co.          | 8,549  | 8  | 6  |
| Bentley & Son           | 8,464  | 8  | 9  |
| Cochrane & Sons         | 8,426  | 17 | 6  |
| Handyside & Co.         | 8,274  | 13 | 9  |
| Heenan & Froude         | 8,249  | 11 | 4  |
| Greig & Matthews        | 8,013  | 8  | 0  |
| Strachan                | 7,980  | 0  | 0  |
| Nightingale             | 7,915  | 0  | 0  |
| Fasey & Son             | 7,845  | 6  | 6  |
| Muirhead & Co.          | 7,834  | 4  | 6  |
| M. & A. Dinnie          | 7,633  | 13 | 10 |
| Hay & Co. (recommended) | 7,506  | 9  | 8  |

For roughly forming, metalling and sewerage an extension of Kevelioc Road on Section B of the White Hart Lane estate, for the London County Council.

|                                    |      |    |    |
|------------------------------------|------|----|----|
| Adams                              | £712 | 19 | 2  |
| Bloomfield                         | 659  | 19 | 10 |
| Knifton                            | 620  | 12 | 0  |
| Gibbons                            | 619  | 0  | 0  |
| Coxhead, Leytonstone (recommended) | 598  | 0  | 0  |

For altering and adapting existing building and completing superstructure of Shepherd's Bush Tabernacle. Mr. P. W. HAWKINS, architect, 28 Victoria Street, Westminster, S.W.

## Gross tenders.

|                                  |        |   |   |
|----------------------------------|--------|---|---|
| Nash                             | £5,993 | 0 | 0 |
| Whitehead & Co.                  | 4,970  | 0 | 0 |
| GRAY, Shepherd's Bush (accepted) | 4,750  | 0 | 0 |
| Ferris Bros.                     | 4,700  | 0 | 0 |

## Reduced tenders.

|                 |       |   |   |
|-----------------|-------|---|---|
| Nash            | 5,188 | 0 | 0 |
| Whitehead & Co. | 4,370 | 0 | 0 |
| Gray            | 4,001 | 0 | 0 |
| Ferris Bros.    | 3,850 | 0 | 0 |

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**LONDON—continued.**

For heating the Kingsland secondary school, for the London County Council education committee.

|                                                                                |      |    |   |
|--------------------------------------------------------------------------------|------|----|---|
| Turner & Co. . . . .                                                           | £753 | 0  | 0 |
| Boyd & Sons . . . . .                                                          | 615  | 0  | 0 |
| G. & E. Bradley . . . . .                                                      | 597  | 0  | 0 |
| Price, Lea & Co. . . . .                                                       | 596  | 0  | 0 |
| Purcell & Nobbs . . . . .                                                      | 567  | 10 | 0 |
| Strode & Co. . . . .                                                           | 563  | 0  | 0 |
| Cannon & Sons . . . . .                                                        | 539  | 0  | 0 |
| Cannon & Heford . . . . .                                                      | 537  | 0  | 0 |
| Palowkar & Sons . . . . .                                                      | 529  | 0  | 0 |
| Brightside Foundry and Engineering Co.,<br>Westminster (recommended) . . . . . | 525  | 0  | 0 |

For installation of additional plant at the Elephant and Castle sub-station, for the London County Council.

|                                                             |        |    |   |
|-------------------------------------------------------------|--------|----|---|
| British Westinghouse Electric and Manufacturing Co. . . . . | £2,493 | 0  | 0 |
| General Electric Co. . . . .                                | 2,489  | 13 | 0 |
| Ferranti, Ltd., Hollinwood (recommended) . . . . .          | 1,954  | 18 | 0 |

**MANCHESTER.**

For the erection of a synagogue, Higher Broughton. Mr. DELISSA JOSEPH, architect, London, E.C. Messrs. GUNSON & SON, surveyors, Manchester.

|                                              |        |   |   |
|----------------------------------------------|--------|---|---|
| BURGESS & GALT, Ardwick (accepted) . . . . . | £5,335 | 0 | 0 |
|----------------------------------------------|--------|---|---|

**NUNEATON.**

For the construction of about 1,410 lineal yards of 9-inch earthenware and cast-iron pipe sewers in Heath End Road, with manholes. Mr. F. C. COOK, engineer and surveyor.

|                                      |        |    |    |
|--------------------------------------|--------|----|----|
| Wellerman Bros. . . . .              | £1,616 | 6  | 10 |
| Barry . . . . .                      | 1,299  | 17 | 8  |
| Macdonald . . . . .                  | 1,184  | 16 | 0  |
| Holloway . . . . .                   | 1,177  | 0  | 0  |
| Brown . . . . .                      | 1,155  | 17 | 2  |
| HARPER, Carlton (accepted) . . . . . | 1,128  | 14 | 6  |

**NETHER ALDERLEY.**

For alterations to Council school, for Macclesfield and Hayfield education sub-committee. Mr. H. BESWICK, architect, Chester.

|                                                   |        |   |   |
|---------------------------------------------------|--------|---|---|
| Allen . . . . .                                   | £1,010 | 0 | 0 |
| Coates . . . . .                                  | 871    | 0 | 0 |
| Roylance & Co. . . . .                            | 806    | 0 | 0 |
| Boon & Fryer . . . . .                            | 740    | 0 | 0 |
| MASSEY & SONS, Alderley Edge (accepted) . . . . . | 690    | 0 | 0 |

**QUEENSBURY (YORKS).**

For the works required in erection of house at Scarlet Heights. Mr. HERBERT F. SHARP, architect, Queensbury.

*Accepted tenders.*

|                                                |      |    |   |
|------------------------------------------------|------|----|---|
| Jones & Wilcock, excavator and mason . . . . . | £555 | 0  | 0 |
| Briggs, carpenter and joiner . . . . .         | 255  | 0  | 0 |
| Hodgson, plumber and glazier . . . . .         | 155  | 0  | 0 |
| Greenwood, plasterer and concreter . . . . .   | 54   | 0  | 0 |
| Smithies, slater . . . . .                     | 49   | 17 | 6 |
| Hodgson, painter . . . . .                     | 21   | 10 | 0 |

**ROSS.**

For painting and decorating at new residence at Lowcop, near Ross, for Mr. J. M. Newton. Messrs. GROOME & BETTINGTON, architects and surveyors, Palace Chambers, Hereford. Quantities by architects.

*Third Contract.*

|                              |     |   |    |
|------------------------------|-----|---|----|
| Greenlands, Ltd. . . . .     | £69 | 5 | 0  |
| Wilks . . . . .              | 68  | 0 | 0  |
| VAUGHAN (accepted) . . . . . | 54  | 1 | 10 |

**SELSTON.**

For sewerage and sewage-disposal works, for the Basford Rural District Council. Messrs. SANDS, WALKER & MAYLAN, engineers, Nottingham.

|                                        |        |    |   |
|----------------------------------------|--------|----|---|
| Home & Son . . . . .                   | £1,204 | 0  | 0 |
| Crane, Ltd. . . . .                    | 1,077  | 17 | 0 |
| Cope & Raynor . . . . .                | 1,072  | 16 | 0 |
| Holmes & Sons . . . . .                | 1,050  | 0  | 0 |
| Buckley . . . . .                      | 928    | 0  | 0 |
| Wood . . . . .                         | 919    | 0  | 0 |
| Bennet, Mansfield (accepted) . . . . . | 900    | 0  | 0 |
| Keetch & Wainer . . . . .              | 892    | 0  | 0 |

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## WOOD GREEN.

For the erection of Baptist church. Messrs. G. BAINES &  
Son, architects, 5 Clement's Inn, Strand, London, W.C.

|                                     |        |   |   |
|-------------------------------------|--------|---|---|
| Carter . . . . .                    | £5,123 | o | o |
| North . . . . .                     | 5,087  | o | o |
| Co-operative Builders, Ltd. . . . . | 4,930  | o | o |
| Holliday & Greenwood . . . . .      | 4,927  | o | o |
| Smith & Sons . . . . .              | 4,866  | o | o |
| Lawrence & Son . . . . .            | 4,784  | o | o |
| Bywaters & Sons . . . . .           | 4,617  | o | o |
| Mattock Bros. . . . .               | 4,617  | o | o |
| Kerridge & Shaw . . . . .           | 4,536  | o | o |
| Battley, Sons & Holness . . . . .   | 4,479  | o | o |
| Fairhead & Son . . . . .            | 4,415  | o | o |
| Coxhead . . . . .                   | 4,300  | o | o |
| Mattock & Parsons . . . . .         | 4,275  | o | o |
| KNIGHT & SONS (accepted) . . . . .  | 4,275  | o | o |

*(Received too late for classification.)*

## MAIDSTONE.

For the erection of Baptist church.

|                                               |        |   |   |
|-----------------------------------------------|--------|---|---|
| Avard . . . . .                               | £3,129 | o | o |
| Wood & Son . . . . .                          | 3,120  | o | o |
| Elmore & Son . . . . .                        | 3,084  | o | o |
| Barden & Head . . . . .                       | 3,060  | o | o |
| Burrows . . . . .                             | 3,000  | o | o |
| Cox Bros. . . . .                             | 2,884  | o | o |
| WALLIS & SONS, Maidstone (accepted) . . . . . | 2,847  | o | o |
| Seager . . . . .                              | 2,678  | o | o |

## PORTSMOUTH.

For the supply of electrical gear for the pumps in connec-  
tion with the new Southsea drainage scheme.

JOHNSON &amp; PHILLIPS, Charlton (accepted) . £2,230 o o

## TRADE NOTES.

MESSRS. McDOWALL STEVEN & Co., LTD., engineers, London,  
are the contractors for the kitchen equipment of the new  
Cotton Exchange, Liverpool.THE Seaburn Small-pox Hospital, Blaydon-on-Tyne, is  
being warmed and ventilated by Shorland's patent Man-  
chester stoves and special inlet ventilators supplied by  
Messrs. E. H. Shorland & Brother, of Manchester.WE have received from Messrs. Vickers & Field, Ltd.,  
a circular relating to their patent Wirebitu, which is made  
of pure Trinidad bitumen spread on woven steel wire, thus  
forming a perfect damp-course sheeting. It is made in  
lengths and widths for purposes of lining reservoirs, tanks,  
vaults, &c.THE Patent Indented Steel Bar Company's system of  
steel reinforcement is being used for the floors of the  
Waldorf Hotel in the Strand, and also for the foundations  
and the floors of the printing machinery department of the  
new *Morning Post* buildings. Amongst other important  
contracts this company is supplying the steel reinforcement  
for the new dock works now in course of construction in  
Scotland by the Coventry Ordnance Company.OUR readers will be interested in inspecting the premises  
known as St. Paul's Chambers, 19-23 Ludgate Hill, the  
restoration of which has just been completed by Farnham,  
Ltd., under Messrs. Joseph & Smithem, architects, 83 Queen  
Street, Cheapside. The façade is of Tisbury (Wilts) stone,  
which, although treated at various times with so-called  
stone-preserving fluids, had been seriously disintegrated by  
the London climate. The decayed stonework has been  
replaced by Portland stone, the whole frontage has been  
waterproofed by the Farnham wax process and subsequently  
cleaned by sand blast, so that it is now impervious to the  
influence of the London atmosphere.MESSRS. PATMAN & FOTHERINGHAM, LTD., of 100 and 102  
Theobald's Road, London, have secured the contract for  
building a motor garage at Lothian Road, Camberwell, S.E.,  
for the Gearless Motor Omnibus Co., Ltd., of 17 Waterloo  
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THE Glasgow Corporation have adopted the following resolution:—"That Clause XXIX. of the Standing Orders be altered so as to read as follows:—"Only firms paying the standard rate of wages or piece prices for all classes of work and recognising trades union conditions, whether under contract or otherwise, shall be eligible to estimate for and receive Corporation contracts. All Corporation contracts shall contain a clause requiring the contractor to pay not less than the standard rate of wages or piece prices in each branch of the trade, or, where no such standard rate of piece prices exist, such wages or piece prices as are generally recognised as fair in the trade; and in districts or places where the Glasgow scale of wages or piece prices do not apply, to pay to the said workpeople not less than the standard rate of wages or piece prices paid in such districts or places, or, where no such standard rate or piece prices exist, such wages or piece prices as are generally recognised as fair in the trade in such districts or places."

IN the Court of Appeal the Master of the Rolls and Lords Justices Romer and Mathew recently had before them the case of *Brindle v. Jones*. The defendant, a builder, appealed against an award of the judge of the Chorley County Court under the Workmen's Compensation Act, 1897. The defendant had contracted to repair a building, and after three men had been at work for an hour whitewashing an outside wall, each standing on a ladder, the ladder on which one of them, named John Brindle, was standing gave way and he was killed. The dependents of the workman accordingly claimed compensation. In the County Court the question to be determined was whether Brindle at the time of the accident was engaged upon a building which was being repaired by means of scaffolding within the meaning of the statute. The County Court Judge held that the ladders which the workmen were using at the time did not in themselves constitute scaffolding, but he found that scaffolding was being used, inasmuch as a board had been placed between a stepladder and a wall for the purposes of whitewashing at another part of the building. He therefore awarded compensation amounting in all to 234/. It was pointed out that up to the time of the accident the board and stepladder

had not been used. Without calling upon the respondent's counsel, the Master of the Rolls gave judgment. He said there was ample evidence to justify the County Court judge's conclusion. The fact that the injured workman was in no way concerned with the scaffolding, or that the scaffolding was entirely remote from the part of the building on which he was engaged, did not affect his right of action under the Act. When once it was ascertained that scaffolding was being used the right of the workman came in. Lords Justices Romer and Mathew concurred, and the appeal was dismissed with costs.

**ELECTRIC NOTES.**

THE municipal authorities of Vilna have provisionally accepted the proposal of an American company who offered to pay 7,630,000 roubles for a seventy-five years' concession for the electric tramways in the city.

THE first electrical power derived from Niagara Falls for the use of Toronto was turned on on the 19th inst., and will be used for lighting and power purposes of all kinds. The present amount available is equal to that of 40,000 horse-power.

Two members of the Walton and Felixstowe Council, Messrs. D. J. Cowles and T. Ward, have been surcharged by the district auditor, Mr. Dixon, the sum of 3,000/ which was paid on their authority to the Suffolk Electricity Supply Company, on the ground that the money was applied to a purpose other than that which was sanctioned by the Local Government Board.

AT Sunderland a Local Government Board inquiry was held on Tuesday into the Corporation's application for sanction to borrow 23,000/ for electric lighting purposes. Mr. Snell, the borough electrical engineer, said that during the year ended March last 6,159,000 units of electric power were sold, and it was expected that during the current year the sales would reach nearly eight million units. A fifteen years' agreement had been entered into with Messrs. Doxford & Sons, shipbuilders, for a supply of 2½ million units annually, and that would make the output over ten million units a year. There was no opposition.

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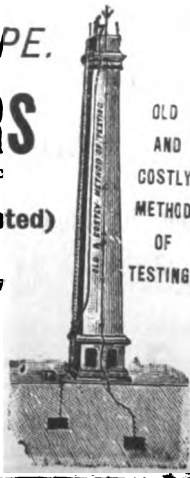
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For Index of Advertisers, see page x.

At a meeting on Monday of the tramways and electricity committee of the Belfast Corporation it was stated that the increase in the demand for electrical energy during the past few years has been very considerable, and that it would be absolutely necessary to provide more plant for the purpose of carrying out extensions. The estimated cost of the work is 75,000*l.*, and it was agreed to take the necessary steps to obtain the approval of the Local Government Board for the loan and to advertise for tenders.

THE Western Counties Electric Railways and Tramways Company, Ltd., have announced that they intend to make application to Parliament in the coming session for leave to bring in a Bill under the name of the York and District Tramways Bill to give them power to construct tramways in the city of York, in the parishes of Huntington, Fulford, Dringhouses and Acomb. It is believed that the G. B. Surface Contact Company are backing up the application, and that it is their intention, or the intention of a syndicate, to promote the Bill in order to incorporate a company and authorise that company to lay down new tramways in the city.

THE Wood Green District Council some months ago made application for sanction to borrow between 40,000*l.* and 50,000*l.* for the purpose of generating and distributing electricity. This, however, was refused by the Local Government Board. After the inquiry the District Council had the locality canvassed as to how many tradespeople would be willing to use the light. The cost of this canvass was objected to at the audit. Mr. Young, the official auditor from the Local Government Board, stated that he knew of no authority for such payment, which seemed to him to be illegal. He should report to the Board on the subject, and probably the cost of the canvass would be disallowed and surcharged.

THE Local Government Board recently refused to sanction a loan for the purchase of a site for a town hall at Hornsey, a scheme which its opponents said would ultimately involve a cost of 200,000*l.*, though the Borough Council denied this. It has now been decided by the Council not to proceed further with the matter.

## VARIETIES.

THE Portland stone employed for the erection of the Manchester Infirmary is derived from the quarries of the Bath Stone Firms, Ltd.

THE Sunderland Rural District Council have adopted a scheme providing for the erection of 121 dwellings for miners, which will cost about 22,000*l.*

At the last meeting of the Essex education committee the offer of Sir Henry Mildmay to sell 1½ acres of land for a new school at Springfield was accepted. The price paid was 500*l.* The frontage to the main road is about 200 feet.

MESSRS. MURGATROYD & SONS, LTD., have secured the contract for the new station at Morecambe for the Midland Railway Company. An effort will be made to have the new station ready for next Whitsuntide.

THE Lincoln City Council, in committee, have decided upon a waterworks scheme, which includes the building of a new covered reservoir on Cross o' Cliff Hill, with a capacity of 6,000,000 gallons, and the construction of a water tower in Westgate. It is estimated that the scheme will cost something like 50,000*l.*

ARBITRATION proceedings between the Guildford Corporation and the Woking Water Company, with regard to the price to be paid by the Corporation for that part of the company's undertakings in the borough of Guildford, are expected to commence on December 19. The company ask for over 105,000*l.*, and the Corporation have offered 18,700*l.*

THE London County Council has informed the Hampstead Borough Council, with regard to a proposed widening of Heath Street, estimated to cost 100,000*l.*, that in view of the present and prospective heavy financial commitments of the County Council, the improvements committee would not be prepared to advise that Council either to undertake the improvement or to contribute any part of the cost of it.

At a meeting of the Kirkham and Mesham Room and Power Company, nineteen tenders were considered for the erection of the new mill, and that of Mr. J. Boland, of Blackburn, was accepted. The mill is to cost 16,000*l.*, and will have room for 1,050 looms. It is expected to be ready

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H.M. CONSUL at Palermo (Mr. S. J. A. Churchill has forwarded an extract from the *Ora* (Palermo) respecting a project under consideration for the establishment of an industrial quarter in that city. New industries initiated in this quarter will enjoy exemption from municipal dues, and it is further proposed to award a substantial premium to any new industry employing a minimum of 500 hands.

THE Board of Trade has approved of the scheme of the Bournemouth Town Council for constructing an experimental portion of an undercliff drive eastward of the Bournemouth pier, for which a tender amounting to nearly 17,000*l.* has been provisionally accepted. The proposal to build an undercliff drive at Bournemouth has always been strenuously opposed by a section of ratepayers, and has been before the town for nearly a quarter of a century.

THE Great Central Railway Company, who have large works in Openshaw and Gorton, have notified the Gorton education committee that instructions have been given for their apprentices to be relieved from overtime, in order that they may be at liberty to attend the evening classes. This is the outcome of the committee's efforts to get the co-operation of employers in furthering their education scheme.

THE Duke of Fife has presented to the towns of Banff and Macduff as a free gift the mansion of Duff House, and that portion of the park immediately surrounding it, covering an area of about 140 acres. This would include the gardens, stables, two lodges and the rod fishing along the land comprised in the gift. This gift is offered with absolutely no restrictions as to the manner in which it is to be developed and managed.

THE Aberystwith Rural Council discussed a communication received pointing out a weakness in one of the stays of the famous Parson's Bridge, which, with the Devil's Bridge, is one of the chief attractions of the district. A member said that English visitors grouped together on the bridge and danced upon it. The chairman said the surveyor had been instructed to put up a notice that no more than two persons should go on the bridge at the same time.

THE Local Government Board have refused to sanction the further loan of 40,000*l.* which the Maesteg Council asked leave to borrow to complete the new storage reservoir at Blaencwmceryn. The Council have already expended nearly 30,000*l.* on the works without having found a satisfactory foundation for the dam. This additional loan would have exceeded the borrowing powers of the Council by about 6,000*l.* The Council have been advised by the Board to look out for a more satisfactory site.

At Chester on Saturday there was offered for sale by auction 27,300 acres of land extending from a mile and a half of Chester to Hilbre Island and West Kirkby at the estuary of the Dee. About 2,890 acres are enclosed farm lands and 1,060 are marsh grazing lands. All the estate, with the exception of two minor lots on the Flintshire side of the Dee, was first offered in one lot, and bidding started at 100,000*l.* and reached 126,000*l.* There was no advance on this sum, and the property as a whole was withdrawn and offered in individual lots.

THE Burmah Oil Company, whose headquarters are in Glasgow, have placed contracts with American and Glasgow firms for 275 miles of 10-inch iron tubes. The tubes are to form a pipe line for the conveyance of the company's oil from Burmah wells down to the river Irrawaddy. The Glasgow firms who have succeeded in gaining half of the contracts are Stewarts & Lloyds, Ltd., and Wilsons and Union Tube Company, Ltd. The contract, which is valued at half a million sterling, is the largest ever given out. The weight of material is about 30,000 tons.

THE cleaning and lighting committee of Edinburgh Town Council have received from a paper works company an offer to purchase the wastepaper collected throughout the city at present. All this wastepaper is handed over by the city's cleaning department to the distress committee, the city supplying waggons and men for the purpose; and the distress committee have recently taken premises in order to handle the collection more effectively and quickly. The offer of Messrs. Caldwell, if accepted, would mean, it is said, an income of about 700*l.* a year to the city. The offer is to be considered.

THE Gorton education committee have decided to pay for the cost of a new stove in St. Francis's school, on the

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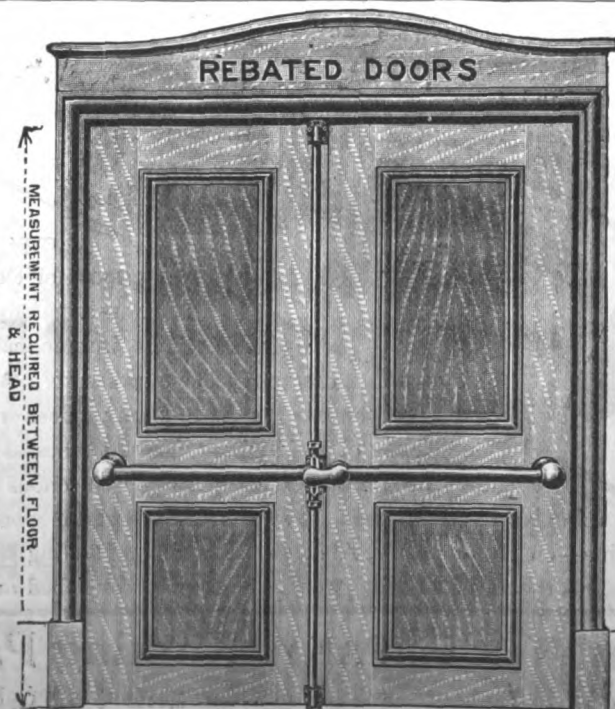
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managers giving the undertaking that they will pay the whole of the cost in the event of the Local Government Board auditor surcharging the amount and this being sustained by the authorities in London. Hitherto the auditor has surcharged such payments (but they have been remitted later on appeal), on the ground that such things as stoves, screens, &c., were part of the structure and should be paid for by the managers. The next answer of the Local Government Board is awaited with interest.

THE Coal Smoke Abatement Society has now issued its report on the experiments carried out with a number of gas stoves with a view of ascertaining their effect upon health and their economic value. The general conclusion is that a properly-constructed gas stove, with a flue sufficiently large to carry away the products of combustion, although for constant work more costly than a coal fire, is quite as satisfactory from a hygienic point of view, and does not in any way vitiate the air of the room, nor does it produce any abnormally drying effect as is popularly supposed.

THE Motor Union have decided to make a grant to the Motor Van, Waggon and Omnibus Users' Association for the purpose of testing the legality of the action of the Great Eastern Railway Company in placing notices on a number of bridges over the Cambridge and Mildenhall line of the company, prohibiting heavy motor vehicles of two tons and upwards in weight passing over them. A member of the Board of Advisory Engineers appointed by the Association has inspected the bridges, and from his report it would seem that they are strong enough to carry the weight of heavy motor traffic.

THE Secretary of the Builders' Exchange, High Street, Birmingham, has on exhibit at the present time a collection of illustrations, mostly from the pages of our contemporary *The American Architect*, showing examples principally of Domestic architecture. Some particularly good examples are shown of the best style, but, as in all collections, there are naturally some particularly bad ones. The collection nevertheless is an interesting one to those engaged in architecture and building and will repay a visit. The Arts and Crafts Club about to be established in connection with the Exchange is progressing, the names of the present

members containing some of our prominent workers in arts and crafts.

DR. F. J. WALDO, the coroner of the City of London, gave an address recently upon fires and fire inquiries. In Scotland inquiry is made into all fires by the Procurator-Fiscal, who conducts a secret inquiry and has the power to swear witnesses. In England, Ireland and Wales there is no general judicial inquiry into non-fatal fires, except in the City of London, where the coroner, by a local Act, has power of inquiry at his discretion into all fires in the City, whether fatal or not. In ancient times all coroners had this right, which, however, fell into disuse after the reign of Edward I. It remained unquestioned until the year 1860, when in the ruling case of *Queen v. Herford* it was decided that non-fatal fires were outside the coroner's jurisdiction. The power was formally restored to the City of London by Parliament in 1888. The whole question is now under the consideration of the Home Office.

THE Surrey County Council will shortly invite tenders for the erection of a smallpox hospital at Ripley. The following permanent buildings will be erected:—An administration block containing rooms for matron and doctor, ample bedroom accommodation for nurses, large kitchen, store-room, &c.; a small ward block containing accommodation for twelve or sixteen patients, a disinfecting and a laundry block, a small observation block in which patients could be isolated if there were any doubt as to their suffering from smallpox, a porter's lodge, small discharging ward and a mortuary. In addition, foundations will be put in for three additional ward blocks on which temporary buildings could be erected in case of a serious outbreak. Other work to be done includes road-making, fencing, a supply of gas and water, and a proper system of drainage. The total cost it is expected will not exceed 14,000*l*.

MR. H. R. BURRILL, a United States special agent, in a report to the Bureau of Manufactures, Washington, on the commerce of Western Australia, says that the timber industry is still in its infancy, but from the latest and most accurate figures obtainable showing its production, enough can be learned to gauge its importance and value as a national asset and the steady rate of its development. The demand for Western Australian hard woods for railway

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sleepers, street paving blocks, piles for wharfs and piers, jetties, bridges, &c., is increasing both in the Commonwealth and for export. The United Kingdom is the chief buyer of these woods outside the Australian States, but a fairly large quantity finds its way into foreign countries. A recent Government estimate gives 8,000,000 acres of jarrah forest and 1,200,000 acres of kauri forest, and the latest published records of the Western Australian Land Department indicate an acreage of only 904,260 of forest land under timber leases and licenses. These figures show the great expansion possible for this industry under intelligently directed effort, and its increasing importance as a source of State wealth. No foreign hard wood can hope to compete with the Australian kinds.

THE town clerks of Hamilton have received the opinion of the Solicitor-General, Mr. James Avon Clyde, K.C., and Mr. C. D. Murray on the question of the legality to erect the new town hall from the Common Good. This has been a burning question in Hamilton for a lengthened period. The designs of the hall are the complement of those of which the new public library now in course of construction form a part. Twice the question has been submitted to a poll of the ratepayers with adverse results, the ground of the objectors being that the cost was greater than the town could bear. Latterly Provost Keith carried a motion in the Town Council to have the buildings erected out of the Common Good. Following on that the objectors obtained the opinion of the Dean of Faculty and Mr. M. P. Fraser, advocate, that this new procedure was illegal. The town clerks gave a contrary opinion, and in the circumstances it was resolved to obtain the opinion the result of which has now been received. Counsel advise that it is legal to erect the town hall out of the Common Good and that the Town Council are not bound to follow the procedure prescribed in the Local Order of 1903 by way of a poll of the householders. They, however, point out that, in consideration of the circumstances that the Town Council have already consulted the ratepayers, and while the Court was slow to interfere with municipal corporations in the administration of their affairs, it might not be safe to proceed without fear of interdict.

### SEWER VENTILATION.

At first it seemed as if ventilation was accomplished when an opening of any kind was made by which sewer gas could pass into the air. So long as the outlet was at a sufficient height disagreeable results did not follow. But it was only a partial effort. What was no less required was to introduce fresh air into the sewer. That was sometimes attempted by separate pipes with special apparatus. But the patent "Omnifex" system of Mr. W. E. Farrer attains both ends simultaneously and by means of the same appliance. Externally there appears to be a tube rising to the air, the lower part up to a reservoir or bonnet being of a larger diameter than the upper part. The larger tube contains two tubes, one leading to the manhole and extending to the upper air, while the outer tube has ribs or diaphragms by which the air is brought into the drain. There is no mere mingling of foul and fresh air, but the latter is brought into operation at the places where it can be most effective. The system has simplicity to recommend it. There is definiteness in the arrangements, and it is an impossibility that foul air or gases should escape at the street level, where they form a terrible nuisance. Special flap valves have been devised which confer additional security. Farrer's patent disc valves are made to meet rough handling. The parts cannot get out of order, and there are no keys or handles which can become mislaid when the moment for use arrives. By means of wedges and bars the door or opening is kept in a rigid position, which allows of no more escape of air or gas than in a locked penstock. And until the simple but massive parts are altered in their positions the valve cannot be opened. The disc valves are particularly well adapted for their purpose.

### THE PLANNING OF CITY SUBURBS.

A CONFERENCE has been held at Westminster to consider the question of the planning of suburbs to cities and large towns. It was presided over by Sir James Woodhouse, the newly appointed member of the Railway and Canal Commission. Those present included the Lord Mayor, the Deputy Lord Mayor and Town Clerk of Manchester, besides representatives of Liverpool, Accrington, Bradford, Leeds, Hull, Blackburn, Harrogate, Macclesfield, Rochdale, Eccles,

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Nelson, Crewe, Burnley, Sheffield, Bolton, York, Southport and Huddersfield. The matter arose out of the conference held at Manchester six weeks ago, at which the following resolution was agreed to:—"That in the opinion of this conference it is necessary for the safeguarding of the health and welfare of the inhabitants of our towns that Parliamentary powers should be conferred on town councils and other local authorities to enable them to control, by means of town extension building plans, the laying-out of all land within the boundaries of towns, or which may hereafter be incorporated. That in the opinion of this conference it is desirable that some central authority should be empowered to confer with town councils and other local authorities in regard to the plans for contemplated building upon the areas between contiguous towns." After carefully considering the question it was resolved, on the motion of the Lord Mayor of Manchester, to refer the resolution to a committee consisting of representatives of the largest towns, to prepare details of the proposal.

### ENGLISH FONTS.

THERE was not one of the late Holman Hunt's wall-paintings in the Manchester town hall which caused more dissatisfaction than the representation of the baptism of one of the early chiefs of the district. He knelt in a large vase-shaped font, and although there could be no doubt about his earnestness, it had to be allowed that his position was most uncomfortable. The ceremony seemed so remote from an ordinary christening in a modern Manchester church, visitors seemed to think that archaicism had triumphed over truth. The earliest baptisms, it is believed, were those in the river Jordan. And at various times that precedent was imitated. The subject is one deserving greater attention than it has obtained, and through the enthusiasm of Miss A. K. Walker a treatise on the subject, illustrated by a greater number of photographs than have hitherto appeared, will in due course of time be completed. The first article has been published in the *Stone Trades Journal*, and is devoted mainly to fonts that still remain in Sussex. They vary from a plain tub or well-head at Littlehampton to an architectural composition like that at Aldingbourne. The

local Sussex examples are supplemented by illustrations from ancient ivories and other representations recording the practice at different times. For lovers of ecclesiastical archaeology the subject is one of the most important.

### BIRMINGHAM ELECTRICAL SUPPLY.

THE first meeting of the new session of the Birmingham Local Section of the Institution of Electrical Engineers was held on the 21st inst. at the University. The new chairman, Mr. R. A. Chattock, the city electrical engineer, was unable to be present owing to an attack of influenza. His paper was read by the hon. secretary. He proceeded to deal with the electrical supply in the city, and said that in one way Birmingham was to be congratulated upon having delayed the development of its electrical supply until the present time. By so doing it had been able to see how electric supply had been developing in other large centres of commerce, and it had been in the position to start afresh and to make provision for dealing with the enormous power supply that it was confidently anticipated would be required in its area. It had also been able to adopt the most modern and efficient types of machinery for giving the supply and to proportion the size of its units, in accordance with the demand that might be expected. Already, although the first instalment of the general scheme was barely completed, the large manufacturers were looking carefully into the question of adopting electrical power for driving their works, and they were doing that not in a hesitating way, such as by installing a few small motors in their works, but many of them were considering the installation of some hundreds of horsepower, varying from 200 or 300 to as much as 1,500. It would therefore appear that the spirit in which Birmingham was dealing with its electrical supply was being appreciated by its citizens, and there was every indication that the policy adopted was a right one, which would eventually tend to greatly increase the welfare of the city. As an initial reason for developing this large scheme of supply Birmingham had its tramways, which it was decided to electrify, and by obtaining such a load upon its new station it assured itself of an immediate return upon a considerable proportion of its capital outlay. It was, however, con-

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fidently anticipating a much larger demand than its tramways could give it, and by offering legitimate inducements to large power consumers there was no doubt that an enormous supply business could be built up and made remunerative in an area such as they were considering. Dealing with the question of a supply for lighting, he said the public had been very quick to recognise the great advantage of using lamps which had a higher efficiency than that of the ordinary incandescent lamp. He referred to the "Tantalum" and the "Nernst" lamps. Although in some cases their adoption was reducing the amount of current sold to certain consumers there was no doubt that the cheaper form of lighting was popularising the use of electric light, and many people were increasing the quantity of light they used now they found they could get it at a cheaper rate. He was of opinion business would be considerably stimulated by this development. He described the "Cooper-Hewitt" or "Mercury vapour" lamp, which consisted of an electric arc passing through mercury vapour in a vacuum tube. It was one of the most efficient forms of lighting. Many workshops in the country were being fitted up with this form of lighting, and there would shortly be some in the city. The fact that a direct current supply was available in so many centres in the city suggested the advisability of splitting up the supply to the tramways into districts. In that way less interference from possible breakdowns was anticipated, and arrangements had been made so that should the supply in any one district fail, the other districts could take it up between them.

### MODEL COTTAGES EXHIBITION, SHEFFIELD.

THE exhibition of model cottages to be held for Yorkshire and the North Midlands in Sheffield next year, under the auspices of the National Housing Reform Council, will be known as the Firth Park exhibition.

The classes of cottages to be erected on a site belonging to the City Council just beyond Firth Park will be as follows:—Class A.—Cottages containing two bedrooms, living room and scullery, with a bath for each house, the maximum price, to include architect's fees and builder's profits, but not to include land or roads, being 175*l*. Class B.—Three

bedrooms, living room, scullery and bath, with a maximum price of 200*l*. Class C.—Three bedrooms, parlour, living room, scullery and bath, with a limit of 225*l*. Twelve houses will be erected to the acre, and a feature of the exhibition will be the planning carried out on model lines. The cottages are to be built either singly or in blocks of not more than four. Gold, silver and bronze medals will be awarded for the best cottages in each of the classes.

The judges already selected include Mr. E. M. Gibbs (past president of Sheffield Society of Architects), Mr. E. Holmes (the present president), Mr. C. F. Wike (city surveyor), and a nominee of the Master Builders' Association. There will also be three other judges. Special furniture and gardening competitions will be held, and a display of building materials, as well as a site planning competition, the conditions for which are to be issued at once. The guarantee fund for the exhibition has been opened, and support to the extent of upwards of 100*l*. promised before any public appeal has been made.

If possible, the exhibition will be opened about the middle of June.

### THE PANAMA CANAL CONTRACT.

THE enormous quantities involved in the contract for the Panama Canal are indicated by the following figures. The first section, from the Caribbean Sea to the Mindi river, will be a channel with a bottom width of 500 feet and a depth below mean tide of 42 feet; this will call for about 9,455,000 cubic yards of dredging, mostly in soft mud, although some coral rock may be encountered. The second section, from the Mindi river to the Gatun locks, is a channel with a bottom width of 500 feet and a minimum depth of 42 feet; it calls for 11,000,000 cubic yards of excavation, partly by dredging and partly by dry methods, about one-third being indurated clay or rock and two-thirds earth. The third section is the Gatun locks, which are not yet definitely located nor even their number of lifts determined. The quantities in the case of three lifts of 28½ feet each are 3,660,000 cubic yards of excavation, 660,000 cubic yards of backfill, 1,302,780 cubic yards of concrete, 5,700 cubic yards of cut stone, 20,000 cubic yards of brick, 130,000 feet of timber, 1,830,000 lbs. of cast-iron, and steel gates weighing

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29,230,000 lbs.; no estimate of quantities for locks having two lifts of 42½ feet has yet been made. The fourth section is the Gatun dam, a great embankment of 21,200,000 cubic yards. The fifth section is the regulating works at Gatun, calling for 1,580,000 cubic yards of excavation, 189,000 cubic yards of concrete, and Stoney gates weighing 5,000,000 lbs. The sixth section, from Gatun locks to Las Cascades, is the lake portion of the project, the channel having a bottom width varying from at least 1,000 feet at the west end to 300 feet at the east end, and calling for 24,000,000 cubic yards of excavation, of which about half may be rock. The seventh section, with a bottom width of 200 feet, in which the famous Culebra cut occurs, calls for 39,000,000 cubic yards of excavation in rock of various degrees of hardness, clay, earth, hardpan and volcanic material. The eighth section, from near Paraiso to the Pedro Miguel lock, has a bottom width of 300 feet, and calls for 6,835,000 cubic yards of rock and soft earth excavation. The ninth section is the Pedro Miguel lock, having a lift of 30 feet; it is not yet fully designed, but the quantities involved will probably embrace about 1,170,000 cubic yards of excavation, 1,100,000 cubic yards of dam embankment, 390,000 cubic yards of backfill, 513,612 cubic yards of concrete, 4,000 cubic yards of cut stone, 8,000 cubic yards of brick, 85,000 feet of timber, 732,000 lbs. of cast-iron, and steel gates weighing 19,500,000 lbs. The tenth section is Lake Sosa, where about 1,680,000 cubic yards of excavation will be required, some of it in rock and some in earth easily dredged. The eleventh section is the Sosa locks, having two lifts of 27½ feet each, which are not yet fully designed; the approximate quantities are 1,430,000 cubic yards of excavation, 950,000 cubic yards of backfill, 992,800 cubic yards of concrete, 6,000 cubic yards of cut stone, 14,000 cubic yards of brick, 145,000 feet of timber, 1,281,000 lbs. of cast-iron and 37,180,000 lbs. of steel in the gates. The twelfth section embraces 6,300,000 cubic yards in the La Boca dam and 5,397,000 cubic yards in the Corozal-Sosa dam. No estimates have yet been made for the regulating works. The thirteenth section, from the Sosa locks to deep water in Panama Bay, calls for 8,528,000 cubic yards of excavation in material which is believed to be nearly all soft. The fourteenth section is the relocation of the Panama R.R. from the Mindi river to Panama; no estimate is given of

the quantities involved, although it is certain to require some heavy embankments.

The total of these figures is enormous, when it is considered that they are for a single contract, for they amount to 108,338,000 cubic yards of rock and earth excavation by dredging and in the dry, 2,998,000 cubic yards of concrete, 35,997,000 cubic yards of earth dams and backfill, 3,843,000 lbs. of iron and 90,910,000 lbs. of fabricated steel. It is manifest that the execution in a tropical climate, with imported labour, of a lump-sum contract involving such quantities would be beyond the resources of any contractor. It is difficult to see how the work could be prosecuted satisfactorily except by some plan by which the nation's credit financed the undertaking and the various items of work were executed by contractors experienced in them and working harmoniously. None of the criticisms of the proposed form of contract have advanced anything better, or, in fact, have attempted to do more than suggest some features in which some of the terms of the contract could be made more fair.

#### NEW SAN FRANCISCO.

A REPORT received through the Foreign Office, from H.M. Consul-General (Mr. C. W. Bennett, C.I.E.) at San Francisco, gives the following account of the situation at present:—

There is very little sign of any permanent construction. The mass of debris, millions of tons of it, remains more or less where it was. The amount removed is barely noticeable, although in the aggregate it is large. Some of the principal streets are cleared sufficiently to allow of the passage of electric cars and wheeled traffic, but except in some of the main streets the pavements are still more or less obstructed. A mushroom city of wooden shanties, "shacks," has sprung up on the edge of the burned district and near the water-front; street cars are running on nearly all the old routes there, and vehicles of other kinds are available for business.

Business is active, but the wholesale and retail trade is much hampered for want of warehouses and depôts for storing stocks. The volume of trade has probably not much decreased, but the nature of the goods sold is not

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what it was before the disaster. Everything is of a cheaper kind. Luxuries are not to be obtained. Men who smoked shilling cigars now smoke threepenny ones. Men who wore six or eight suits of clothes made to order at seventy or eighty dollars a suit now buy ready-made clothing at about twenty-five to thirty dollars a suit and order half the number of suits or less. Economy is practised in every direction.

Had things otherwise been normal, had the insurance money been paid up well, and had not labour troubles come in an acute form on top of a disordered commerce, things might have righted themselves more quickly. But insurances in many cases have not been paid. Several of the companies having "earthquake clauses" have definitely refused. Some have paid small claims of a few hundred dollars. Other companies have paid up in full; others again at a reduction varying from 10 to 50 per cent. In numberless cases the insurance money was required to organise the business or to tide over present difficulties. It is not forthcoming and trading is hard. No firm knows exactly how it stands. This applies also to capitalists who, before the earthquake, were millionaires.

Speculative trading after the disaster has caused further losses. It was at once seen, for instance, that cement would be required in large quantities. Several ships were chartered to bring it over, and the first arrivals were sold at good prices. But everybody ordered cement, and the market is overstocked and there is no place to store it. The cash for these orders was, as a rule, advanced by the banks against the bills of lading. The banks lose—temporarily, at any rate—the advance made, and the consignees are still more deeply burdened with debt. San Francisco is thrown back practically to the days of 1849 with this one exception—she now has trans-continental communication with the Atlantic States and a steamship service on the Pacific. This is an enormous advantage and will aid in re-establishing trade on new lines.

It is questionable whether the payment of insurance money has really benefited the insurers to any great extent, at any rate those who were really in need of it. The case of large insurers need not be considered, for, as a rule, the nonpayment of insurance would not break them. There were, however, an enormous number of artisans, clerks

and junior employes who have saved a little money and purchased a piece of land. Sometimes they had paid the purchase money in full, in others they had mortgaged their interest in the "lot" to build a house and pay for it in instalments. The savings banks were in the habit of advancing to an owner three-fifths of the value of the ground and of the house upon it. The fire comes, destroys the house, the insurance assigned to the savings bank was paid in whole or in part (or was not paid at all) and credited in part payment of the mortgage. For the remainder of the mortgage the bank forecloses and the owner loses both lot and house. Thousands of such cases will occur, and the insurance money will benefit only the banks. The banks will therefore be loaded up mainly with real estate, barely worth half of the money advanced on it in the first instance. In a few months the banks must sell this mass of real estate, and at, no doubt, a considerable loss.

The commercial banks are extremely chary as to making loans, which everybody wants, as the clients have no security to offer. Practically everything has been burned down, business blocks, private houses, stocks; nothing is left but vacant "lots," at times already mortgaged, and covered with debris which it will cost a large amount to remove to make ready for building on.

Large sums formerly invested in California have been withdrawn, and it is feared that much more may be. In view of such a disaster as has recently befallen San Francisco, the above facts are depressing enough, but all these difficulties have been augmented a hundredfold by labour troubles.

If the earthquake made outside capitalists cautious as to investments in San Francisco, the labour question, now so acute, has frightened them still more. Californian capitalists, of course, whatever happens, must support the city even by throwing good money after bad in order to save something.

Even before the earthquake and the advance in wages a building could be put up in Los Angeles, where labour unions are not supreme, for 30 per cent. less than in San Francisco. Now the cost of building is almost prohibitive, and a man will think carefully before he puts up, at enormous cost, a building which can hardly make any return on the capital invested. Finally, the cost of living has increased fully 20 per cent. since the fire.

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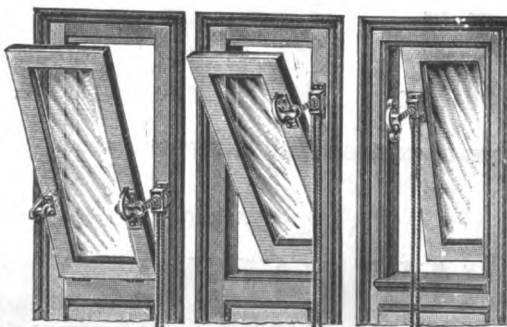
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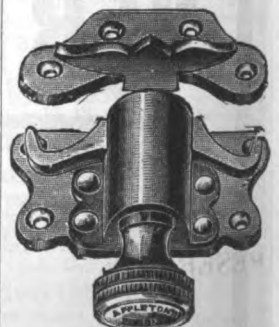
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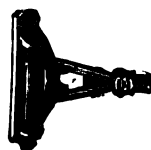
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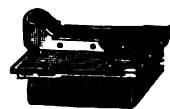
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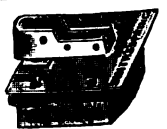
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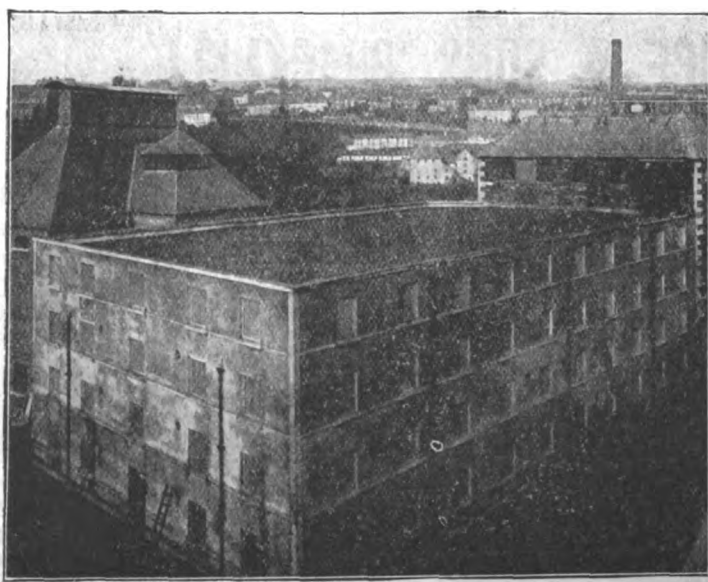
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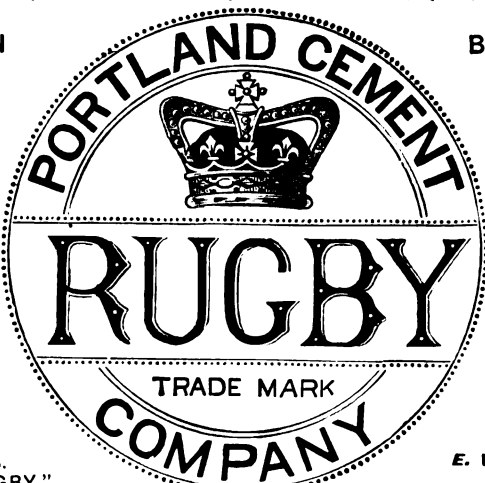
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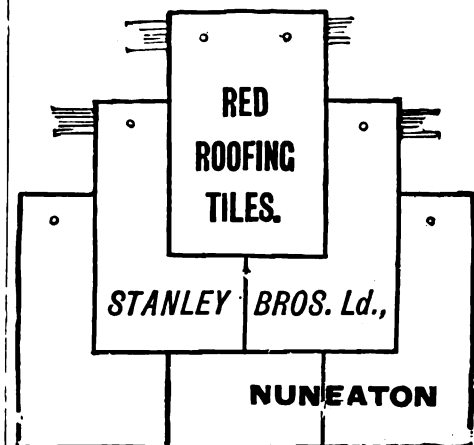
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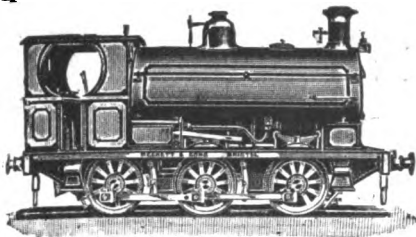
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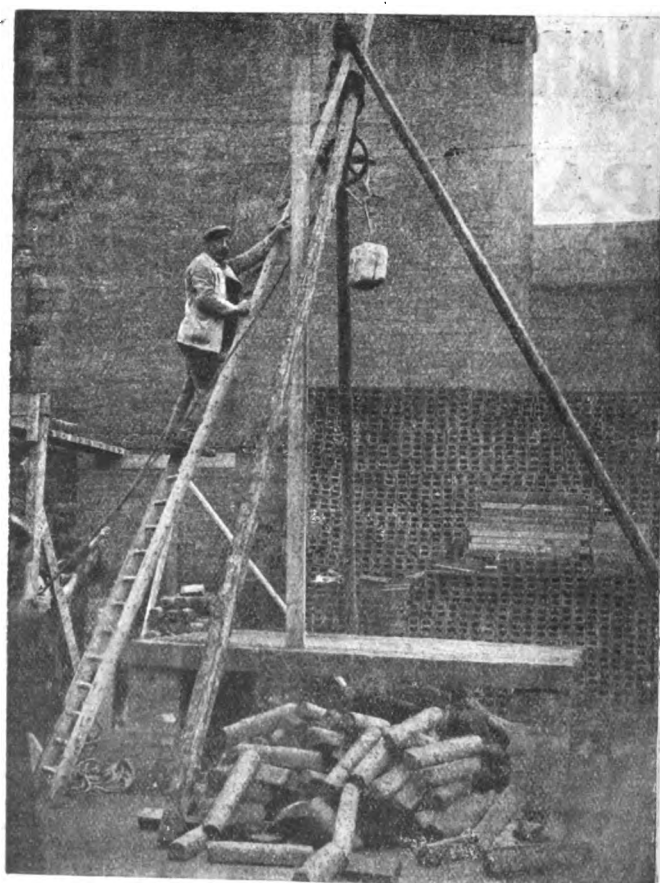
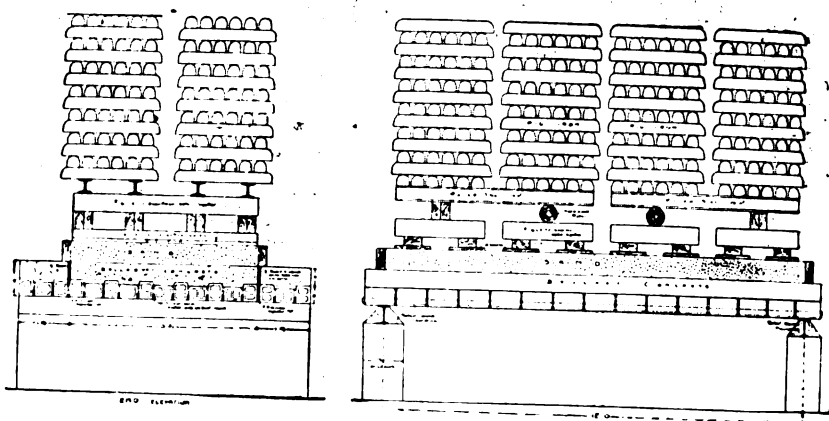
FLAT arches of brickwork are familiar to the youngest builder. To what extent they are practicable is a question which has often been debated. Brunel, who was in advance of his age, demonstrated by a very flat arch at Maidenhead that brick laid with hoop-iron along the courses was capable of being used to an extent that appeared to be incredible. That inventive engineer would, if he were living, be certain to approve of the Kleine flooring, in which hollow bricks, flat metal bars and concrete are combined to constitute a floor that is light, strong, fire-resisting and capable of being employed to cover regular or irregular spaces.

Practically the system may be considered as a slab, which in modern phraseology can be described as "armoured brickwork." It corresponds with armoured concrete in any tensile strains being sustained by the metal bars. There is, consequently, no thrust, and apparently there is no probability of contraction or expansion in the brickwork, unless to an infinitesimal degree. It is, however, of little advantage to confine attention to general conditions. Floors in factories and warehouses have to sustain heavy loads; besides, there is the contingency of a body falling from a height upon them. To determine how far a Kleine slab was equal to both purposes was the object of tests lately made at Irongate Wharf, Paddington, in the presence of several experts, and under the direction of Mr. A. T. Walmisley, M.Inst.C.E.

For the testing two slabs were prepared by ordinary workmen without special supervision. The first measured 12 feet by 5 feet 3½ inches, and was supported by rolled joists. It was made up of special hollow bricks placed alternately 6 inches and 4 inches deep. A metal bar 1½ inches by ½ inch was inserted in the centre of each longitudinal joint, and was turned at right angles at the ends. Over the bricks was laid a bed of 6 to 1 concrete. On the slab pig-iron was piled with care until the load on the 63½ square feet of floor attained a distributed load exceeding 25 tons, or 7.9 cwt. per square foot approximately. As the safe load was assumed to be 2 cwt. per square foot, the strength before collapse was nearly four times in excess of requirements. The ten-

KLEINE PATENT FIRE-RESISTING FLOOR

GENERAL ARRANGEMENT OF TEST



sion bands were found to be unbroken, there was no thrust on the unloaded sides or extensions. The concrete was not well mixed and did not appear to add to the strength. The second slab was used for tests by falling weights. In construction it corresponded with the first. The concrete was omitted, but the bricks were covered with sand. A distributed load of 4 cwt. was applied without any recorded change. It was removed. Then a weight of 84 lbs. was allowed to fall from a height of

8 feet. The sand was disarranged by the impact, and in the centre of the floor was a depression of 2 inches. The sand was removed and a like weight fell from a height of 9 feet. The lower part of the bricks for about 18 inches was broken. For the third time the weight fell on the centre of the slab and made a hollow about 8 inches square, but the iron band was intact, and Mr. Walmisley recognised the superiority of flat to round iron for such purposes.



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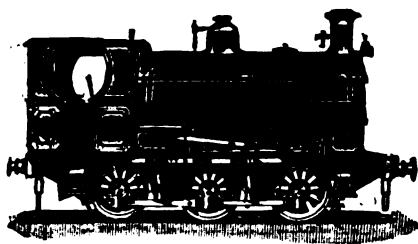
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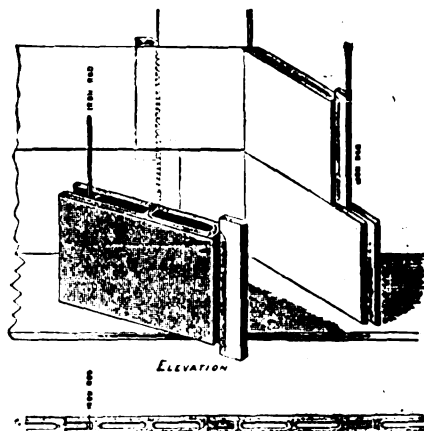
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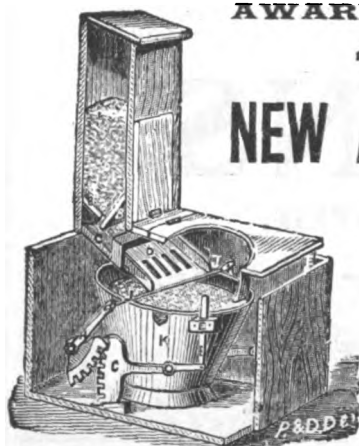
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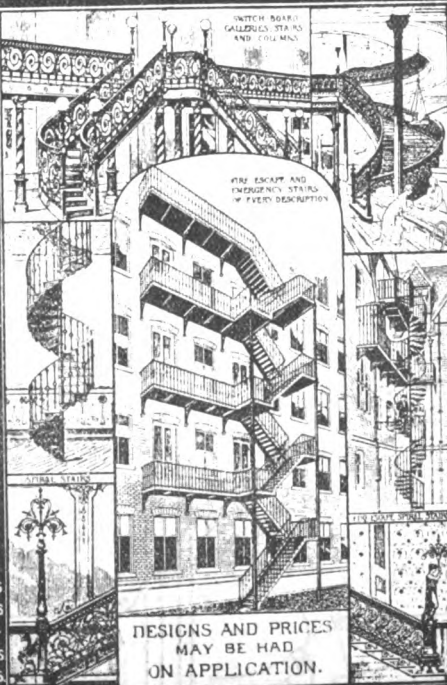
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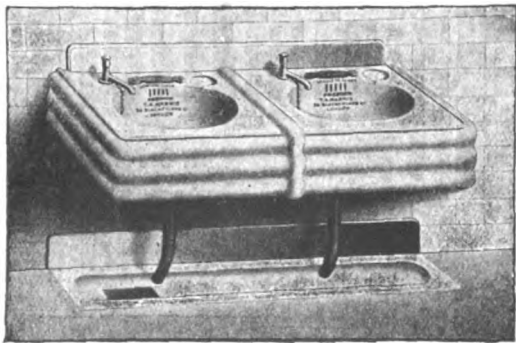
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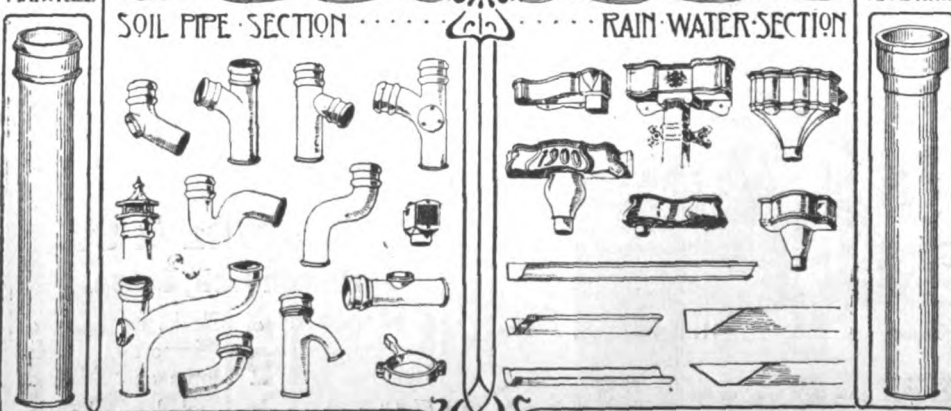


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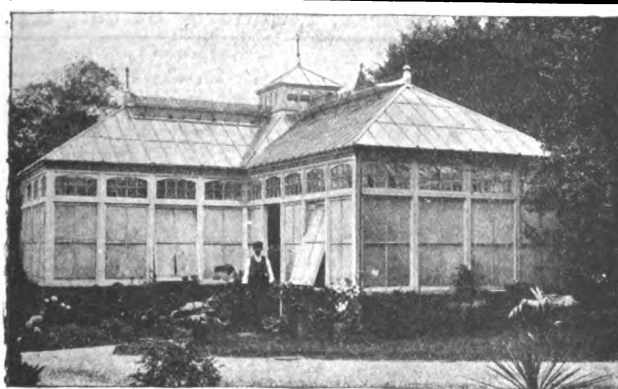
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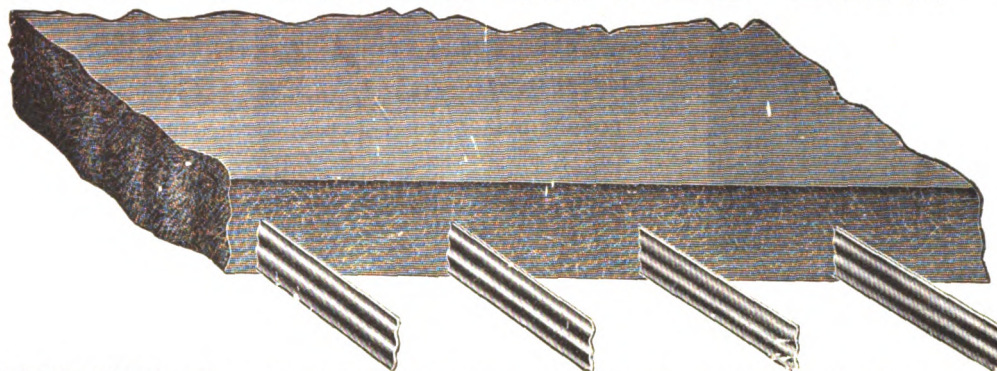
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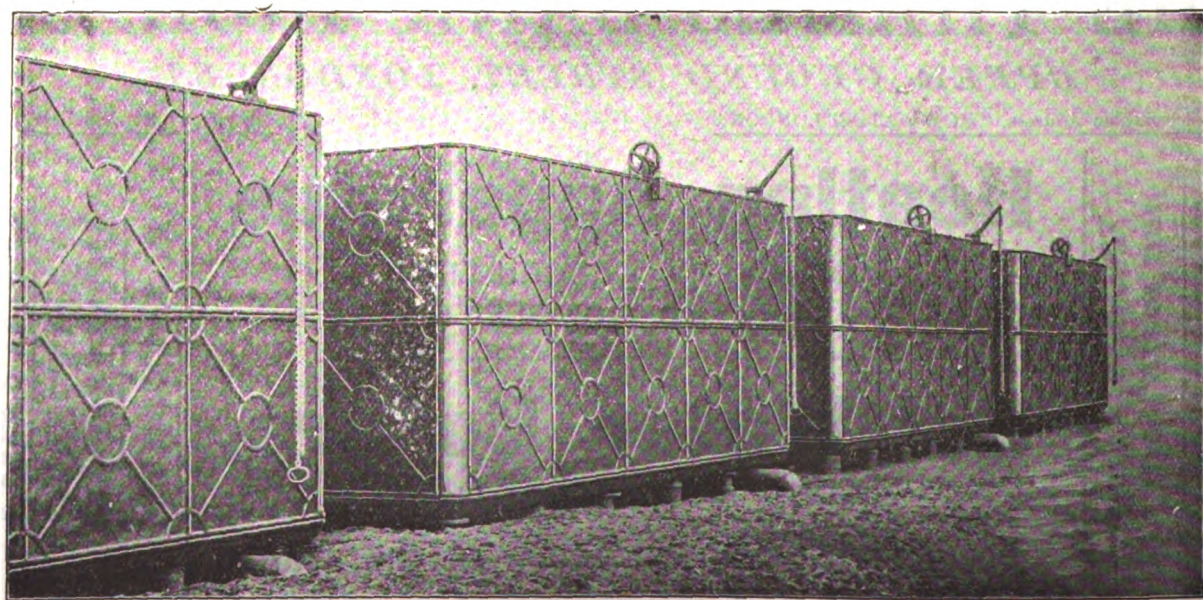
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# THE Architect and Contract Reporter.

FRIDAY, DECEMBER 7, 1906.

Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,

P. A. GILBERT WOOD,

Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus London, England.

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

## EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL

ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

## TENDERS, ETC.

\*\* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

## COMPETITIONS OPEN.

GLASGOW.—Dec. 12.—The Corporation of Glasgow invite competitive designs for laying-out the estate at Riddrie, by the erection thereon of small self-contained houses. Premiums of 75l., 50l. and 25l. will be awarded. Mr. A. W. Myles, town clerk, City Chambers, Glasgow.

GOOLE.—Dec. 31.—The Goole Joint Body of Governors invite competitive designs for erection of a dual secondary school, accommodating 200 students, with provision for the conduct of technical and evening classes. Premiums of 50l. and 25l. Deposit 2l. 2s. Mr. James Wm. Johnson, clerk to the Governors, Council Offices, Goole.

IRELAND.—Dec. 31.—The Local Government Board for Ireland invite from architects the submission of designs for labourers' cottages in rural districts. Premiums of 50l., 30l. and 20l. for the three best designs. A copy of the conditions of the competition may be obtained from the Secretary of the Local Government Board, Dublin.

MONTEVIDEO.—Dec. 14.—La Comision Nacional de Caridad require competitive plans for new foundling hospital with approximate cost. Plans and report, under mottoes, and, in sealed envelope, name and address of competitor. The four selected plans will receive 212l. each, and will be asked to further compete. Further particulars from the Consulate-General for Uruguay, 5 and 6 Clement's Inn, Strand, W.C.

SUNDERLAND.—Feb. 1.—The committee of the Sunderland infirmary invite designs for a children's hospital. Premiums of 100l., 50l. and 25l. are offered. Deposit 1l. 1s. Mr. Thomas Robinson, secretary, Infirmary Offices, Bank Buildings, Sunderland.

WOLVERHAMPTON.—Dec. 31.—The Board of Management of the Wolverhampton and Staffordshire general hospital, Wolverhampton, invite competitive designs for a nurses' home adjoining the hospital. Mr. J. Stephen Neil, house governor and secretary.

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**BECKENHAM.**—Dec. 10.—For works of decoration and repairs to Gloucester Lodge, St. George's Road. Deposit 1*l*. Mr. J. A. Angell, surveyor to the Council.

**BURNLEY.**—Dec. 22.—For the erection of proposed technical school in Ormerod Road. Deposit 1*l*. 1*s*. Mr. G. H. Pickles, borough engineer, Town Hall.

**CALLINGTON.**—Dec. 22.—For erection of a secondary school at Callington, Cornwall. Mr. John Sansom, architect to the committee, Liskeard.

**CAVERSHAM.**—Dec. 20.—For the erection and completion of a public library. Deposit 2*l*. 2*s*. Mr. W. G. Lewton, architect, 6 The Forbury, Reading.

**COLNE.**—Dec. 14.—For the erection of public elementary schools off Burnley Road, Colne, Lancs. Messrs. Holgate & Spivey, architects and surveyors, Market Street, Colne.

**COWLING.**—Dec. 12.—For the plumber, glazier and slater's work required in the erection of a residence at Cowling, Yorks. Mr. James Hartley, architect, Skipton.

**CROXDALE.**—Dec. 18.—For additions to Croxdale Council school, Durham. Mr. W. Rushworth, architect, Shirehall, Durham.

**DEVONPORT.**—Dec. 13.—For providing and fixing a covered iron balcony to the workhouse infirmary at Ford. Mr. Chas. Cheverton, architect, 64A Chapel Street, Devonport.

**DEWSBURY.**—Dec. 13.—For the erection of a villa residence in Birkdale Road. Messrs. Kirk & Sons, architects, Dewsbury.

**DUNSFORD.**—Dec. 12.—For enclosing part of churchyard with brick wall, supplying material. Length 310 feet, height 7 feet. Apply to Rev. H. Tickell, Dunsford Vicarage, near Exeter.

**FAREHAM.**—Dec. 13.—For the erection of a school building and offices, master's house, drainage, roadmaking, fencing, &c., for the Governors of Price's Charity. Deposit 5*l*. Mr. Wilberforce Cobbett, architect, Fareham, Hants.

**GOTHERINGTON.**—Dec. 8.—For alterations at Gotherington Council school, Gloucestershire. Mr. R. S. Phillips, surveyor to the committee, Shire Hall, Gloucester.

**HARBORNE.**—Dec. 10.—For the erection of a fire station at Harborne, Birmingham. Deposit 5*l*. Mr. Henry E. Stilgoe, city engineer and surveyor, Council House, Birmingham.

**HEDON.**—Dec. 17.—For additions and alterations to the Council school, Hedon, Yorks. Deposit 1*l*. 1*s*. The Building Surveyor, County Hall, Beverley.

**HULL.**—Dec. 12.—For erecting emigrants' room, &c., Paragon station, Hull, for the North-Eastern Railway Company. Mr. William Bell, the company's architect, at York.

**KINGTON.**—Dec. 19.—For carrying-out additions and alterations to the Lady Hawkins grammar school, Kington, Hereford. Deposit 2*l*. 2*s*. Mr. Alfred Dryland, Shirehall, Hereford.

**LAUNCESTON.**—Dec. 14.—For erection of a drill hall. Mr. Otho B. Peter, architect, Launceston.

**LONDON.**—Dec. 12.—For the extension of and an additional storey to the laundry at the Edmonton workhouse at Upper Edmonton. Deposit 5*l*. 5*s*. Mr. Stuart Hill, architect, 106 Cannon Street, E.C.

**LONDON.**—Dec. 12.—For building-in a Lancashire boiler, &c., at the workhouse, Sidney Road, Homerton, N.E. Mr. Frank R. Coles, clerk, Homerton, N.E.

**LONDON.**—Jan. 17.—For certain alterations and additions at the infirmary, Lower Road, Rotherhithe, S.E. Deposit 50*l*. Names and addresses before December 8 to Mr. E. Pitts Fenton, clerk, 283 Tooley Street, S.E.

**LONDON.**—Dec. 14.—For the enlargement of the sorting office at Lewisham, S.E. Deposit 1*l*. 1*s*. Mr. J. Wager, H.M. Office of Works, Storey's Gate, S.W.

**LOSTWITHIEL.**—Dec. 14.—For taking-down part of the present house and building additions to Collamere House, near Bridge End, Lostwithiel, Cornwall. Mr. T. H. Andrew, architect, Market Hill, St. Austell.

**MANCHESTER.**—Dec. 11.—Applications for the erection of the superstructure of additions to the offices of the Refuge Assurance Company, Oxford Street, to Mr. Paul Waterhouse, architect, Staple Inn Buildings, High Holborn, W.C.

**MATLOCK.**—Dec. 17.—For the taking-down of existing buildings and walls and the rebuilding of walls on Bakewell

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**NOTTINGHAM.**—Dec. 10.—For the erection of a bandstand at the arboretum. Deposit 1*l.* 1*s.* Mr. Frank B. Lewis, city architect, Guildhall.

**ORRELL.**—Dec. 8.—For the erection of offices, for the Urban District Council. Deposit 2*l.* 2*s.* Names to Mr. Richard Pennington, architect, Malvern Chambers, Wigan.

**PICKETT HOW.**—Dec. 10.—For the erection of loose boxes, &c., at Pickett How, near Egremont. Mr. Jackson, Pickett How Farm.

**PORTSMOUTH.**—Dec. 10.—For erecting a shop at the corner of Highland Road and Clegg Road, Eastney. Messrs. Rake & Cogswell, architects, Prudential Buildings, Portsmouth.

**RADNOR.**—Dec. 19.—For the erection and completion of proposed Bible Christian chapel at Radnor, near Redruth. Mr. Sampson Hill, architect, Green Lane, Redruth.

**RUSTINGTON.**—Dec. 17.—For the erection of two cottages at Rustington, Sussex. Mr. H. G. Heal, surveyor, Worthing, and Beach Road, Littlehampton.

**SAFFRON WALDEN.**—Dec. 15.—For the erection of a manual instruction building, for the Governors of King Edward the VI. Grammar school. Messrs. Ackland, Son & Bailey, Saffron Walden.

**SCOTLAND.**—Dec. 10.—For the mason, carpenter, slater, plasterer, painter, glazier, plumber and water-heating works of classrooms to be erected at the public school, Kingussie. Mr. Alexander Cattanach, architect, The Laurels, Kingussie.

**SCOTLAND.**—Dec. 11.—For the mason, carpenter, slater, plaster and painter's work of rebuilding shop and house at Archiestown. Plans and specifications may be seen with Mr. John Wittet, architect, Elgin.

**SCOTLAND.**—Dec. 12.—The Commissioners of H.M. Works and Public Buildings invite separate tenders for the execution of (1) excavator, mason and bricklayer's work;

(2) carpenter and joiner's work; (3) ironfounder, smith and ironmonger's work; (4) slater's work; (5) plasterer's work; (6) plumber and gasfitter's work; (7) painter, paper-hanger and gilder's work; (8) glazier's work; (9) blind-maker and bellhanger's work in connection with ordinary works and repairs to buildings in their charge in (1) Edinburgh, (2) Glasgow, (3) Aberdeen, for three years from January 1. Deposit 10*s.* for each schedule. Mr. W. T. Oldrieve, H.M. Office of Works, Edinburgh.

**SCOTLAND.**—Dec. 12.—For the erection of proposed house at Lochgilphead (mason, joiner, slater, plasterer and plumber's work). Messrs. Gillies & Todd, architects, Lochgilphead.

**SCOTLAND.**—Dec. 15.—For the mason, carpenter, slater, plumber, plasterer, painter and glazierwork of Town and County bank to be erected in Keith. Mr. D. J. Corrigan, architect, Keith.

**SKIPTON.**—For the work in connection with the building of a bridge at Gill Beck, Barden, for the Skipton Rural District Council. Mr. A. Rodwell, surveyor, Skipton.

**SHOREHAM.**—Dec. 17.—For alterations and additions to New Shoreham Council schools. Mr. A. W. Nye, 2 Duke Street, Brighton.

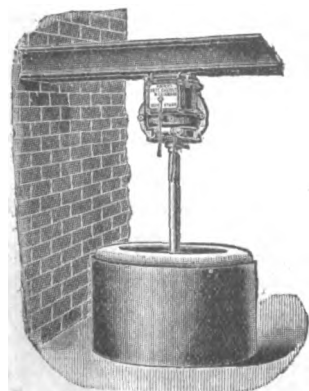
**STOKE-UPON-TRENT.**—Dec. 12.—For the following works for the Guardians:—(1) Fixtures and fittings for the stores at the administrative block; (2) painting at the cottage homes, Penkhull; (3) repairs and painting at the relief and rate offices, Longton. Mr. C. Daniel, clerk, Union Offices, Stoke-upon-Trent.

**WALES.**—Dec. 8.—For rebuilding of Bethania Welsh Baptist chapel, Maesteg. Deposit 1*l.* 1*s.* Mr. W. Beddoe Rees, architect, 3 Dumfries Place, Cardiff.

**WALES.**—Dec. 11.—For carrying-out alterations and repairs at 2, 7 and 8 Broad Street, Merthyr Tydfil. Mr. J. Llewellyn Smith, architect, Aberdare.

**WALES.**—Dec. 12.—For the following, for the Glamorgan County Council:—(1) Alterations at the Llanmorlais Council school, near Gowerton; (2) minor alterations at Penrheol Council school, near Gorseinon; (3) erection of an infants' school at Bedlinog; (4) additions and alterations at the Llantwit Fardre Council school. Mr. W. E. R. Allen,

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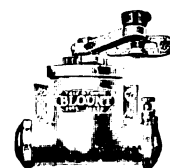
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deputy clerk of the County Council, Glamorgan County Offices, Westgate Street, Cardiff.

WALES.—Dec. 12.—For the erection of buildings at Mardy, Glamorgan. Deposit 1*l.* 1*s.* Messrs. Lewis & Morgan, architects, Pontypridd.

WALES.—Dec. 13.—For repairs and alterations to the Council school at Bwlchygroes, in the parish of Clydey, Pembrokeshire. Mr. D. E. Thomas, architect, 17 Victoria Place, Haverfordwest.

WALES.—Dec. 13.—For alterations and additions at Goodwick station, Pembrokeshire, for the Great Western Railway Company. The Engineer at Neath Station.

WALES.—Dec. 13.—For the erection of two cottage homes at Bargoed, in the parish of Gelligaer, for the Merthyr Tydfil Board of Guardians. Mr. Thomas Roderick, architect, Clifton Street, Aberdare.

WALES.—Dec. 18.—For carrying-out the following works for the managers of the Eastern Valleys group of Council schools:—(1) Erection of iron railings and other work at the Pontnewynydd Council school, Mon.; (2) erection of new offices at the Forge Side Council school, Blaenavon, Mon. Mr. H. J. Griggs, architect, Newport, Mon.

WALES.—Dec. 28.—For the erection of a workhouse at Carmarthen. Deposit 2*l.* 2*s.* Mr. Arthur I. Jones, architect, 2 Spilman Street, Carmarthen.

WEMMERGILL.—Dec. 15.—For additions to and strengthening of Wemmergill bridge (stone), Yorks, on the Middleton-in-Teesdale and Brough main road. County Surveyor's Office, County Hall, Northallerton.

WEST RANTON.—Dec. 10.—For the erection of hospital buildings at the Alexandrina Colliery, near West Ranton. Deposit 1*l.* 1*s.* Names to Messrs. J. G. & R. G. Cowe, architects, Chester-le-Street.

WHITEHAVEN.—Dec. 8.—For the erection of business premises in Tangier Street, Whitehaven. Mr. A. Huddart, architect, 9 Lowther Street, Whitehaven.

WOODFORD.—Dec. 15.—For the erection and completion of a boys' school to accommodate about 500 pupils, and for sundry alterations to the girls and infants' schools at Churchfields, Woodford, Essex, for the Essex education committee. Mr. Frank Whitmore, Chelmsford, and Mr.

Arthur Hogwood, architects, 33 Great Tower Street, E.C. Names and deposit (5*l.*) before Nov. 26 to Mr. Ernest J. Bond, clerk to the local advisory committee, Woodford Green, Essex, and 95 Leadenhall Street, London, E.C.

WORCESTER.—Dec. 25.—For the erection of warehouse and offices, for Kays, Ltd. Deposit 2*l.* 2*s.* Messrs. Simpson & Ayrton, architects, 3 Verulam Buildings, Gray's Inn Road, London, W.C.

WORKINGTON.—Dec. 14.—For the erection of a shop, warehouse and hall at Westfield, Workington. Messrs. W. G. Scott & Co., architects and surveyors, 2 Park Lane, Workington.

The commission appointed to report on Italian ports has submitted to the Minister of Public Works a scheme for the improvement of nearly 100 ports, and of the lights on the coast during the years 1907-17, the total expenditure being placed at about 7,200,000*l.* The estimate does not include the cost of railway extension which will be needed at some ports. A considerable portion of the sums voted in previous years for extraordinary expenditure on port works still remains to be disbursed. If the proposals of the commission are sanctioned the total expenditure on these works during the next ten years will amount to about 10,000,000*l.*

In a consular report issued from the Washington Chamber of Commerce it is stated that a Hungarian chemist named Brunn claims to have discovered a liquid chemical compound which renders certain kinds of matter proof against the effects of time. He asserts that it doubles the density of nearly every kind of stone and renders it waterproof. It imparts to all metals qualities which defy oxygen and rust. The Professor says that while travelling in Greece twenty-five years ago he noticed that the mortar in stones of ruins which were known to be over 2,000 years old was as hard, fresh and tenacious as if it had been made only a year. He secured a piece of the mortar and has been working on it ever since until now, when, he says, he has discovered the secret. His discovery, he claims, will at the least double the life of metal exposed to the air, such as in bridges, railroads, vessels and tanks.

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|-------------------------|------|----|---|
| Rendle & Sons           | £231 | 15 | 0 |
| Sainsbury               | 225  | 0  | 0 |
| Wilcox                  | 204  | 0  | 0 |
| Harding                 | 203  | 0  | 0 |
| Chick, Carden & Co.     | 184  | 19 | 0 |
| Andrews                 | 183  | 3  | 6 |
| Ash, Devizes (accepted) | 162  | 8  | 0 |

## DEVONPORT.

For the erection of five terrace houses on the Weston Mill estate, for Sir J. Jackson, Ltd. Mr. E. M. LEEST, architect. Quantities by Messrs. LEEST & ADAMS.

|                         |        |    |   |
|-------------------------|--------|----|---|
| Jenkin & Son            | £1,730 | 0  | 0 |
| Watts                   | 1,730  | 0  | 0 |
| Smith & Son             | 1,619  | 15 | 0 |
| PEARCE BROS. (accepted) | 1,495  | 0  | 0 |
| May                     | 1,432  | 0  | 0 |

For alterations at rear of Camel's Head hotel. Mr. E. M. LEEST, architect. Quantities by Messrs. LEEST & ADAMS.

|                         |      |    |   |
|-------------------------|------|----|---|
| Perkins                 | £342 | 14 | 2 |
| Johnson Bros.           | 334  | 12 | 5 |
| Sobey                   | 290  | 0  | 0 |
| Watts                   | 280  | 12 | 6 |
| PEARCE BROS. (accepted) | 277  | 0  | 0 |

For the erection of two small houses, Hamoaze Avenue. Mr. E. M. LEEST, architect. Quantities by Messrs. LEEST & ADAMS.

|                         |      |   |   |
|-------------------------|------|---|---|
| Sobey                   | £570 | 0 | 0 |
| Perkins                 | 436  | 0 | 0 |
| Donne                   | 430  | 0 | 0 |
| Watts                   | 425  | 0 | 0 |
| PEARCE BROS. (accepted) | 409  | 0 | 0 |

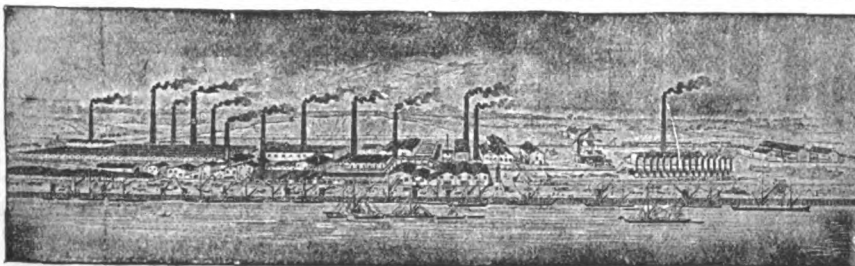
## GLOUCESTER.

For the erection of a block at the Second County asylum, Barnwood, near Gloucester, to accommodate about 170 female patients. Messrs. GILES, GOUGH & TROLLOPE, architects, 28 Craven Street, Charing Cross, London, W.C.

|                                   |         |   |   |
|-----------------------------------|---------|---|---|
| Simmonds                          | £27,341 | 0 | 0 |
| King & Sons                       | 27,000  | 0 | 0 |
| Forse & Sons                      | 26,000  | 0 | 0 |
| Rowbotham                         | 22,854  | 0 | 0 |
| Walters & Son                     | 22,782  | 0 | 0 |
| Jones                             | 22,400  | 0 | 0 |
| Dallow & Sons                     | 22,260  | 0 | 0 |
| Whitehouse & Sons                 | 22,233  | 0 | 0 |
| Stephens, Bastow & Co.            | 22,166  | 0 | 0 |
| Pye, Parkinson & Co.              | 21,649  | 0 | 0 |
| Bloxham                           | 21,616  | 0 | 0 |
| Saunders & Sons                   | 21,595  | 0 | 0 |
| Barnsley & Sons                   | 21,388  | 0 | 0 |
| Estcourt & Sons                   | 21,175  | 0 | 0 |
| Nicholls                          | 21,060  | 0 | 0 |
| Griffiths                         | 21,053  | 0 | 0 |
| Lewis & Co.                       | 20,990  | 0 | 0 |
| Pethick Bros.                     | 20,944  | 0 | 0 |
| King & Son                        | 20,885  | 0 | 0 |
| Pattinson & Sons                  | 20,529  | 0 | 0 |
| Hughes & Sterling                 | 20,340  | 0 | 0 |
| Lowe & Sons                       | 19,949  | 0 | 0 |
| Coles                             | 19,847  | 0 | 0 |
| Fish & Sons                       | 19,546  | 0 | 0 |
| Hopkins                           | 19,500  | 0 | 0 |
| Moss & Sons                       | 19,450  | 0 | 0 |
| Willcock & Co.                    | 19,450  | 0 | 0 |
| Williams                          | 19,369  | 0 | 0 |
| Colborne                          | 19,199  | 0 | 0 |
| Davies & Sons                     | 19,045  | 0 | 0 |
| Norman                            | 18,995  | 0 | 0 |
| Davies                            | 18,681  | 0 | 0 |
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|                             |      |   |    |
|-----------------------------|------|---|----|
| Moss                        | £605 | 0 | 0  |
| Jennings & Goldsworthy      | 569  | 7 | 11 |
| KELWAY, Falmouth (accepted) | 591  | 0 | 0  |

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|                                   |        |   |   |
|-----------------------------------|--------|---|---|
| Brown, Thomas & John              | £1,247 | 0 | 0 |
| Thomas                            | 1,022  | 0 | 0 |
| Young Bros.                       | 971    | 0 | 0 |
| Evans                             | 965    | 0 | 0 |
| JOHN BROS., Carmarthen (accepted) | 913    | 0 | 0 |

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For heating apparatus, &c., at Clifton school, Deptford.

|                                        |      |    |   |
|----------------------------------------|------|----|---|
| Korting Bros.                          | £725 | 0  | 0 |
| Boyd & Sons                            | 630  | 0  | 0 |
| Wippell Bros. & Row                    | 616  | 3  | 6 |
| Grundy                                 | 597  | 0  | 0 |
| Price, Lea & Co.                       | 596  | 10 | 0 |
| Defries & Sons, Ltd.                   | 590  | 10 | 0 |
| G. & E. Bradley                        | 571  | 0  | 0 |
| Macintosh & Sons                       | 548  | 16 | 0 |
| Brightside Foundry and Engineering Co. | 529  | 0  | 0 |
| Cash & Co., Westminster (recommended)  | 518  | 0  | 0 |
| Stevens & Sons (withdrawn)             | 450  | 0  | 0 |
| Architect's estimate                   | 583  | 0  | 0 |

For the supply at Battersea, Finsbury and Victoria Parks of about 300 enamelled iron by-law plates.

|                                   |       |    |   |
|-----------------------------------|-------|----|---|
| Garnier & Co.                     | Each. | 10 | 8 |
| Patent Enamel Co.                 | 10    | 6  |   |
| Orme, Evans & Co.                 | 8     | 6  |   |
| Jordan & Sons                     | 7     | 6  |   |
| Willing & Co., Ltd. (recommended) | 5     | 10 |   |

**LONDON—continued.**

For the erection of two blocks, staff quarters, at the Manor asylum.

|                        |         |    |   |
|------------------------|---------|----|---|
| Cummins & Sons         | £22,173 | 0  | 0 |
| Potter                 | 16,476  | 3  | 8 |
| Potter Bros.           | 16,462  | 6  | 2 |
| Lovell & Sons          | 16,268  | 0  | 0 |
| Lovatt                 | 16,164  | 0  | 0 |
| Longley & Co.          | 15,989  | 0  | 0 |
| Messom & Sons          | 15,932  | 0  | 0 |
| Wall & Co.             | 15,899  | 0  | 0 |
| Leslie & Co.           | 15,706  | 0  | 0 |
| Cropley Bros.          | 15,695  | 0  | 0 |
| Lawrence & Sons        | 15,694  | 0  | 0 |
| Hyde & Co.             | 15,579  | 0  | 0 |
| Cook & Son             | 15,568  | 0  | 0 |
| Foster & Dicksee       | 15,522  | 0  | 0 |
| J. & M. Patrick        | 15,511  | 0  | 0 |
| Allen & Sons, Ltd.     | 15,500  | 0  | 0 |
| Moss                   | 15,474  | 0  | 0 |
| Drowley & Co.          | 15,020  | 0  | 0 |
| Goddard & Sons         | 15,000  | 0  | 0 |
| Johnson & Co.          | 14,977  | 0  | 0 |
| Stephens & Sons        | 14,944  | 5  | 0 |
| Kirk & Randall         | 14,930  | 0  | 0 |
| Thomas & Edge          | 14,902  | 0  | 0 |
| F. & G. Foster         | 14,861  | 0  | 0 |
| Colborne               | 14,798  | 7  | 8 |
| Holliday & Greenwood   | 14,749  | 0  | 0 |
| Oak Building Co.       | 14,633  | 0  | 0 |
| Saunders               | 14,624  | 0  | 0 |
| Hawkins & Co.          | 14,304  | 0  | 0 |
| Faulks                 | 14,080  | 15 | 6 |
| Harris & Sons          | 13,700  | 0  | 0 |
| Coles                  | 13,522  | 10 | 7 |
| Moss & Sons            | 13,240  | 16 | 8 |
| NIGHTINGALE (accepted) | 13,237  | 0  | 0 |

For provision and erection of galvanised iron chimney-shaft at the sluice-house, Bermondsey.

|                                     |     |    |   |
|-------------------------------------|-----|----|---|
| Pryke & Palmer                      | 129 | 5  | 0 |
| Buck & Hickman                      | 107 | 0  | 0 |
| Braby & Co., Deptford (recommended) | 90  | 16 | 9 |

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|------------------------------------------------|--------|----|---|
| Davis . . . . .                                | £1,150 | 0  | 0 |
| Turner & Co. . . . .                           | 823    | 0  | 0 |
| Grundy . . . . .                               | 777    | 0  | 0 |
| Kite & Co. . . . .                             | 750    | 0  | 0 |
| Richardson & Co. . . . .                       | 710    | 0  | 0 |
| Price, Lea & Co. . . . .                       | 675    | 0  | 0 |
| Defries & Sons . . . . .                       | 658    | 0  | 0 |
| Yetton & Co. . . . .                           | 651    | 16 | 6 |
| Stevens & Sons . . . . .                       | 650    | 0  | 0 |
| Comyn Ching & Co. . . . .                      | 618    | 0  | 0 |
| G. & E. Bradley . . . . .                      | 613    | 0  | 0 |
| Brightside Foundry and Engineering Co. . . . . | 609    | 0  | 0 |
| J. & F. May . . . . .                          | 599    | 0  | 0 |
| Strode & Co. (recommended) . . . . .           | 549    | 0  | 0 |
| Architect's estimate . . . . .                 | 650    | 0  | 0 |

For additional classroom, for Clapton Park Congregational church. Mr. E. M. WHITAKER, architect.

|                                           |      |   |   |
|-------------------------------------------|------|---|---|
| Williams & Son . . . . .                  | £292 | 0 | 0 |
| Silk & Son, Homerton (accepted) . . . . . | 273  | 0 | 0 |

For the erection of garage in Chelsea. Mr. H. HARDWICKE LANGSTON, architect and surveyor, 6 John Street, Bedford Row, London. Quantities by Mr. C. F. A. POLAND.

|                             |        |   |   |
|-----------------------------|--------|---|---|
| Harris & Wardrop . . . . .  | £2,567 | 0 | 0 |
| Bywaters & Sons . . . . .   | 2,546  | 0 | 0 |
| Webster & Cannon . . . . .  | 2,528  | 0 | 0 |
| Ford & Walton . . . . .     | 2,482  | 0 | 0 |
| Wallis . . . . .            | 2,476  | 0 | 0 |
| Leslie & Co. . . . .        | 2,459  | 0 | 0 |
| Jarvis & Sons . . . . .     | 2,408  | 0 | 0 |
| Parsons . . . . .           | 2,393  | 0 | 0 |
| Greenwood, Ltd. . . . .     | 2,381  | 0 | 0 |
| Lole & Co. . . . .          | 2,375  | 0 | 0 |
| Mattock & Parsons . . . . . | 2,367  | 0 | 0 |
| YOUNG (accepted) . . . . .  | 2,313  | 0 | 0 |

## MITCHAM.

For the erection of a school at Gorrington Park. Messrs. A. W. JARVIS & F. A. RICHARDS, architects, 36 Victoria Street, S.W.

|                                    |        |   |   |
|------------------------------------|--------|---|---|
| Wood & Son . . . . .               | £8,797 | 0 | 0 |
| Stuart & Sons . . . . .            | 8,764  | 0 | 0 |
| Kemp . . . . .                     | 8,741  | 0 | 0 |
| M. Patrick . . . . .               | 8,585  | 0 | 0 |
| Waller . . . . .                   | 8,565  | 0 | 0 |
| Dove Bros. . . . .                 | 8,452  | 0 | 0 |
| Rice & Sons . . . . .              | 8,383  | 0 | 0 |
| Wakeham Bros. . . . .              | 8,295  | 0 | 0 |
| J. & M. Patrick . . . . .          | 8,049  | 0 | 0 |
| Martin, Wells & Co. . . . .        | 8,010  | 0 | 0 |
| Hawkins & Co. . . . .              | 7,888  | 0 | 0 |
| BURGES & SONS (accepted) . . . . . | 7,803  | 0 | 0 |

## NORWICH.

For alterations to premises in Exchange Street. Messrs. MORGAN & BUCKINGHAM, architects, Norwich.

|                                             |      |    |   |
|---------------------------------------------|------|----|---|
| Smith . . . . .                             | £555 | 0  | 0 |
| Gill . . . . .                              | 549  | 0  | 0 |
| Young & Son . . . . .                       | 547  | 0  | 0 |
| Utting . . . . .                            | 497  | 10 | 0 |
| SCARLES BROS., Norwich (accepted) . . . . . | 494  | 0  | 0 |

## ORSETT.

For alterations and additions to workhouse. Mr. C. M. SHINER, architect, 110 Hamilton House, E.C. Quantities by Mr. G. SILVESTER.

|                                                |        |    |   |
|------------------------------------------------|--------|----|---|
| Robotham . . . . .                             | £6,537 | 0  | 0 |
| Sabey & Sons . . . . .                         | 5,914  | 0  | 0 |
| Potter . . . . .                               | 5,682  | 0  | 0 |
| Coxhead . . . . .                              | 5,592  | 0  | 0 |
| Bruty . . . . .                                | 5,290  | 0  | 0 |
| Sheffield Bros. . . . .                        | 5,283  | 0  | 0 |
| Davey . . . . .                                | 5,235  | 0  | 0 |
| Wall, Ltd. . . . .                             | 5,230  | 0  | 0 |
| G. Brown . . . . .                             | 5,096  | 6  | 0 |
| Davey . . . . .                                | 5,076  | 0  | 6 |
| Mead . . . . .                                 | 5,066  | 16 | 3 |
| Carter . . . . .                               | 5,041  | 9  | 9 |
| J. Brown, Grays, Essex (recommended) . . . . . | 4,800  | 0  | 0 |

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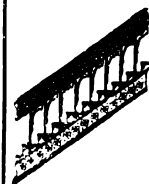
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who was responsible for that organisation and for the status of the firms exhibiting; and whether he proposed to consider how the British department of international exhibitions might be better organised in future. The President of the Board of Trade said the British section was organised by an unofficial commission, composed of a number of representative men, chiefly drawn from British chambers of commerce and other bodies directly concerned with trade and industry. That body was formed mainly under the auspices of the London Chamber of Commerce. No complaints of the character indicated had reached the commission. As regards the last part of the question, a departmental committee was sitting to consider questions affecting the participation of this country in international exhibitions.

EXCEPTION appears to have been taken to the comments on the treatise relating to "Public Baths and Washhouses," by A. W. S. Cross, which appeared in our issue of November 9 last, more particularly as regards the heating and ventilation of Turkish baths, and in this connection our representative was recently invited to inspect the Charing Cross Turkish Baths in Northumberland Avenue, W.C., which comprise a suite of rooms having a floor space of about 12,000 feet for gentlemen, with a smaller set in a separate contiguous building for ladies. In the erection and fitting of these baths the proprietors, Messrs. Nevill, have brought their long experience and practical knowledge to bear on all questions connected therewith, so as to make them the most complete and comfortable extant. The heat in the bath-rooms is maintained by the convoluted stove, and the ventilation effected by the principle first introduced at the London Bridge baths. The cooling-rooms, which are surmounted by a lofty dome, are fitted in a luxurious manner, and we noticed that ventilation is much facilitated by the employment of several of the well-known Tobin ventilators. Attention is moreover called to the fact that the plans, elevations, &c., for the block of buildings containing the baths, which occupy a prominent position in Northumberland Avenue, were examined and approved by the Council of the Royal Institute of British Architects.

THE Mayor of Norwich presided at the annual meeting of the Plumbers' Registration District Council for Norfolk

and Suffolk. The Mayor was supported by Mr. Alderman Dakin, president of the District Council; Mr. A. E. Collins, city engineer; Mr. J. Brooks, chief inspector of nuisances; and Mr. F. W. Brock, of the Technical Institute. The Mayor expressed his opinion that the registration of plumbers was a grand object in which everybody was more or less interested. He congratulated the young plumbers who attended the plumbing classes with the object of improving themselves in the principles and practice of their trade. There would certainly not be so many men out of employment if only they could be got to learn a trade thoroughly when they were young, and he much regretted the decay of the apprenticeship system. Mr. A. E. Collins, city engineer, stated that there was not the slightest question as to the great improvements that had been effected in plumbing work, and these improvements had undoubtedly resulted in the greatest possible benefit to the community. He would like to see the registration of plumbers made compulsory, and if it was the law that an inspector of weights and measures, who only had to do with slight differences of weight, should be compulsorily qualified, it was very much more important that persons who had to deal with matters that affected the health and real comfort of the community should not be allowed to practise unless they could show themselves to be absolutely capable.

#### SOCIETY OF ENGINEERS.

At a meeting of the Society held at the Royal United Service Institution, Whitehall, on Monday evening, December 3, Mr. Maurice Wilson, president, in the chair, a paper was read on "The Prevention of the Bacterial Contamination of Streams and Oyster Beds," by Mr. W. Pollard Digby and Mr. Henry C. H. Shenton, and of which the following is an abstract:—

The authors first pointed out the great danger to health arising from contamination by sewage of rivers and fisheries. Proofs were quoted from reports of the Royal Commission on sewage disposal. Bacterial purification was formerly not considered, chemical purity being the only qualification

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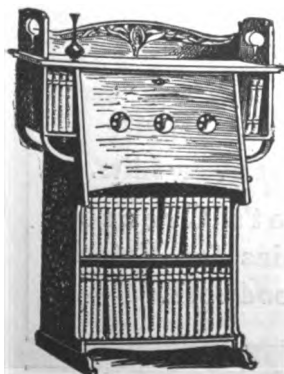
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demanding by river authorities. Effluents from good works, however, contain few pathogenic germs, as shown by Dr. Rideal's Caterham experiments and by others. The authors showed that the fourth report of the Royal Commission insists on the importance of bacteriological purity.

The practical side of the question was next considered, and the methods for obtaining chemical purity in the effluent were discussed. The sterilisation of sewage effluent was then dealt with under the heads of, its need, the manner in which it may be effected, the cost of effecting it and the question upon whom the cost should fall. The authors dwelt upon the absolute necessity of making the effluent chemically pure before proceeding to sterilise it. The fact that pathogenic bacteria must be combated wherever met was insisted upon. If sewage containing a large proportion of organic matter were sterilised, this organic matter remaining in the river would act as a food for other disease-producing micro-organisms entering the river from other sources.

The various methods of sterilisation were then described. These include boiling, which was stated to be quite impracticable for sewage effluents; treatment with various chemicals, such as acids and acid solutions, copper compounds, permanganates, sodium manganate, the cost of which processes was declared to be so great as to make them practically impossible. Chlorine compounds, such as chloride of lime, were mentioned, also liquid solutions of hypochlorites, which it was stated could be produced either by chemical means or by various electrolytical processes. Chloros, a chemically produced solution of sodium hypochlorite, was referred to as having recently been used by the Metropolitan Water Board for sterilising sewage effluent, and also by the Lincoln Corporation during the typhoid epidemic.

The history of the application of hypochlorite solutions was then given. The Guildford experiments of 1897 and the Maidenhead experiments with the hypochlorite solution known as "electrozone" were mentioned. The Guildford tests with oxychloride solution, the Hermite trials at Worthing, the Woolf trials (Danbury, U.S.A.), the surface sterilisation at Rickers Island by the Woolf plant, and Woolf's installation at Brewster, N.Y., were also referred to.

A brief history of the electrolytic production of sodium

hypochlorite was next given. The practical application of hypochlorite solutions to the effluents from contact beds or filters was shown to be a very simple matter. No extra fall at the works was required and it was stated that sterilisation could be accomplished in the discharge channel in the space of from five to seven minutes. The test for sterilisation or for an excess of sterilising solution in the effluent was shown to be very simple, needing no special knowledge. As regards the cost of the application, it was shown that the cost of sterilising 61,600 gallons of effluent chemically pure—i.e. not liable to secondary decomposition—would amount to 10d., exclusive of capital outlay, which was stated to be small.

The position of the Local Government Board with regard to the absolute purification of sewage and water used for drinking purposes was discussed. The authors consider that no disease germs should be allowed to enter a river, the water of which was used for drinking purposes, if it could possibly be prevented; also that if steps were taken in the Thames and the Lea to sterilise sewage effluent, the cost would be very much less than that of obtaining water from Wales or elsewhere. They thought that if sewage and trade wastes entering the river were absolutely purified the pollution due to land drainage and surface water would not cause the water to be unfit for drinking after the water authorities had purified it. If necessary and desirable it could also be sterilised. The authors stated as their opinion that the cost of works needed to sterilise effluent from sewage works ought under these circumstances to be borne by the water authorities rather than by the ratepayers.

#### PATENT LAW REFORM.

A PAPER was read last week at the Society of Arts by Mr. John William Gordon on "Patent Law Reform," in which he suggested, for the consideration of the Society of Arts, whether it is not fitting, at a time when Patent Law reform is being officially taken in hand, that the principles upon which this terrible jurisdiction to grant injunctions ought to be administered should be carefully considered by the Legislature and accurately defined by the authority of Parliament itself.

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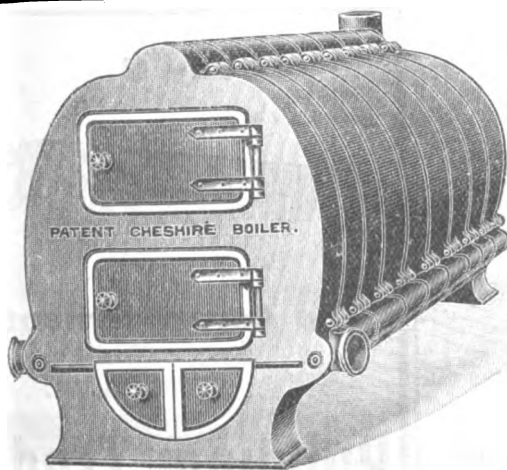
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Sir Joseph Lawrence, after thanking the author for his excellent paper, said the chairman had dwelt upon the drawbacks the judges were under in interpreting Acts of Parliament passed by the Legislature without their having had anything to do with the framing of the Bills in the first instance. The difficulty he experienced in regard to the measure of 1902, which he assisted Mr. Gerald Balfour very considerably in carrying, was that they were legislating on the basis of a report prepared by a departmental committee which largely consisted of lawyers. He felt there was not a man on that committee who was practically and commercially acquainted with the working of patented industries, the result being that the great reform for which the commercial community of the country had been crying aloud for nearly forty years was never touched in the slightest degree; in fact, the present Lord Chief Justice, who was a member of the committee, said when the question was raised, that the committee was not met to discuss the economic question. The terms of reference to the committee were extremely narrow, and excluded the questions which the commercial and manufacturing community desired to be discussed. For nearly thirty years Mr. Levinstein had been agitating on the question at the Associated Chambers of Commerce and Chemical Institutions. He was the man who called attention to the prospective loss of the aniline dye industry, a great question which was not even referred to by the committee. The reformers were told by the lawyers that the matter could not be remedied, and even Mr. Gordon at one time held that view, but he was fast coming round to an opposite opinion. It had now become necessary for the laymen to tell the lawyers of this country what was done by the laws and legislatures of other countries. In this connection he desired, to save time, to quote from an article of his own, which appeared in the October number of the *National Review* as to what was being done in Germany, a country which was going ahead by leaps and bounds. He there said:—"A long series of successful actions for the revocation of patents in Germany, on the ground of non-working, show that the question considered by the Courts is whether the Commonwealth has suffered, or is likely to suffer, by the neglect of the patentee to work his patent in the country. The law keeps the common weal in view in compelling the working of

the patent in Germany. The production must contribute to the advancement of inland commercial industry. The articles protected by the patent must be produced in the country. The patentee cannot excuse himself from the legal obligation to work his patent by the plea that there is no remunerative demand for the patented article. Only *bona fide* efforts to work are of any avail; part of the work being done in Germany will not be regarded as working 'to an adequate extent.' In no case is it admitted that the patentee can delay working till he has a certain prospect of a market to recoup him for his outlay. As recently as April 1904 a patent for stoppered bottles was revoked because, though the bottles had been made in Germany, the aluminium stoppers had been imported. One of the reasons given by the German Court is noteworthy:—"Because aluminium is cheap in Germany, German industry as such has an interest in the patent being worked in this country." He quoted in the House of Commons the celebrated case of Gruson, of Magdeburg, who held a patent for armoured trains in France. The French officials contended that the two years within which he ought to have manufactured in that country under his patent had expired. The patentee replied that there was only one customer for armoured trains in France—the Government; that he offered the patent to the Government who, after considering it for eighteen months, declined it. Nevertheless, the French patent office confiscated the patent. It was untrue, historically and in fact, to say that compulsory working was not enforced on the Continent. It was enforced to such an extent that it was a colossal disadvantage to English industry. Five years ago Mr. Levinstein and himself headed a powerful deputation from various chambers of commerce, representative of all shades of political opinion, to the then President of the Board of Trade with the object of amending the Bill of 1902, which was framed on the recommendation of lawyers, and he then stated that the Bill was an instance of the way in which English commercial industries were menaced by the present patent laws. The whole system of English patent laws had been overlaid by the subtleties of the law. He had a high appreciation of Mr. Gordon's enormous learning on the question of patents, because no man had devoted himself to the question with a higher sense of duty, singleness



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of purpose and a profounder desire to remedy the present evils than Mr. Gordon had done; and if the author did not see absolutely eye to eye with Mr. Levinstein and himself, yet he had a strong eye for justice, and was gradually beginning to realise that they were not such fools as they had hitherto been represented to be by lawyers, and that good solid common sense was at the basis of what they were working for. He thought they could take some comfort from the results of their endeavours. For years they had been pegging away in the Associated Chambers of Commerce, with the result that two unanimous resolutions had now been passed recommending the policy which Mr. Levinstein had brought forward, namely, that where a foreigner took out a patent in this country and worked it in his own, he must come here also and work it in order to give employment to English people, which was one of the conditions upon which the original patent rights were granted. That followed a sound good policy, and it furthermore staved off very grave injustices which had been inflicted upon English people in the past. For instance, everybody knew the celebrated case in which Mr. Levinstein sought to get elementary justice by carrying the case to the highest court and failed. People in Germany took out patents for manufacturing dye stuffs which vitally hit Mr. Levinstein's business; Mr. Levinstein unsuccessfully endeavoured to obtain a compulsory license, with the result that the German manufacturers seriously interfered with the trade of every chemical manufacturer in this country. Mr. Gordon set out very strongly the evils of patentees owning the control and profits, but suggested no remedy, only recommending very warmly a very pet view of his, namely, some restriction being placed on the power of judges to grant injunctions. He did not think that people engaged in manufacture in this country were particularly anxious about that, and there had been no pronouncement upon the part of any of the public bodies of this country in favour of limiting that power. He knew of a recent case where the exercise of that power by the judges had a just and wholesome effect. Some foreigners came over to England and introduced an industry which was a gross infringement of an existing patent, and if they had been allowed to go on the manufacturer whose business was prejudiced would not have had a bawbee left by the time he had taken all the

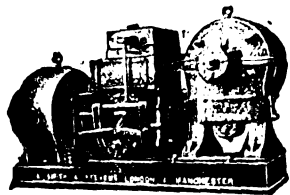
necessary legal steps through the courts up to the House of Lords. In such a case it was a very wholesome power to keep unrestricted, and he thought the judges might be trusted to exercise a very fair discretion, because they were men animated by a high sense of justice and fair play. He would do nothing to restrict that power; in any case he would not lessen their powers of discretion. He frankly admitted that the Act of 1902 was a dead letter. They asked for the power of compulsory working, but were not granted it, the bugbear of the Convention being thrown in their faces. They were not asked as a body to give evidence before the departmental committee, and consequently their views were not known. On the occasion of the last deputation to the Board of Trade, he told the President that he did not desire to place any disability upon any foreign patentee which he, as an Englishman, was not prepared to submit to. Mr. Lloyd George at once said that that was the only point that had hitherto divided them, and agreed that they had absolutely made out their case, and, on a subsequent occasion, informed them that he intended to bring in a Bill on the lines the deputation recommended. There was, therefore, a prospect of what they had been fighting for for so many years being realised before long, and he trusted they would have the loyal help and support of Mr. Gordon in the framing of the measure which would be brought before Parliament. A Bill had already been drafted and laid before the President of the Board of Trade which, he believed, would meet with the unanimous support of all parties in the House, of all the commercial and manufacturing community, and last, but not least, of the legal powers of the country. The difficulty he experienced in the House of Commons was that, whilst he had certain able patent counsel on one side supporting the commercial interests, there were other lawyers on the other side who were frightened to death to do anything to disturb the Ark of the Covenant. He told them it would have to be done, and by dint of hard work he thought they were in a fair way of getting it accomplished.

The Chairman announced that, owing to the number of gentlemen who were desirous of speaking, it had been decided to adjourn the discussion to Wednesday, January 16, the first evening meeting after the Christmas recess.

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The principal feature of the interior is the main hall or exchange, and the attention of the visitors on entering is at once drawn to the monolithic royal pearl granite columns, which are not merely ornamental, but form an integral part of the structure as supports. There are seventy-four of these monoliths, which were quarried in Norway, shipped to Aberdeen, where they were turned and polished, and then shipped to Liverpool. It is interesting to note that nearly 200 stones were quarried before the requisite number of perfect ones could be obtained. The ground-floor columns are of the Doric order, and those of the gallery of the Ionic. The caps and bases are of Bleu Belge marble, and the balustrades of Greek Cippolino and Verde Antico. The moulded architraves of the door openings and the entrance porches are in Italian Mazzano cream-coloured marble, which makes an excellent harmony with the Portland stone. The entablatures and cornices are executed in the finest Portland stone from the base bed. The walls are panelled

in Spanish mahogany, finished with a richly-carved cornice, and above that the walls are finished in French plaster, which is also used for the large ornamental ceiling over the central area. The floor is laid with Australian Jarrah wood blocks, keyed together and bedded in an asphalt composition. The surrounding steps are in French Eschailon stone, which was adopted on account of its non-slippery surface. The floors of the colonnades are laid with rubber flooring in 2 feet 6 inch squares with black diamonds at the intersections. This flooring gives a fine architectural appearance and is absolutely noiseless. The angle fireplaces are important features, and are executed in Mazzano, and the grates are fine specimens of the smith's art. On the backs will be observed a bull and a bear, symbolising the varying strife in the rise and fall of the value of cotton. The dimensions of this large hall are 140 feet long by 165 feet wide. The side wings are occupied by telephone boxes, post, telegraph and cable offices, so that no time shall be lost in the transaction of business. A system of tape machines is also installed, every office having its instrument or ticker which will record the prices as they are marked on the quotation boards. Synchronised electric clocks are fitted throughout the building.

Beyond the hall are the members' smoke and reading-rooms, handsomely panelled in Italian walnut, with a polished oak floor. From the gallery access is gained to the ante-room, board-room, secretary's room and committee-room. The board-room is panelled to the ceiling in wainscot oak. It has a mantelpiece in Mazzano and richly ornamented plaster ceiling. The board-room table and other furnishings are to be in dark polished walnut. The clearing-house and bank are important departments of the Association's business. They are situated on the first floor next Ormond Street, and are completely fitted up for the work to be carried on there.

On the sixth floor are placed the arbitration and appeal rooms, with a north-east light, where all disputed bargains and contracts are settled by experts without recourse to the delays and uncertainties of the law.

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The buildings have been designed by Messrs. Matear & Simon, the Waring-White Building Company, Ltd., of London, being the general contractors. It is interesting to note that the work has been carried out in the short period of seventeen months, well within the stipulated period.

The heating and ventilating has been carried out by Messrs. Ashwell & Nesbit, Ltd., of Leicester, under the supervision of their engineer, Mr. Lund. The Northern Electrical and Ventilating Company of Liverpool have carried out the electric lighting, under the supervision of the consulting electrical engineer, Mr. Alfred H. Gibbings, M.I.E.E.

Messrs. Waring & Gillow, Ltd., of Bold Street, Liverpool, have executed the wall panellings and the ornamental joinery in a first-class manner. Messrs. A. & F. Manuelle, of London, are responsible for the granite columns and marblework, the balustrades and mantelpieces being executed by Messrs. Emley & Son, Newcastle-on-Tyne.

The constructional steelwork was in the hands of Messrs. Edward Wood & Co., Ltd., of Manchester, and throughout was of a high quality and expeditiously carried out from the detail drawings, and under the super-

intendence of Mr. Henry S. Woodhouse, C.E., of Liverpool. The same must also be said of the work of Messrs. Walter Macfarlane & Co., of Glasgow, who executed the ornamental cast-iron work of the Edmund Street and internal façades.

The Fram Fireproof Flooring Company executed the fireproof floors. The figure and decorative sculpture has been ably executed by Mr. Birnie Rhind, R.S.A., of Edinburgh, and Mr. E. O. Griffith, of Liverpool. The ornamental plasterwork was in the hands of Messrs. Henry Johnson & Sons, of Primrose Hill, Liverpool, the modelling being done in their shops by Mr. Stenborn.

The wrought-iron work of the lift enclosures, the large ornamental ceiling of the Exchange Hall, and the lead-light glazings throughout were executed by Messrs. George Wragge, Ltd., of Salford. Mr. Joseph Ebner and the Acme Wood Block Flooring Company laid the wood-block floors. The terrazzo floors were executed by Messrs. Diespeker, Ltd., of London, and the wall tiling by Mr. G. Swift, of Liverpool, also Messrs. Martin Van Straaten and Messrs. Doulton & Co., of London. The latter firm are also responsible for the sanitary fittings.

The lifts have been executed by the Easton Lift Company, of London, and the metal casements by Messrs. Henry Hope & Sons, of Birmingham.

The rubber flooring of the colonnade was executed by Messrs. George MacLellan, of Glasgow, under the supervision of Mr. R. H. M. Taylor.

The furnishings of the smoke and reading-rooms are being supplied by Messrs. Maple & Co., of London, and Messrs. Waring & Gillow, Ltd., are supplying those for the board-room.

The bank and clearing-house, as well as the arbitration and appeal rooms, were fitted up by Messrs. W. A. Peters & Son, of Rochdale.

Messrs. Ockleston & Drayton, of Liverpool, have executed the iron sliding gates which enclose the portico at night.

The tickers and electric clocks have been installed by the Private Wire and Telephone Installation Company, of London, and the telephone installation has been in the hands of the Telephone Company.

Messrs. Hurrell & Taylor, of 6 Stanley Street, Liverpool, were the quantity surveyors.

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**WATER SUPPLY.**

At the ordinary meeting of the Institute of Civil Engineers on the 27th ult., Sir Alexander Kennedy, LL.D., F.R.S., president, in the chair, three papers were read, namely, "The Talla Water Supply of the Edinburgh and District Waterworks," by W. A. P. Tait; "Repairing a Limestone Concrete Aqueduct," by M. R. Barnett; and "The Yield of Catchment Areas," by E. P. Hill. The following are abstracts of the papers:—

The first paper deals with the new supply lately introduced from Talla, one of the head waters of the river Tweed, and occasion is taken to review shortly the other proposed sources of supply which for a time were under consideration. Attention is directed to the results of borings and trial pits at other sites which were considered, viz. St. Mary's Loch and the Manor Valley. A statement is given of the population and water consumed for domestic and trade purposes in 1870 and at the present date.

Attention is directed to various points in the Act authorising the construction of the Talla works. For instance, there was some diversity of opinion as to the available rainfall. The steps taken to appoint arbitrators to determine this and the subsequent amount of compensation-water are dealt with. The basis upon which the arbitrators proceeded in considering and issuing their award is fully placed before the Institution, and it is also mentioned that the Water Trustees, though only bound by their Act to have rain-gauges read during a period of seven years, have adopted a suggestion made to them by the arbitrators, that the readings of these gauges should be continued. The author points out that it might have been more satisfactory if the clause appointing the arbitrators had provided for regular readings of gauges on the stream as well as ordinary rain-gauges, and the paper goes on to refer to a series of observations which have been made during the filling of the reservoir with a view to determine the relationship between actual and available rainfall on this drainage area.

The opposition by the River Tweed Commissioners and

the proceedings in the subsequent arbitration with them are also noticed, and the award by the umpire is stated.

The general features of the valley in which the Talla reservoir is placed are described, and some drawbacks to Talla as a really good reservoir site, including the total absence of suitable clay for puddle and of good building stone, are referred to. A general description is given of a railway ten miles in length, which was constructed to the reservoir from the nearest point on the Caledonian Railway, for bringing up clay, building materials, &c.

The general design of the reservoir embankment and puddle trench is described and changes in the design which were brought about by various causes are referred to. Mention is also made of the timely discovery that water was escaping outside the lining of the outlet tunnel from the reservoir. The probable cause of this and the method of preventing subsequent leakage are dealt with.

Particulars are given of the outlet works and of the gun-metal valves which were adopted.

A general description of the aqueduct is given and various troubles encountered in its construction are related. The method of timbering adopted in some of the soft tunnels is described. For one of the tunnels recourse was had to compressed air without a shield and the process of driving and the plant used are described.

The paper concludes with a statement of the cost of the work and also statistics of the Edinburgh and District Water Trust's rating and revenue.

To it are appended tables of the rainfall on the Tulla drainage area for ten years and also a series of gaugings of springs extending over forty-three years.

The second paper describes the work of repairing a short length of the Thirlmere aqueduct which conveys water from Thirlmere, in the Lake district, to Manchester.

The aqueduct, which is nearly 96 miles in length, was completed and brought into use in October, 1894. After the water had been flowing through the aqueduct for a number of years, it was found that the full quantity of water was not being received at Manchester, and one of the causes was that considerable leakage was taking place in the concrete culvert portion of the aqueduct at Hutton Roof—a length of nearly 3 miles. For several years repairs were carried out in this length, but these did not stop the leakage, as it was

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found that the same began at new places. The author, who had been resident engineer in the same district during the original construction of the Thirlmere aqueduct, and had returned in connection with the laying of a second line of pipes, was requested to investigate this matter and carry out the necessary repairs.

The first work done was to re-test the length in question in order to locate the leakage. This was done by fixing timber stanks across the culvert at the manholes. These stanks were made with a rectangular opening, large enough to pass the water through to Manchester, but which could be closed with a wooden door during the tests. The main divisions were further subdivided into 4-chain lengths and tested. The tests proved that there was a total loss of over 1,250,000 gallons of water in twenty-four hours when the aqueduct was running full, and also indicated where the leakage was occurring and its relative extent in several sections.

The work of repairing was started in the section at the north end, where the leakage was found to be greatest. On making an examination of the concrete in this length, the author found that the cause of the leakage was due to the action of the soft water from Thirlmere on the limestone in the concrete of which the Hutton Roof section had been built. Holes were found in the floor of the culvert by which the water was escaping, and all the small individual pieces of limestone were found to be much water-worn.

Analyses of the water in the Thirlmere aqueduct are given.

The author made experiments to ascertain the rate of the action of the soft water on blocks of the limestone, and the Portland cement and mortar (one of cement to one of sand) used for the repairs, were similarly tested. Chemical analyses were made of the limestone from which each of the blocks was prepared, as well as of the Portland cement and the sand, and the results of these tests and analyses are given.

After three months' immersion the rate of wastage of the blocks varied from 6.83 per cent. per annum to 18.10 per cent. per annum, and after six months' immersion from 6.75 per cent. per annum to 17.09 per cent. per annum. The sample blocks of Portland cement and mortar, instead of losing, actually gained slightly in weight, namely, the

cement block 5.47 per cent. per annum and the mortar block 3.57 per cent. per annum.

It was decided that the whole water surface of the concrete in which limestone had been used should be refaced with Portland cement mortar not less than 1 inch in thickness. The methods adopted in removing the necessary thickness from the old concrete and in applying the new mortar facing are described in detail. The mortar was put in between timber framework fixed so as to give the correct thickness and maintain the original dimensions of the culvert. The surface of the invert was hacked off and replastered after the side walls had been done.

A description is given of various special circumstances arising during the execution of the repairs, and of the nature of the various holes, &c., met with. Although the removal of the surface of the concrete in the culvert was a very searching test, the whole of the concrete in the Hutton roof section of the aqueduct was found to be excellent in quality, as far as the workmanship was concerned, and could not be improved upon in this respect.

The way in which the outside water was dealt with is described. In all cases free vent was given to the water by the insertion of pipes of suitable diameter, and these were carried up the side walls to above top water-level.

The author of the third paper points out the deficiency of data for computing the yield of drainage-areas for waterworks purposes, and the necessity for such data in utilising the areas in the most economical manner, having in view the few suitable areas yet remaining unappropriated.

Reference is made to the difficulties encountered in making stream gaugings on a large scale and recording the observations continuously.

The present method of estimating the yield by rainfall observations combined with assumptions as to loss by evaporation and rate of flow in the streams, is next described.

Finally, the author urges the necessity for every waterworks being utilised as an experimental station, and for water authorities keeping an account of water received and expended, like a banking account, as a condition of their being allowed to appropriate a portion of the national sources of water supply.

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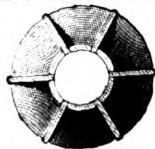
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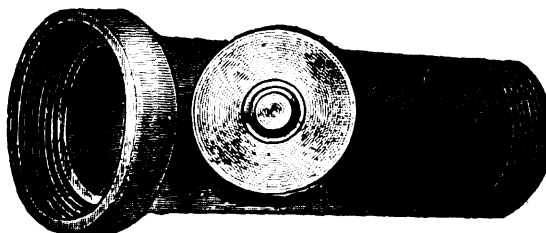
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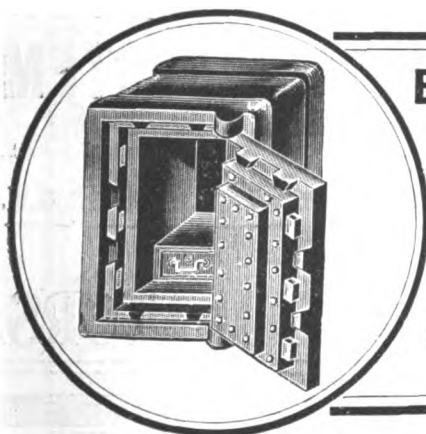
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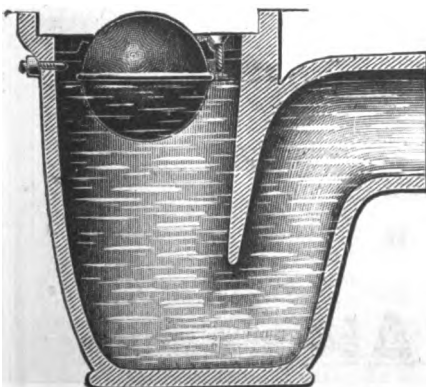
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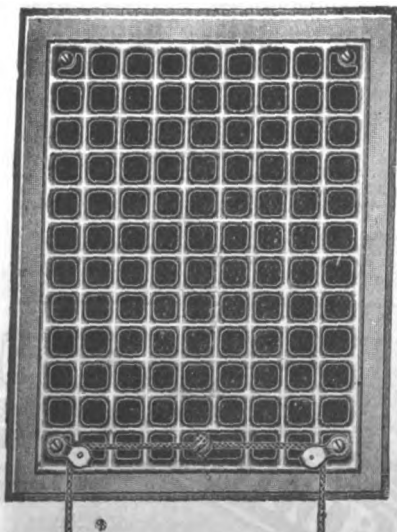
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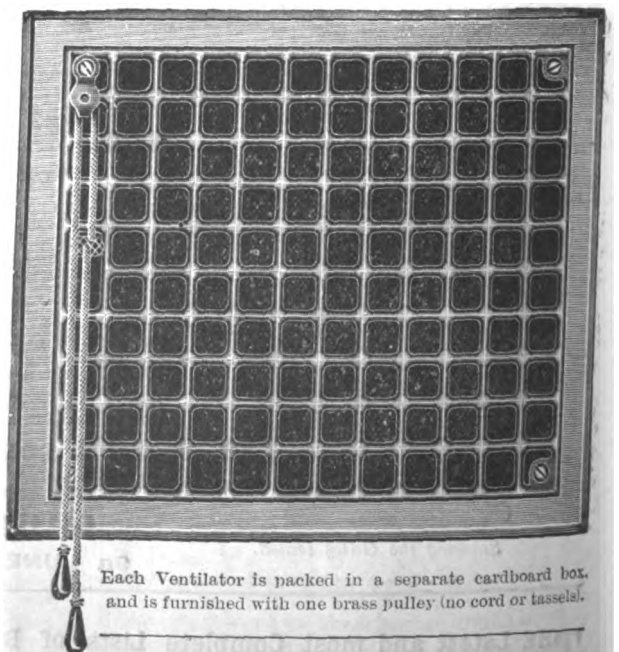
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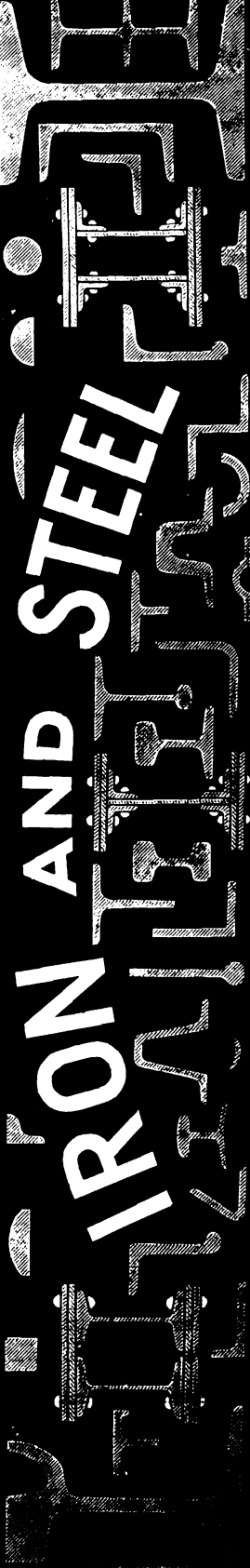
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**TRADE NOTES.**

A LARGE clock with four dials has been fixed in the turret of the buildings known as Spondon pumping station, Derbyshire, by John Smith & Sons, Midland Clock Works, Derby.

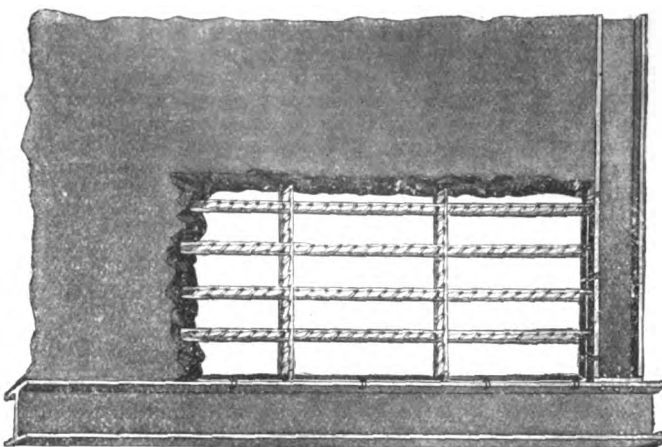
A NEW clock, striking the hours and showing time upon one dial, is to be erected in the tower of Staunton-on-Arrow Church, Herefordshire. The work has been entrusted to Messrs. J. B. Joyce & Co., Whitchurch, Salop, who are also making a large clock for the Royal Enfield Cycle Company, Redditch.

**AMALGAMATION OF CRANE MAKERS.**—Arrangements have been completed for the amalgamation of the firms of Jessop & Appleby Brothers (Leicester and London), Ltd., and the Glasgow Electric Crane and Hoist Company, Ltd., under the style of "Applebys, Ltd.," as makers of giant cranes, shipbuilding berth equipments, lifting appliances of all types and powers, &c., with head offices at 56 Victoria Street, S.W.

MR. H. S. DICKINSON, of 42 Union Street, Bradford, has just introduced a new and economical composition known as "Leadite," which is claimed to make the strongest jointing material for water mains, gas mains, sewer and soil pipes in the market. It requires no caulking, saving thereby labour, and as it is not affected by oxidation or by extremes of heat and cold, it is absolutely efficient.

A BLUE-BOOK has been issued containing illustrations of methods of dust extraction in factories and workshops, compiled by Commander Sir Hamilton P. Freer Smith, R.N. (late H.M. Superintending Inspector of Factories). While great advances have been made in the direction of exhaust ventilation of factories, it is often found that owing to misapprehension of the conditions of the problem ineffective installations have been provided at considerable cost, and in view of this it has been thought advisable to bring together for the information of manufacturers a number of examples of well-planned installations which in practice have secured the desired results.

"M.L.T." is a new material for the purpose of erecting partitions. Metal Ladder Tape is the name of this the latest invention for this purpose. It is produced by diagonally splitting strips of steel at intervals somewhat short of either edge, and it is supplied in this way in coils; the lengths are secured at top and bottom by staples, with the



cross-pieces at right angles to the face of the partition. When fixed a ladder formation is the result, forming a first-rate key for the plaster. We give an illustration which will show some idea of the system. The address of the Metal Ladder Tape Co. is 84 Newhall Street, Birmingham.

An "International Exhibition of Balneation and of Bathing Resort Life" will take place next year in Spa under the patronage of H.R.H. Princess Clementine of Belgium. The programme of the exhibition includes balneology, hygiene, medicine and chemistry, architecture, furniture and its accessories, the decorative and graphic arts, electricity, styles, alimentation, locomotion, sport and play, association and publicity.

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**ELECTRIC NOTES.**

THE Caledonian Railway Company have decided upon the installation of electro-pneumatic power for working the railway signals and points at their new central station at Glasgow. All the traffic will be worked from one cabin, with no fewer than 347 levers. The Westinghouse electric pneumatic signals will be used, and it will be by far the largest interlocking signalling plant.

At an inquiry into the explosion near Pontypridd whereby six men lost their lives three weeks ago, in accordance with the theory propounded by the management and inspectors of mines, the jury returned a verdict that the explosion was caused by the emission of sparks from the electric battery used for lighting colliers' lamps in the mine, but that no fault or neglect could be attached to any person concerned.

THE electricity committee of the Manchester Corporation received a deputation which attended from the Failsworth District Council with a request that the committee will put in use the powers (which by an arrangement with the District Council they now possess) for supplying Failsworth with electric current for lighting and power purposes. Hitherto it has seemed to the committee that the demand for the electric light in the district was so small that serious loss would attend the grant of the request, but after hearing what the deputation had to say it was agreed on both sides that a special effort should at once be made to ascertain the wishes of the inhabitants of the district, and if the result of the canvass gives promise of a fair return on the capital outlay the committee will be pleased to comply with the District Council's wishes.

**BUILDING AND BUILDERS.**

THE Institute of Builders will visit St. Paul's Cathedral on Monday, December 10, at 2.30 P.M.

THE London Master Builders' Association Council meet on Thursday, the 13th inst., at 4 P.M.

THE Rochford (Essex) Guardians have passed plans for the enlargement of the workhouse at an approximate cost of 10,000*l.*

Two cases under the Factories and Workshops Act came before Sheriff Gardner Millar on Friday last in Edinburgh Sheriff Court. James Millar & Son, builders, Edinburgh, were charged with failure to report to H.M. Inspector of Factories in charge of the Edinburgh division an accident which proved fatal to James Gaffney, labourer, who was injured at the building in course of construction at the corner of St. Andrew Street and Princes Street on October 15. The firm pleaded ignorance of the Act, but the Inspector pointed out the action taken by the Home Office to make these provisions known, and the Sheriff imposed a penalty of 3*l.*, including expenses.

THE Bath Master Builders' Association had a special meeting last Friday to consider the new rules proposed by the men governing working conditions, hours, wages, &c., which were summarised at the meeting. It appears that the general advance movement has arisen out of a proposal to readjust the working hours of the winter months so that more advantage might be taken of the hours of daylight. The proposals of the men tend, speaking generally, to place the Bath building trade under the same rules as govern the Bristol operatives, and have not been at all favourably received by the master builders, whose inclinations run rather in the direction of less wages than of more. The Association has appointed a sub-committee to go into the matter and report.

**VARIETIES.**

It is proposed to erect a new wing to the Yorkshire Institution for the Deaf and Dumb at Doncaster, for which plans are being prepared for the approval of the Board of Education by Mr. E. H. Ballan, M.S.A., Doncaster.

THE Bremen Senate has put a motion before the Common Council for the building of a new industrial harbour at Oslebshausen, between Bremen and the mouth of the river Weser, at an estimated cost of 20,000,000 marks.

THE Salford Union Guardians have agreed, subject to the sanction of the Local Government Board, to purchase the site in Irwell Place and the Crescent, containing 1,802 square yards, for 2,300*l.* for the purpose of providing new offices.

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A GRANITE monument has been completed in Aberdeen for shipment to Invercargill, New Zealand, where it is to be erected by the municipality in memory of the colonial troopers who fell in the South African War. The cost of the monument is about 2,000*l*.

THE engineers to the water committee of the Birmingham Corporation have issued their final certificate for Contract 12 for construction of the aqueduct from Cleobury to Hagley, amounting to 456,111*l*. 11*s*. 8*d*. The amount provided for the contract in the ultimate estimate was 455,731*l*. 17*s*. 6*d*., so that the completed work exceeds the provision by 379*l*. 14*s*. 2*d*., or .08 per cent.

THE Pennsylvania Railroad Company has called for bids for the construction of 100 all-steel non-inflammable passenger-cars. This will be the first lot of such equipment to be made in accordance with the company's intention to build no more wooden cars. The Pullman Company, at the instance of the Pennsylvania Railroad, is at work upon an all-steel non-inflammable sleeping car.

THE finance committee of the Kensington Borough Council have submitted a statement showing an increase in the number of empty houses in the borough, due, it is said, to the annoyance caused by the motor omnibus and other heavy motor traffic. The loss to the rates during the past half-year in consequence has been 25,245*l*., or 49,000*l*. for the twelve months. A petition from residents against the

present motor omnibus traffic was referred to the law committee for consideration.

MR. GUENTHER, the American Consul-General at Frankfurt, in a report to the Washington Bureau of Manufactures, says that "alzen" is the name given to a new metal, composed of two parts of aluminium and one part of zinc, and which is said to equal cast-iron in strength, but is much more elastic. Alzen is superior because it does not rust as easily as does iron, and it takes a high polish. Besides being very strong this new metal is capable of filling out most delicate lines and figures of forms in casting.

THE borough engineer of Camberwell has presented a report to his Council respecting the price paid by them for some land in Addington Square, off Camberwell New Road. In 1902 10,170*l*. was raised for the purchase of the Council's original depot, which worked out at 13,181*l*. an acre. But later the Council resolved to acquire additional space, and this time 15,478*l*. was paid, or at the rate of 32,182*l*. per acre. Since the purchase the land has not been used, and a board announces that it is to let.

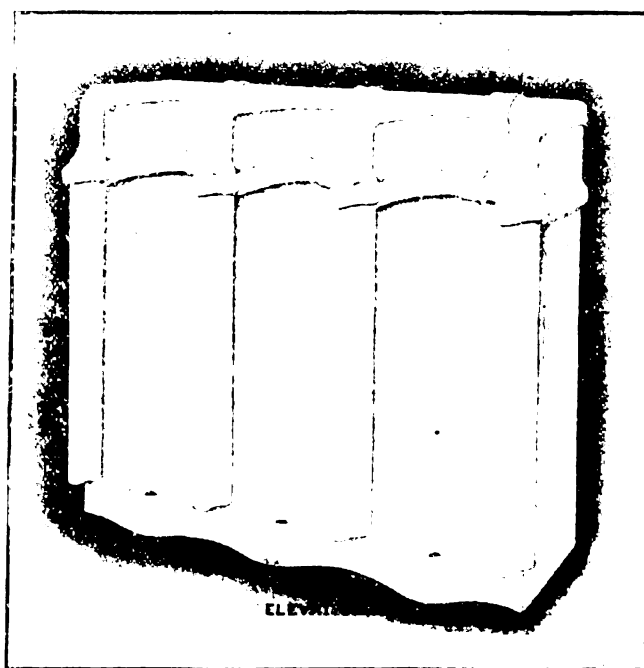
THE Coventry City Council on Tuesday agreed upon the expediency of promoting a bill authorising the Coventry Corporation and the Birmingham Corporation to enter into and carry into effect agreements for the supply by the Birmingham Corporation of water to the Coventry Corporation, and to empower the Coventry Corporation to lay mains and carry out waterworks; to authorise the Coventry Corporation to borrow money for the purpose; and to confer on the Coventry Corporation further powers with regard to their water undertaking.

THE waterworks committee of the Manchester Corporation have completed arrangements with Messrs. G. H. Hill & Sons, waterworks engineers, for the construction of the third conduit from Thirlmere. The work will be begun as soon as possible. Messrs. Hill were the engineers of the two pipes already laid between Manchester and Thirlmere. The committee also decided to appeal against the increased assessment of the rateable value of the work at Thirlmere made by the assessment committee of the Cockermouth Council consequent on the raising of the level of the lake for supplying the new pipe. The increase—from 4,450*l*. to 8,500*l*.—was considered wholly unreasonable.

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Fig. 1502.—SEMI-CIRCULAR-BACK URINAL.

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THE Local Government Board has given its sanction to the raising of a loan of 18,000*l.* by the Bournemouth Town Council for the purpose of constructing the proposed new Undercliff Drive. This work, when completed, will not only form a handsome new promenade, but will also serve to preserve and protect the cliff, for which purpose it has been designed, between Bournemouth Pier and Meyrick Road. The new drive will be about 850 yards long, and forms part of a scheme for linking Bournemouth and its neighbour Boscombe by a new carriage-way, estimated to cost altogether 60,000*l.*

THE Lincoln City Council have adopted the report of the waterworks committee, which recommended that a water tower capable of holding 300,000 gallons be constructed at an estimated cost of 7,000*l.*, that the present reservoir on the cross of Cliff Hill be abandoned, that a new covered reservoir capable of holding 6,000,000 gallons be constructed at the summit of the cross of Cliff Hill at a cost of 26,500*l.*, and that the Council provide an additional rising main or mains and a supply main from the proposed reservoir to High Street, South Bar; also that the waterworks engineer's salary be increased to 400*l.* per year.

In the King's Bench Division, before Mr. Justice Bucknill and a common jury, a woman was awarded 100*l.* damages for personal injuries against a furniture dealer, of Westbourne Grove, London. Plaintiff visited defendant's shop for the purpose of making purchases, and whilst she was there a portion of the cornice under the parapet of the house fell, breaking the skylight in the roof, killing the shop assistant and injuring plaintiff, her companion and others. Plaintiff's case was that the defendant had neglected to take reasonable care to secure the safety of his establishment in the interest of his customers, and defendant, on the other hand, attributed the accident to a heavy gale which, he said, was blowing at the time.

THE International Society of Building Commissioners and Inspectors, U.S.A., at a recent meeting stated that there are 11,500,000 buildings in the United States valued at 14,500,000,000*l.*, and only one of the buildings—that of the Underwriters' Laboratories in Chicago—is absolutely fireproof. It was declared that such absolute fireproofing cost only 12 per cent. more than ordinary building con-

struction would. If a building is absolutely fireproof, fire insurance is dispensed with, but as so-called fireproofing is but a reduction of annual fire hazard, the question arises if a building cost 12,000*l.* for ordinary construction, and only 13,440*l.* when "fireproofed," what is the difference between insurance cost and annual interest cost at say 4 per cent.?

THE longest concrete arch yet undertaken anywhere is that of the main span of the Walnut Lane bridge in Philadelphia, which also has the third place in the list of long-span arches of all classes of masonry. The structure, which is now in process of construction, consists of one main arch having a clear span of 233 feet with a rise of 73 feet, and five other arches each having a clear span of 53 feet. The total length of the bridge is 585 feet. The bridge is designed for highway traffic and carries a 60-foot street at a height of 147 feet above the creek. The five approach arches are all semicircular in form, and each has two ribs or rings resting on twin shaft piers. Their general design conforms closely to that of the main arch.

THE Chief Registrar of Friendly Societies in his annual report gives figures regarding the work being carried on by various schemes under the Workmen's Compensation Act. Various schemes, differing in character, had on June 30, 1905, been adopted by 100,215 workmen, who contributed during the year 35,221*l.* The employers contributed 51,252*l.* The payment on death was 15,422*l.*; during incapacity, 50,472*l.*, of which 17,727*l.* was paid for the first two weeks of incapacity for all cases, 27,686*l.* after the first two weeks, and 5,059*l.* in lump sum payments; for other benefits, 11,646*l.* The funds were 185,570*l.* The number of deaths eighty-seven, in sixty-six of which 128 dependents, comprising fifty-two widows, sixty-two children and fourteen parents, were left. The number of cases of incapacity, 16,147. The average contribution of each workman, 7*s.*

MR. WEDGWOOD, M.P., on Tuesday in the House of Commons asked the President of the Board of Trade whether he was aware of the dissatisfaction existing among the British exhibitors at the Milan Exhibition, especially in the section devoted to applied arts, owing to the bad organisation and arrangements of the British exhibits;

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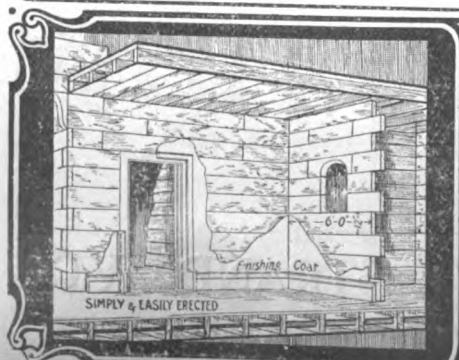


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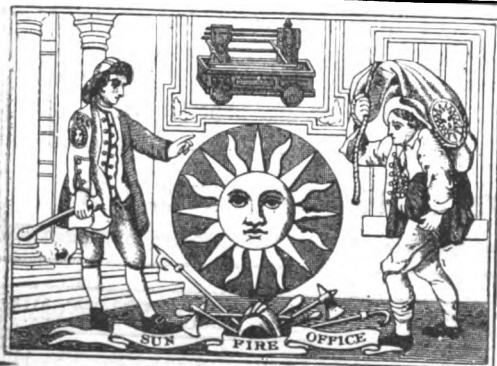
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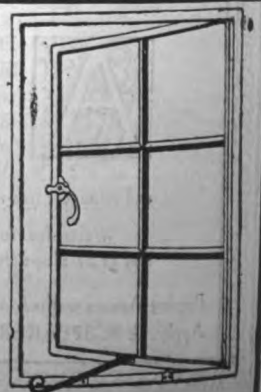
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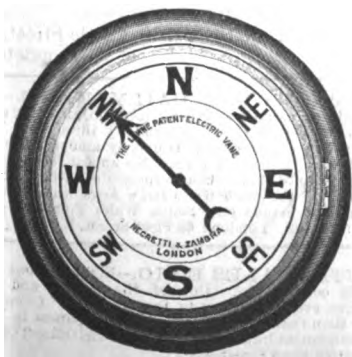
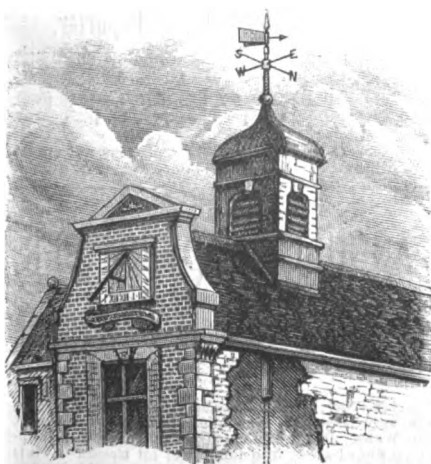
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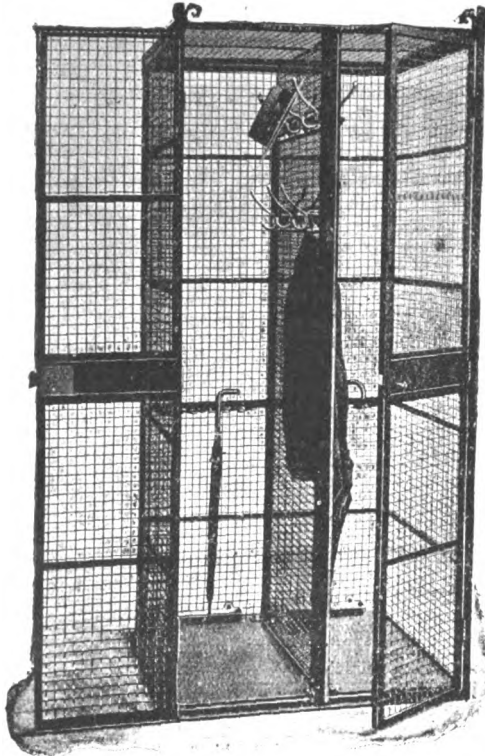
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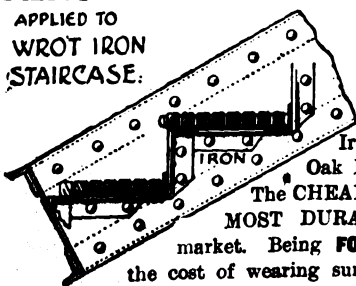
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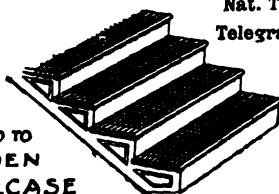


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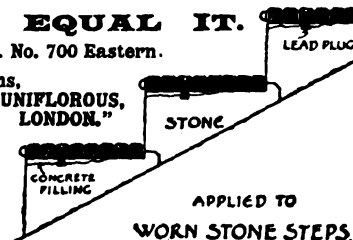
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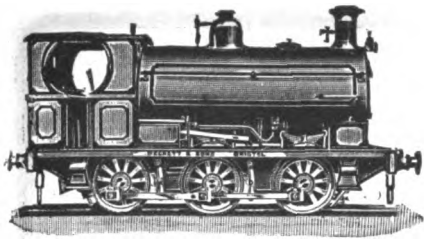
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P. A. GILBERT WOOD,

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Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.

**EDITORIAL NOTICES.**

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL

ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

**TENDERS, ETC.**

\* \* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

**COMPETITIONS OPEN.**

GOOLE.—Dec. 31.—The Goole Joint Body of Governors invite competitive designs for erection of a dual secondary school, accommodating 200 students, with provision for the conduct of technical and evening classes. Premiums of 50l. and 25l. Deposit 2l. 2s. Mr. James Wm. Johnson, clerk to the Governors, Council Offices, Goole.

GUISELEY.—Jan. 5.—For a dual Secondary school for the Guiseley district, near Leeds, to accommodate 200 scholars. Names and addresses to M. Rennard, secretary, Guiseley Secondary school, Guiseley, near Leeds.

IRELAND.—Dec. 31.—The Local Government Board for Ireland invite from architects the submission of designs for labourers' cottages in rural districts. Premiums of 50l., 30l. and 20l. for the three best designs. A copy of the conditions of the competition may be obtained from the Secretary of the Local Government Board, Dublin.

IRELAND.—Feb. 6.—The Galway Board of Guardians invite plans and estimates of a proposed fever hospital. The premium of 25l. will be merged in the architect's fees if the winner carries out the work. Particulars from Mr. R. F. Mullery, clerk to the Union, Galway.

NEWCASTLE-ON-TYNE.—Jan. 15.—For the North of England Model Cottage Exhibition. Site planning for this exhibition, which is 16½ acres in extent, twelve houses to the acre. Further particulars from Mr. R. Aldridge, c/o Burt Hall, Newcastle-on-Tyne.

SHEFFIELD.—Jan. 10.—For the Yorkshire and Midlands Model Cottage Exhibition to be held in Firth Park, Sheffield. Site planning for the exhibition to be held, with twelve houses to the acre. Further particulars of the organising secretary, Mr. R. Aldridge, 45 Bank Street, Sheffield.

SUNDERLAND.—Feb. 1.—The committee of the Sunderland infirmary invite designs for a children's hospital. Premiums of 100l., 50l. and 25l. are offered. Deposit 1l. 1s.



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WOLVERHAMPTON.—Dec. 31.—The Board of Management of the Wolverhampton and Staffordshire general hospital, Wolverhampton, invite competitive designs for a nurses' home adjoining the hospital. Mr. J. Stephen Neil, house governor and secretary.

WALES.—Jan. 12.—The committee of the George Edwards Memorial hall, Cefn, Ruabon, offer a prize of 10*l.* for the best design (including plans and elevations) of the hall. Full particulars may be obtained from Mr. W. Ryland Jones, secretary, High Street, Cefn, Ruabon.

### CONTRACTS OPEN.

ALNWICK.—Dec. 19.—For a proposed dwelling-house in Lisburn Street (joinerwork excepted). Mr. M. Temple Wilson, architect and surveyor, Alnwick.

BATLEY.—Dec. 19.—For the erection of eight terrace houses in Snowden Street, off Dark Lane. Mr. John H. Brearley, architect, Commercial Street, Batley.

BRIDLINGTON.—For the erection of a theatre on the New Spa. Deposit 2*l.* 2*s.* Messrs. Brodrick, Lowther & Walker, architects, 77 Lowgate, Hull.

BURNLEY.—Dec. 22.—For the erection of proposed technical school in Ormerod Road. Deposit 1*l.* 1*s.* Mr. G. H. Pickles, borough engineer, Town Hall.

CALLINGTON.—Dec. 22.—For erection of a secondary school at Callington, Cornwall. Mr. John Sansom, architect to the committee, Liskeard.

CAVERSHAM.—Dec. 20.—For the erection and completion of a public library. Deposit 2*l.* 2*s.* Mr. W. G. Lewton, architect, 6 The Forbury, Reading.

CREWE.—Dec. 18.—For erection of offices and stores at the electric-light works, for the Town Council. Deposit 1*l.* Mr. G. Eaton-Shore, borough surveyor, Municipal Offices, Earle Street, Crewe.

CROXDALE.—Dec. 18.—For additions to Croxdale Council school, Durham. Mr. W. Rushworth, architect, Shirehall, Durham.

DERBY.—Dec. 31.—For erection of electric-power station, Silk Mill Lane, for the Corporation. Deposit 1*l.* 1*s.* Mr. John Ward, borough surveyor, Babington Lane, Derby.

DURHAM.—Dec. 18.—For alterations and additions to St. Hild's college. Deposit 2*l.* 2*s.* Messrs. Joseph Potts & Son, architects and surveyors, 57 John Street, Sunderland.

ENFIELD.—Jan. 15.—For erection of a junior mixed school at Bush Hill Park. Deposit 1*l.* 1*s.* Send names by Dec. 29 to Mr. G. E. T. Laurence, architect, 22 Buckingham Street, Adelphi, W.C.

GATESHEAD.—Jan. 12.—For the erection of additional classrooms, laboratory, &c., at the Secondary schools, Durham Road. Deposit 1*l.* 1*s.* Mr. N. Percy Pattison, borough engineer, Town Hall, Gateshead.

HEDON.—Dec. 17.—For additions and alterations to the Council school, Hedon, Yorks. Deposit 1*l.* 1*s.* The Building Surveyor, County Hall, Beverley.

HOVE.—Dec. 28.—For erecting a public library in Church Road, Hove. Deposit 1*l.* 1*s.* Messrs. Percy Robinson & W. Alban Jones, architects, Yorkshire Post Chambers, Leeds.

KINGTON.—Dec. 19.—For carrying-out additions and alterations to the Lady Hawkins grammar school, Kington, Hereford. Deposit 2*l.* 2*s.* Mr. Alfred Dryland, Shirehall, Hereford.

LONDON.—Dec. 29.—For the construction of an underground convenience at Brockwell Park, S.E., for the Lambeth Borough Council. Deposit 1*l.* 1*s.* Mr. Henry Edwards, borough engineer, 346 Kennington Road, S.E.

LONDON.—Dec. 31.—For the erection of a branch library at Hither Green, S.E., for the Lewisham libraries committee. Deposit 2*l.* 2*s.* Mr. H. Hopton, architect, 37 Ringstead Road, Catford, S.E.

LONDON.—Jan. 3.—For alterations and additions to the Council's slipper-baths and the covering-in of the open swimming-bath, for the Edmonton Urban District Council. Send names by Dec. 17 to Mr. Wm. Francis Payne, clerk, Town Hall, Edmonton.

LONDON.—Jan. 17.—For certain alterations and additions at the infirmary, Lower Road, Rotherhithe, S.E. Deposit 50*l.* Names and addresses before December 8 to Mr. E. Pitts Fenton, clerk, 283 Tooley Street, S.E.

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**MIDDLEWICH.**—Dec. 19.—For converting the market place town hall into ante-rooms, providing and fixing the necessary fittings and executing other alterations and work in the town hall, Middlewich. Mr. Frederick W. Stocks, surveyor, Town Hall, Middlewich.

**MORLEY.**—Dec. 19.—For the erection of weaving shed at Crank Mills. Messrs. T. A. Buttery & S. B. Birds, architects, Queen Street, Morley.

**NEW MALDEN.**—Jan. 8.—For the erection of buildings at Norbiton Common farm, New Malden, Surrey, for the Guardians of Kingston Union. Mr. William H. Hope, C.E., architect and surveyor, Hampton Wick.

**NARBOROUGH.**—Dec. 29.—For the erection and completion of farm buildings at the new asylum, together with farm bailiff's house and other works at Narborough, near Leicester. Deposit 2/ 2s. Messrs. Everard, Son & Pick, architects, 6 Millstone Lane, Leicester.

**RADNOR.**—Dec. 19.—For the erection and completion of proposed Bible Christian chapel at Radnor, near Redruth. Mr. Sampson Hill, architect, Green Lane, Redruth.

**RUSTINGTON.**—Dec. 17.—For the erection of two cottages at Rustington, Sussex. Mr. H. G. Heal, surveyor, Worthing, and Beach Road, Littlehampton.

**SAFFRON WALDEN.**—Dec. 15.—For the erection of a manual instruction building, for the Governors of King Edward the VI. Grammar school. Messrs. Ackland, Son & Bailey, Saffron Walden.

**SCALBY.**—Dec. 19.—For rebuilding and widening of Newby bridge (stone) at Scalby, near Scarborough. County Surveyor's Office, County Hall, Northallerton.

**SCOTLAND.**—Dec. 15.—For the mason, carpenter, slater, plumber, plasterer, painter and glazierwork of Town and County bank to be erected in Keith. Mr. D. J. Corrigan, architect, Keith.

**SHOREHAM.**—Dec. 17.—For alterations and additions to New Shoreham Council schools. Mr. A. W. Nye, 2 Duke Street, Brighton.

**TREDEGAR.**—Dec. 22.—For carrying-out extensions and additions to the Bush inn. Deposit 1/ 1s. Mr. Osborne Newcombe, architect and surveyor, Tredegar.

**TRENHOLME BAR.**—Dec. 19.—For widening and strengthening bridge (stone), near Trenholme Bar, Yorks. The County Surveyor's Office, County Hall, Northallerton.

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**WALES.**—Dec. 18.—For carrying-out the following works for the managers of the Eastern Valleys group of Council schools:—(1) Erection of iron railings and other work at the Pontnewynydd Council school, Mon.; (2) erection of new offices at the Forge Side Council school, Blaenavon, Mon. Mr. H. J. Griggs, architect, Newport, Mon.

**WALES.**—Dec. 21.—For reroofing, reseating and various other works and alterations to Carmel chapel, Maesteg. Deposit 1/ 1s. Mr. E. W. Burnett, architect, St. Michael's Road, Maesteg.

**WALES.**—Dec. 22.—For the construction of a concrete sea defence wall at the Esplanade, Porthcawl, in length 216 lineal feet or thereabouts, with all necessary excavations, &c. Deposit 2/ 2s. Mr. R. W. Jones, engineer, Council Offices, Porthcawl.

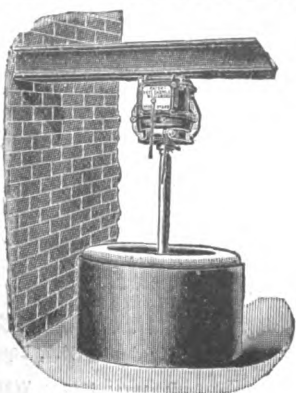
**WALES.**—Dec. 27.—For alterations and improvements to the old school at Penygraig, for the Rhondda Urban District Council. Deposit 2/ 2s. Mr. Jacob Rees, architect, Hillside Cottage, Pentre, Rhondda.

**WALES.**—Dec. 28.—For the erection of a workhouse at Carmarthen. Deposit 2/ 2s. Mr. Arthur I. Jones, architect, 2 Spilman Street, Carmarthen.

**WALES.**—Dec. 29.—For carrying-out alterations and additions, building boundary walls, &c., and laying-out and asphaltting new playgrounds, with drains, &c., at the Clwydyfagwyr school, for the Merthyr Tydfil education authority. Deposit 1/ 1s. Mr. J. Llewellyn Smith, architect, Town Hall, Merthyr Tydfil.

**WALLASEY.**—Dec. 29.—For the erection of new ferry workshops at Seacombe Ferry. Deposit 1/ 1s. Mr. W. H. Travers, engineer and surveyor, Public Offices, Egremont, Cheshire.

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WESTON-SUPER-MARE.—Dec. 21.—For alteration and extension of premises, Co-operative Society's stores, Baker Street. Messrs. Wilde & Fry, architects, Boulevard Chambers.

WEMMERGILL.—Dec. 15.—For additions to and strengthening of Wemmergill bridge (stone), Yorks, on the Middleton-in-Teesdale and Brough main road. County Surveyor's Office, County Hall, Northallerton.

WOODFORD.—Dec. 15.—For the erection and completion of a boys' school to accommodate about 500 pupils, and for sundry alterations to the girls and infants' schools at Churchfields, Woodford, Essex, for the Essex education committee. Mr. Frank Whitmore, Chelmsford, and Mr. Arthur Hogwood, architects, 33 Great Tower Street, E.C. Names and deposit (5%) before Nov. 26 to Mr. Ernest J. Bond, clerk to the local advisory committee, Woodford Green, Essex, and 95 Leadenhall Street, London, E.C.

WORCESTER.—Dec. 25.—For the erection of warehouse and offices, for Kays, Ltd. Deposit 2% 2s. Messrs. Simpson & Ayrton, architects, 3 Verulam Buildings, Gray's Inn Road, London, W.C.

THE State of New York is, for the first time in its history, pursuing a systematic plan for the construction, maintenance and repair of the 75,000 miles of highways within its boundaries. First, by extending State aid in the construction of a county and State system of main or market roads equitably apportioned among the counties and covering a distance of 7,500 miles. Of this 692 miles have already been improved, and plans for the improvement of 1,550 miles have been approved by the boards of supervisors, leaving 5,450 miles of additional roads the improvement of which is suggested. Second, by extending State aid to all towns which have substituted for the antiquated system of working out the road tax the more modern and businesslike method of paying same in cash. Five hundred and thirty-three towns, containing 45,005 miles, have adopted this money system, and many of the remaining 399 towns, containing 30,083 miles, are rapidly following their example.

## TENDERS.

## ACCRINGTON.

For the erection of an engine and boiler-house at Altham Bridge. Messrs. HAYWOOD & HARRISON, architects, Accrington.

|                                                  |        |   |   |
|--------------------------------------------------|--------|---|---|
| Griffith . . . . .                               | £8,365 | 0 | 0 |
| Fairclough . . . . .                             | 7,369  | 0 | 0 |
| Lewis & Son . . . . .                            | 6,855  | 0 | 0 |
| Grimshaw . . . . .                               | 6,826  | 0 | 0 |
| Lightbown . . . . .                              | 6,700  | 0 | 0 |
| Crake . . . . .                                  | 6,630  | 0 | 0 |
| Whittaker & Son . . . . .                        | 6,590  | 0 | 0 |
| Byrom . . . . .                                  | 6,436  | 0 | 0 |
| Lomax . . . . .                                  | 6,324  | 0 | 0 |
| Cronshaw . . . . .                               | 6,270  | 0 | 0 |
| Knowles . . . . .                                | 6,250  | 0 | 0 |
| Higson & Son . . . . .                           | 6,199  | 0 | 0 |
| Ramsbottom . . . . .                             | 5,960  | 0 | 0 |
| Neill & Sons . . . . .                           | 5,686  | 0 | 0 |
| Gerrard & Son . . . . .                          | 5,453  | 0 | 0 |
| CUNLIFFE & SONS, Accrington (accepted) . . . . . | 5,449  | 7 | 6 |

## ASHINGTON.

For erecting Council school, for Northumberland education committee. Mr. G. TOPHAM FORREST, architect.  
CARSE & SON, Amble (accepted) . . . . . £8,017 13 10

## ASH VALE.

For the erection of house at Ash Vale. Mr. AYLWIN O. CAYE, architect, 29 John Street, Bedford Row, W.C.  
Quantities by Mr. McEWAN WAGHORN.

|                             |        |    |   |
|-----------------------------|--------|----|---|
| King . . . . .              | £1,647 | 10 | 0 |
| Crosby & Co. . . . .        | 1,609  | 10 | 0 |
| Hunt . . . . .              | 1,560  | 13 | 0 |
| Kemp . . . . .              | 1,478  | 0  | 0 |
| Martin, Wells & Co. . . . . | 1,465  | 0  | 0 |
| Redhouse & Sons . . . . .   | 1,463  | 10 | 0 |

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**BOLTON-ON-DEARNE.**

For construction of sewerage works. Mr. W. H. RADFORD,  
engineer, Nottingham.

|                           |        |    |    |
|---------------------------|--------|----|----|
| Greaves & Wheeler         | £9,200 | 0  | 0  |
| Allott, Cook & Heywood    | 8,100  | 0  | 0  |
| Gates & Hogg              | 8,041  | 16 | 5  |
| Boul                      | 7,819  | 4  | 6  |
| Edmondson & Wyatt         | 7,685  | 0  | 0  |
| Hamilton                  | 7,640  | 0  | 0  |
| Jowett Bros.              | 7,286  | 18 | 0  |
| Jones Bros.               | 7,200  | 0  | 0  |
| Cooper                    | 7,070  | 9  | 2  |
| Moran                     | 7,050  | 0  | 0  |
| Dean & Co.                | 6,995  | 0  | 0  |
| Parker & Sharp            | 6,778  | 11 | 10 |
| Johnson                   | 6,719  | 0  | 0  |
| Thornton & Son            | 6,689  | 0  | 0  |
| Moffatt                   | 6,622  | 15 | 7  |
| Cottle                    | 6,600  | 0  | 0  |
| Mackay                    | 6,599  | 0  | 5  |
| Taylor                    | 6,480  | 6  | 10 |
| Fletcher, Hann & Fletcher | 6,459  | 17 | 3  |
| Blackwell & Co.           | 6,433  | 2  | 11 |
| Bentley & Sons            | 6,377  | 7  | 9  |
| Wood                      | 6,375  | 0  | 0  |
| Hill                      | 6,340  | 0  | 0  |
| Firth & Co.               | 6,338  | 12 | 0  |
| Ward & Tetley             | 6,195  | 0  | 0  |
| Meanley                   | 6,138  | 0  | 0  |
| Brigg                     | 6,100  | 0  | 0  |
| Bower Bros.               | 6,065  | 0  | 0  |
| Braithwaite               | 6,045  | 6  | 4  |
| Lock, Andrews & Price     | 5,987  | 15 | 6  |
| Rothera                   | 5,943  | 17 | 4  |
| Clements                  | 5,900  | 0  | 0  |
| Waring & Sons             | 5,857  | 8  | 10 |
| Craig                     | 5,831  | 0  | 0  |
| Holmes & Sons             | 5,800  | 0  | 0  |
| Morrison                  | 5,780  | 0  | 0  |
| Beighton & Berry          | 5,709  | 10 | 8  |
| Morley & Sons             | 5,631  | 12 | 10 |
| Barry                     | 5,600  | 0  | 0  |

**BOLTON-ON-DEARNE—continued.**

|                              |        |    |   |
|------------------------------|--------|----|---|
| Mackay & Son                 | £5,577 | 17 | 0 |
| Dean                         | 5,474  | 14 | 8 |
| BUCKLEY, Bradford (accepted) | 5,464  | 5  | 9 |
| Broadhead                    | 5,100  | 0  | 0 |

**CHESTER-LE-STREET.**

For new roads and erecting fence to enclose the isolation  
hospital grounds.

|                    |      |    |   |
|--------------------|------|----|---|
| Oates              | £265 | 10 | 0 |
| Thompson & Son     | 211  | 1  | 0 |
| Mole & Son         | 203  | 12 | 6 |
| JOPLING (accepted) | 199  | 9  | 5 |

**EASTBOURNE.**

For work in connection with new laundry and kitchen  
apparatus at the workhouse.

|                                 |        |    |   |
|---------------------------------|--------|----|---|
| BRADFORD & Co., Ltd. (accepted) | £1,175 | 10 | 0 |
|---------------------------------|--------|----|---|

**FULWOOD.**

For sewerage works (Contract No. 6), for the Urban District  
Council. Mr. E. H. NAYLOR, engineer and surveyor,  
Council offices, Fulwood. Quantities by engineer.

|                                                        |      |    |    |
|--------------------------------------------------------|------|----|----|
| Holdsworth & Halsall                                   | £883 | 14 | 3  |
| Cook & Flannery                                        | 676  | 8  | 8  |
| Moxham & Sons                                          | 623  | 15 | 0  |
| Edmondson & Wyatt                                      | 609  | 10 | 2  |
| Sharpel Bros.                                          | 548  | 4  | 7  |
| CHADWICK BROS., Skelington Road, Preston<br>(accepted) | 482  | 3  | 10 |

**GUILDFORD.**

For the making-up of Guildown Road.

|                                      |        |    |   |
|--------------------------------------|--------|----|---|
| Norris                               | £1,295 | 15 | 6 |
| Osman                                | 1,266  | 14 | 6 |
| May                                  | 1,068  | 0  | 0 |
| James & Co.                          | 1,026  | 5  | 1 |
| Franks                               | 1,007  | 10 | 0 |
| Smith & Co.                          | 990    | 0  | 0 |
| STREETER & Co., Godalming (accepted) | 974    | 2  | 7 |

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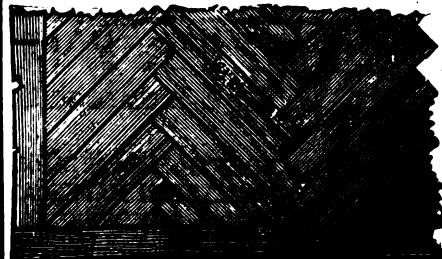
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For the erection of an unclimbable corrugated iron fence, with gates and posts and barbed wire fence, for the fencing-in of the ground at the higher level reservoir.

|                              |      |    |   |
|------------------------------|------|----|---|
| Filmer & Mason               | £100 | 0  | 0 |
| Carling, Gill & Carling      | 94   | 10 | 0 |
| Miles & Co.                  | 93   | 13 | 0 |
| ANGEL, SON & GRAY (accepted) | 85   | 0  | 0 |

**HALIFAX.**

For erecting engineers' works. Mr. L. COATES, architect, Halifax.

*Accepted tenders.*

Greenwood & Son, mason and excavator.  
Bancroft & Son, carpenter and joiner.  
Firth, plumber & glazier.  
Pullman & Son, steel merchant.  
Heywood & Co., patent glazing.

**HARROW.**

For additions to technical schools, for Middlesex County Council. Mr. H. G. CROTHALL, architect.

|                                         |        |   |   |
|-----------------------------------------|--------|---|---|
| Haynes                                  | £4,300 | 0 | 0 |
| Fassnidge & Son                         | 4,200  | 0 | 0 |
| Dorey & Co.                             | 4,144  | 0 | 0 |
| Nicholls & Son                          | 3,995  | 0 | 0 |
| Renshaw                                 | 3,993  | 0 | 0 |
| Knight & Son                            | 3,990  | 0 | 0 |
| Lawrence & Son                          | 3,924  | 0 | 0 |
| Treasure & Son                          | 3,891  | 0 | 0 |
| Johnson & Co.                           | 3,890  | 0 | 0 |
| Tribe & Co.                             | 3,879  | 0 | 0 |
| Dickens                                 | 3,870  | 0 | 0 |
| Batchelor                               | 3,788  | 0 | 0 |
| Fairhead & Son                          | 3,771  | 0 | 0 |
| Mattock & Parsons                       | 3,687  | 0 | 0 |
| Mattock Bros., Wood Green (recommended) | 3,587  | 0 | 0 |

**HEREFORD.**

For alterations and additions to the Mansion House, Widemarsh Street, Hereford, to form new business premises. Mr. H. SKYRME, architect, 138 Widemarsh Street, Hereford.

*First portion of contract.*

|                  |      |    |   |
|------------------|------|----|---|
| Powell           | £709 | 0  | 0 |
| Cooke            | 698  | 0  | 0 |
| Lewis & Co.      | 681  | 0  | 0 |
| Bowers & Co.     | 662  | 15 | 0 |
| WILKS (accepted) | 655  | 0  | 0 |

**HOWTH (CO. DUBLIN).**

For the construction of waterworks. Messrs. HASSARD & TYRRELL and KAYE PARRY & ROSS, engineers

|                 |        |    |    |
|-----------------|--------|----|----|
| Fitzpatrick     | £8,471 | 7  | 6  |
| H. & J. Martin  | 8,368  | 0  | 0  |
| Collen Bros.    | 8,130  | 8  | 2  |
| Graham          | 8,065  | 14 | 3  |
| Grainger Bros.  | 7,442  | 14 | 4  |
| Galloway & Sons | 7,250  | 0  | 0  |
| Clark           | 6,906  | 9  | 6  |
| Martin & Co.    | 6,857  | 10 | 0  |
| McKee & McNally | 6,683  | 17 | 7  |
| Fleming Bros.   | 6,420  | 10 | 11 |
| Hull & Co.      | 6,249  | 0  | 0  |

**KIVETON.**

For sewage-disposal works.

|                                       |      |   |   |
|---------------------------------------|------|---|---|
| HOLMES & Co., Chesterfield (accepted) | £527 | 5 | 0 |
|---------------------------------------|------|---|---|

**LLANDAFF.**

For providing and laying about 850 yards of 9-inch surface-water sewers, with manholes. Mr. JAMES HOLDEN, engineer, Cardiff.

|                                    |      |    |    |
|------------------------------------|------|----|----|
| Pugh                               | £700 | 4  | 6  |
| M. Williams                        | 664  | 0  | 9  |
| Hatherly & Co.                     | 571  | 9  | 10 |
| Cross & Blackmore                  | 561  | 12 | 0  |
| Osmond & Sons                      | 527  | 8  | 8  |
| Shail                              | 495  | 16 | 1  |
| Davies                             | 485  | 8  | 10 |
| Rees                               | 481  | 8  | 3  |
| Evans                              | 475  | 17 | 10 |
| F. C. WILLIAMS, Cardiff (accepted) | 412  | 11 | 9  |

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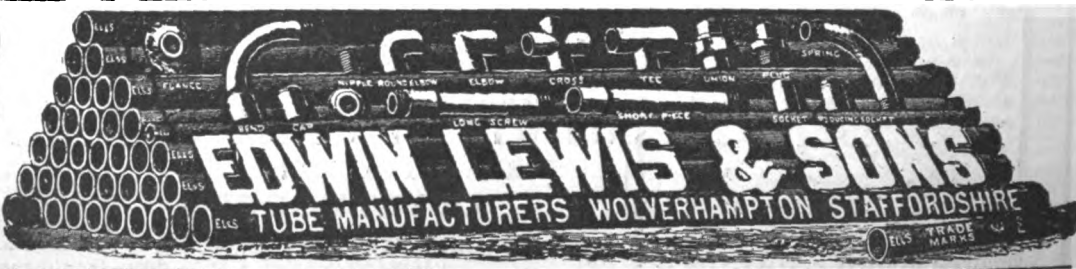
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For removing existing boiler at Allen Street school, Kensington, and for providing and fixing new boiler and additional heating surface.

|                             |      |    |   |
|-----------------------------|------|----|---|
| Kite & Co.                  | £125 | 0  | 0 |
| Palowkar & Sons             | 110  | 0  | 0 |
| Davis                       | 108  | 0  | 0 |
| Defries & Sons              | 105  | 0  | 0 |
| Stevens & Sons              | 100  | 0  | 0 |
| Wontner-Smith, Gray & Co.   | 99   | 15 | 0 |
| Yetton & Co.                | 93   | 5  | 0 |
| Cannon & Sons (recommended) | 85   | 0  | 0 |
| Architect's estimate        | 79   | 0  | 0 |

For wiring and electric fittings at the new fire-station, Knightsbridge.

|                                                              |      |    |   |
|--------------------------------------------------------------|------|----|---|
| Oliver Clark & Co.                                           | £235 | 10 | 0 |
| Sunderland & Co.                                             | 235  | 0  | 0 |
| Durell & Co.                                                 | 235  | 0  | 0 |
| Weston & Sons                                                | 230  | 0  | 0 |
| Coleby & Co.                                                 | 225  | 0  | 0 |
| Suter & Co.                                                  | 218  | 0  | 0 |
| Fryer & Co.                                                  | 197  | 0  | 0 |
| Blackburn, Starling & Co., Ltd.                              | 195  | 0  | 0 |
| Smeeton & Page, 63 Queen Victoria Street, E.C. (recommended) | 154  | 8  | 0 |

For the erection of warehouses and shops at Boleyn Road, N.E. Mr. J. PARRISH, architect.

|                   |        |    |   |
|-------------------|--------|----|---|
| Fuller            | £2,026 | 0  | 0 |
| Snewin Bros.      | 1,998  | 0  | 0 |
| Faulkner & Palmer | 1,596  | 0  | 0 |
| Sharpin           | 1,280  | 13 | 0 |
| Crispin           | 1,185  | 0  | 0 |
| Behrend           | 1,179  | 0  | 0 |

LONDON—continued.

For drainage works at the workhouse, Bermondsey. Messrs. NEWMAN & NEWMAN, architects.

|                                              |      |   |   |
|----------------------------------------------|------|---|---|
| Calnan & Son                                 | £125 | 0 | 0 |
| Nightingale                                  | 120  | 0 | 0 |
| Reason                                       | 119  | 0 | 0 |
| Bragg & Sons                                 | 107  | 0 | 0 |
| Chalkley                                     | 104  | 0 | 0 |
| Renwick                                      | 96   | 0 | 0 |
| Harper                                       | 95   | 0 | 0 |
| Thomas & Edge                                | 93   | 0 | 0 |
| Glendinning                                  | 88   | 0 | 0 |
| Negus                                        | 76   | 0 | 0 |
| North British Plumbing Co.                   | 75   | 0 | 0 |
| COLLINS, 46 Kellyon Road, Clapham (accepted) | 70   | 0 | 0 |

For kerbing, channelling, paving, making-up, &c., of Cotesbach Road, Clapton. Mr. NORMAN SCORGIE, borough engineer.

|                                            |      |    |    |
|--------------------------------------------|------|----|----|
| Griffiths & Co.                            | £840 | 16 | 8  |
| Adams                                      | 811  | 6  | 11 |
| BLOOMFIELD, South Tottenham, N. (accepted) | 777  | 15 | 5  |

LONG DITTON.

For construction of filter-beds, &c., for the Metropolitan

|                             |          |    |    |
|-----------------------------|----------|----|----|
| Water Board.                |          |    |    |
| Mowlem & Co.                | £101,625 | 0  | 0  |
| Manders                     | 97,182   | 7  | 5  |
| Perry & Co.                 | 92,232   | 0  | 0  |
| Lovatt, Ltd.                | 89,345   | 18 | 8  |
| Pearson & Son               | 83,618   | 1  | 2  |
| Kennedy, Ltd.               | 83,531   | 10 | 7  |
| Nunn                        | 72,627   | 1  | 10 |
| Osman                       | 71,856   | 0  | 0  |
| Docwra & Son                | 69,998   | 14 | 6  |
| Kirk & Randall              | 67,824   | 0  | 0  |
| Pedrette & Co.              | 61,893   | 19 | 3  |
| Aird & Sons                 | 61,876   | 15 | 10 |
| Hay & Co.                   | 61,696   | 4  | 8  |
| Wall, Ltd.                  | 61,309   | 0  | 0  |
| Neal, Ltd.                  | 57,443   | 14 | 5  |
| Moran & Son                 | 56,996   | 0  | 0  |
| Muirhead & Co.              | 55,604   | 13 | 0  |
| Pethick Bros. (recommended) | 54,783   | 0  | 0  |

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Illustrated Sheet, showing application of our Hot Water Cylindrical Tanks, sent on request.

For Index of Advertisers, see page x.

**NEWCASTLE-UNDER-LYME.**

For rearrangement and extension of the Orme girls' school.  
Messrs. A. R. WOOD & SON, architects, Tunstall and Burslem.

|                                                  |        |   |   |
|--------------------------------------------------|--------|---|---|
| Cooke . . . . .                                  | £4,609 | 0 | 0 |
| Grant & Sons . . . . .                           | 4,550  | 0 | 0 |
| Heath . . . . .                                  | 4,549  | 0 | 0 |
| Bagnall . . . . .                                | 4,500  | 0 | 0 |
| Godwin . . . . .                                 | 4,478  | 0 | 0 |
| Tompkinson & Bettely . . . . .                   | 4,247  | 0 | 0 |
| Wilton . . . . .                                 | 4,140  | 0 | 0 |
| EMERY, Newcastle-under-Lyme (accepted) . . . . . | 3,980  | 0 | 0 |
| Smith . . . . .                                  | 3,956  | 0 | 0 |

**SOLIHULL.**

For supplying and fixing laundry machinery at workhouse.  
Mr. W. H. WARD, architect, Birmingham.

|                                                           |      |    |   |
|-----------------------------------------------------------|------|----|---|
| Parker, Ltd. . . . .                                      | £410 | 0  | 0 |
| Bradford & Co. . . . .                                    | 395  | 0  | 0 |
| Summerscales & Sons . . . . .                             | 379  | 10 | 0 |
| Armstrong & Co. . . . .                                   | 367  | 0  | 0 |
| Smith & Paget . . . . .                                   | 345  | 0  | 0 |
| Cherry Tree Machine Co. . . . .                           | 332  | 7  | 6 |
| Ashwell & Nesbitt . . . . .                               | 332  | 0  | 0 |
| GODDARD, MASSEY & WARNER, Nottingham (accepted) . . . . . | 328  | 9  | 9 |

**STOKE-UPON-TRENT.**

For erecting boiler-house at electricity works. Mr. A. BURTON, borough surveyor.

|                                                      |      |    |   |
|------------------------------------------------------|------|----|---|
| Till . . . . .                                       | £332 | 13 | 0 |
| Boston . . . . .                                     | 288  | 0  | 0 |
| Godwin . . . . .                                     | 285  | 0  | 0 |
| Heath . . . . .                                      | 277  | 9  | 0 |
| Bagnall . . . . .                                    | 268  | 0  | 0 |
| BALL & ROBINSON, Stoke-on-Trent (accepted) . . . . . | 255  | 0  | 0 |

**TILBURY.**

For the erection of new police station.

|                                      |        |   |   |
|--------------------------------------|--------|---|---|
| DAVEY, Southend (accepted) . . . . . | £2,197 | 0 | 0 |
|--------------------------------------|--------|---|---|

**UTTOXETER.**

For the execution of sewerage extensions.

|                                             |        |   |   |
|---------------------------------------------|--------|---|---|
| READING, Wolverhampton (accepted) . . . . . | £1,200 | 0 | 0 |
|---------------------------------------------|--------|---|---|

**WORCESTER.**

For extension of engine-house, store, &c., at the Hylton Road electricity station.

|                                                  |        |   |   |
|--------------------------------------------------|--------|---|---|
| WOOD & SON, LTD., Worcester (accepted) . . . . . | £1,373 | 0 | 0 |
|--------------------------------------------------|--------|---|---|

**WELLINGBOROUGH.**

For pumping machinery, gas-engine and suction-gas plant, for the pumping station. Mr. E. Y. HARRISON, engineer.

|                                                |        |    |   |
|------------------------------------------------|--------|----|---|
| Crossley Bros. . . . .                         | £1,840 | 0  | 0 |
| Warner & Co. . . . .                           | 1,812  | 10 | 0 |
| Hayward Tyler & Co. . . . .                    | 1,730  | 3  | 3 |
| Dynamic Gas Co. . . . .                        | 1,685  | 17 | 0 |
| Simpson & Co. . . . .                          | 1,684  | 10 | 0 |
| Watt & Co. . . . .                             | 1,622  | 12 | 0 |
| Glenfield & Kennedy . . . . .                  | 1,584  | 0  | 0 |
| Ruston, Proctor & Co. . . . .                  | 1,473  | 0  | 0 |
| Potter & Co. . . . .                           | 1,472  | 0  | 0 |
| Davey, Paxman & Co. . . . .                    | 1,461  | 3  | 0 |
| Haste Pump Co. . . . .                         | 1,427  | 0  | 0 |
| Campbell Gas Engine Co. . . . .                | 1,419  | 0  | 0 |
| Boulton & Paul . . . . .                       | 1,364  | 16 | 6 |
| Mather & Son . . . . .                         | 1,298  | 0  | 0 |
| Death & Ellwood . . . . .                      | 1,285  | 0  | 0 |
| Excelsior Engineering Co. . . . .              | 1,260  | 0  | 0 |
| Dougill's Engineering, Ltd. . . . .            | 1,245  | 0  | 0 |
| Mussey & Marr . . . . .                        | 1,229  | 0  | 0 |
| Pratchitt Bros. . . . .                        | 1,185  | 10 | 0 |
| Pollock, Whyte & Waddel . . . . .              | 1,172  | 10 | 0 |
| TANGYES, LTD., Birmingham (accepted) . . . . . | 1,074  | 0  | 0 |
| Mather & Platt . . . . .                       | 986    | 0  | 0 |

FIRES caused electrically during the last three months in the United States were seventy-four in number, and resulted in 161,000 dols. loss, according to a report of the National Board of Fire Underwriters. Eight were due to the crossing of high-tension wires with telephone and lighting circuits, nine were due to the grounding of lighting and motor circuits, and thirty-one were due to short circuits on interior wiring.

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**DRY BOARDS.**  
**TEAK LOGS & PLANKS.**

**IRVIN & SELLERS**  
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*(Received too late for classification.)***BRISTOL.**

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LOVELL & SON, Bristol \* £4,130 0 0

\* Accepted subject to deductions.

**TRADE NOTES.**

WE are informed that Messrs. Redpath, Brown & Co., Ltd., have secured an order to the value of 3,000l. for the steel framework for a new electric-power station which is being erected by Messrs. D. Davis & Sons, Cardiff, at their Tylorstown colliery.

THE extensions to the infectious diseases hospital, Lincoln, are being warmed and ventilated by means of Shorland's double-fronted patent Manchester stoves with descending smoke flues and exhaust roof ventilators, the same being supplied by Messrs. E. H. Shorland & Brother, of Manchester.

A HANDY little spirit-level is that known as the "Cat's Eye," supplied by Mr. J. R. Wood, of 20 Union Street, Glasgow, in sizes from 1½ inch up to 5 inches, at such a reasonable rate that every builder should possess himself of one.

A NEW steam fire engine by Messrs. Merryweather & Son was tested by the fire brigade, Glasgow, a few days since in boisterous weather. Water was thrown to a height of 140 feet, and afterwards a test was made with a low-pressure supply. The results were satisfactory.

WE have often referred to the care taken by the Yale & Town Co., Ltd., New York, to produce locks and lock furniture which would be adapted to all varieties of styles. The company's metalwork of those classes has been employed throughout the new Liverpool Cotton Exchange, which it will be remembered is Classic in style.

THE vicar (the Rev. Charles L. L. Gwilliam) and inhabitants of Otterburn have given instructions to Messrs. Wm. Potts & Son, clock manufacturers, Newcastle and Leeds, to erect a public clock in the village church, of the very best quality, with all Lord Grimthorpe's improvements inserted, which is now well in hand, and will shortly be fixed in the tower. Otterburn is the village where the celebrated Border fray occurred, as depicted in the ancient ballad of "Chevy Chase," some centuries ago.

**NEW DIARIES.**

No architect or builder who desires to be up to date should be without the diaries issued by Messrs. Hudson & Kearns, which are replete with information and are produced in such excellent style. This firm also supply the best blotting pads we have yet had brought to our notice. The one numbered 8A is possibly the most useful, although "The Banker's" may run it very closely for popularity; each pad consists of blotting-pad, diary and date remembrancer. The one known as 8A has, in addition, ample provision for standing memos; the blotting-paper is of the best quality, and the whole is so admirably produced that it is an ornament, whether for the studio, office or board-room table.

**NEW CATALOGUE.**

WE have received from Messrs. Barford & Perkins, engineers, Peterborough, a copy of their admirable new illustrated catalogue of steam cooking, heating and laundry appliances, which are specially adapted for the requirements of workhouses, asylums, schools, hotels, messrooms, &c. Among the numerous advantages claimed for Barford & Perkins's system is economy, inasmuch as one fire only is required for the complete system of cooking all kinds of food, heating by steam all parts of the institution, supplying hot water to baths, driving laundry and pumping machinery, drying clothes, &c.

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**MANCHESTER**

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SUMMER DRIED SEASONED BATH STONE FOR WINTER USE.



**ELECTRIC NOTES.**

MR. ROLES has been offered the appointment of electrical engineer and manager to the Bradford Corporation, in succession to Mr. Blackman, who has accepted the appointment at Sunderland.

MR. P. C. COWAN, M.Inst.C.E., chief engineering inspector, Local Government Board, held an inquiry in the town hall, Ballsbridge, Ireland, into an application by the Pembroke Urban Council for a loan of 6,500*l.* for the proposed extension of the electric-lighting scheme in the Pembroke township.

THE Aston Town Council have agreed that the town clerk be authorised to make application to the Local Government Board for sanction to the borrowing of the sum of 7,000*l.* to defray the expenditure incurred in the laying of feeder cables and works incidental thereto in connection with the supply of electrical energy for tramway purposes in Erdington. The demand for lighting and power was still showing a very marked upward tendency.

THE Wolverhampton electricity committee report that certain generators and transformers which formed part of the old high-tension system are now out of date, and it is recommended that they be disposed of. The original first cost of the machines amounted to 5,245*l.*, and their present scrap value is placed at 657*l.*; the amount repaid by the operation of the sinking fund is 2,386*l.*, and the balance to be provided out of reserve fund to extinguish the remaining debt is 2,202*l.*

At the next meeting of the Islington Borough Council the lighting committee will report that on March 2 last the late Council resolved to proceed with a scheme for the extension of arc lighting at an estimated cost of 21,011*l.*, but they now propose to go fully into the details of the scheme and report thereon at a later date. The electrical engineer has been instructed to proceed no further with the works, except where cables have been already laid down. The committee will ask the Council to approve of this action.

ACCORDING to the *Japan Herald* two important electric railway proposals for Kobe are now under consideration by the Government, whose official sanction thereto is expected shortly. The first is that of the Kobe City Electric

Railway for permission to connect the Hanjin and the Kobe electric lines near the present terminus of the former line. The second is an application of the Hanjin Electric Railway Company for permission to extend its line to the American Hatoba. An agreement has already been arrived at between the Osaka Municipality and the Hanjin Electric Company concerning the connection of the latter line with the Osaka Harbour electric line.

THE Grimsby Town Council have adopted the recommendation of the electric-lighting committee, that in view of the developments taking place at Immingham, the Council take steps to secure a provisional order enabling them to extend their area of supply so as to include Immingham and other parishes. The mover said if the scheme were carried out fully it would cost nearly 30,000*l.* If they got the order they would be able to keep out competitors, while they would not be committed definitely to the total expenditure unless the demand for current was such as compelled it.

CONSIDERABLE extensions to the Aston electric-power station in Chester Street were officially brought into use on Saturday. The full capacity of the new generating set is 1,000 kilowatts, increasing the total capacity of the station from 1,450 to 2,450 kilowatts. The engine is capable of giving out approximately 1,400 indicated horse-power. The revolving weight of the fly-wheel, shafting, generator and cranks amounts to almost 100 tons, and revolve at a speed of 95 revolutions per minute. The total weight of the combined set is 225 tons, and the combined engine and generator rests on concrete foundations composed of 300 tons of concrete. The total cost of the extensions is between 15,000*l.* and 16,000*l.*

THE Alexandra Dock and Railways Company has applied to the Newport Corporation for quotations for the supply of a large amount of electric power, and the latter have agreed to offer three-phase electric current in bulk at three-farthings per unit, subject to the company giving a satisfactory guarantee as to the amount and period of consumption. The borough electrical engineer reports that it would be necessary for the Corporation to expend between 30,000*l.* and 40,000*l.* upon the plant required to meet the demand. The Post Office authorities have decided to take current from the Corporation for lighting the new post

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PLAIN & RIVETTED  
STEEL WORK.



**BRIGHTON ELECTRICITY WORKS.**  
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**INCORPORATED  
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## ILLUSTRATIONS.

## NO. 5 CHEAPSIDE.

THE KING'S ARMS INN, THORNFORD—VIEW IN BAR TOWARDS INGLE.

## SLEEKBURN CHURCH.

CHEVINGTON PAROCHIAL HALL.

CATHEDRAL SERIES.—MANCHESTER: THE NAVE, EASTWARDS.

office, and Messrs. Morris & Griffin, chemical works, East Usk, have applied for a minimum quantity of 100,000 units per annum for power purposes for at least three years.

THE tramways committee of Edinburgh Town Council have approved the draft agreement between the Corporation and the Edinburgh Suburban Electric Tramways Company, under which the Corporation agree to the company continuing the Dalkeith tramway from the city boundary at Nether Liberton, by way of Dalkeith and Pleasance, to a point at or near the Waverley bridge, to be fixed by the Corporation. By the agreement it is provided that all the works so far as within the city are to be executed to the satisfaction of the Corporation or their engineer. The promoters are to lay and maintain to the satisfaction of the Corporation the roads between the tramways and as much as extends 18 inches beyond the rails on each side of the tramways. The tramways are to be worked only by electrical energy or by other mechanical power approved by the Corporation. The company bind themselves not to erect any electrical station or machinery within the city, or to sell or distribute electrical energy within the city.

THE Marylebone Borough Council last week discussed a report of the lighting committee regarding the lighting of Oxford Street. A report presented to the London County Council by its highways committee alleged that the new electric lamp standards erected on small refuges in Oxford Street were an obstruction to traffic, and urged that the London County Council should promote legislation to obtain powers to deal with such cases of obstruction. The lighting committee of the Borough Council now repudiated

in the strongest manner possible the allegation that the standards and refuges were any obstruction whatever, asserting that, on the contrary, they were serviceable for regulating the traffic, and recommending that the legal and parliamentary committee of the Council be instructed to take all necessary steps for opposing any attempt of the London County Council to obtain greater powers of interfering with the duties and powers of borough councils in connection with the streets within their respective districts. This course will be taken.

## BUILDING AND BUILDERS.

MESSRS. PATMAN & FOTHERINGHAM, LTD., carried out the erection of the large Mission Hall for the use of Seamen, together with the general offices, which were recently opened. The same firm have nearly completed the rebuilding of the Avenue Theatre, which will be known as "The Playhouse."

THE housing committee of the Birmingham City Council will shortly submit a report recommending the acceptance of an offer for leasing the Bordesley Green land for the erection of working men's houses. The guiding principle is to make an experiment in the direction of leasing municipally owned land to building societies of public utility. The object of the committee is to show what can be done in the provision of housing accommodation for working men when the profits of the middle-man are eliminated.

At the Guildhall, London, on Tuesday a meeting of a committee of representatives of district councils for the national registration of plumbers was held. A resolution was passed requesting the Plumbers' Company to arrange for a deputation to the Local Government Board to urge the introduction by the Government of a Plumbers' Registration Bill, and that district councils should be asked to support the action of the deputation by all the means in their power. It was further resolved that local authorities should be requested to give preference to the employment of registered plumbers wherever possible. It was stated that the Plumbers' Company had spent 37,000*l.* in supporting the movement.

# THE LEEDS FIRECLAY COMPANY, LTD.

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"IMPERIAL"  
PORCELAIN  
URINAL  
RANGES.



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RANGES.

Fig. 1502.—SEMI-CIRCULAR-BACK URINAL.

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THE finance committee of the Metropolitan Asylums Board reported that in their estimates of capital expenditure for next year the following works should be included, they having been approved by the Board, but sanctions to borrow had not been received:—Central stores, new premises at Peckham, 18,000*l.*; bacteriological laboratories, new premises at Peckham, 9,090*l.*; Darenth asylum, industrial workshops, 3,500*l.*; Joyce Green hospital, cottages, reception-station, &c., 7,030*l.*; Belmont asylum, adaptation of boys' school (architects' approximate estimate for building works, 69,500*l.*; engineer-in-chief's approximate estimate for engineering works, 22,600*l.*), and other works. The committee ask for a total sum of 250,000*l.*

A WORKING-MAN was charged at Eccles on Monday under the 104th section of the Eccles Corporation Act, 1901, with constructing the drains in the back yards of several houses in Hampson Street, Peel Green, Patricroft, in such a manner as to be defective and injurious to health, and the chief sanitary inspector submitted to the Bench a pipe taken out of one of the yards of the houses that contained large lumps of cement. The joints of the drains were also bad. The assistant town clerk said that the health committee wished workmen to understand that it was very important that drains should be laid properly. The defendant had rendered himself liable to a penalty of 20*l.* As this was the first case taken under the Act, a nominal penalty of 10*s.* and costs was imposed.

MR. A. A. G. MALET, M.I.C.E., held an inquiry into an application by the Clay Cross Urban Council for a supplementary loan of 4,600*l.* in respect of their scheme of sewage and sewerage disposal. The solicitor to the Council said the contractors for the Danesmoor works had obtained judgment for 1,400*l.*, with costs. The sheriff's officers had been in possession, but they were paid out, the costs being 58*l.*, and the Council entered into an undertaking to pay interest on the amount due at the rate of 5 per cent. upon the judgment until the amount was paid. At the same time the Council undertook to apply with all expedition for a supplementary loan. Since then further certificates had been issued. The contractors could further proceed against them if they wished. The Inspector said the Board were desirous of helping the Council out of their difficulties and at the same time the contractors. The difficulty was due

to the figures not being got ready by the engineer. He would put it before the Board that the Council and the contractors were prepared to meet one another. He would have to adjourn that inquiry until the engineer had prepared his figures. The inquiry was adjourned *sine die*.

At the Lancaster County Court on Friday Judge Hans Hamilton gave judgment for a dentist, who sued Mr. R. Thompson, builder, Lancaster, and Mr. R. Leighton, Lancaster, for damages to a motor-car. Going through Ashfield Avenue the car came in contact with a sewer grid, 10 inches above the roadway, the roadway being unfinished. The damage cost 18*l.* to repair. The road had not been taken over by the Lancaster Corporation, and his Honour said he had no doubt the law was that the owners of property on either side of the street held the freehold of the street, and were liable for the obstruction. It was a serious matter for the public and property owners if it was true that streets in Lancaster were sometimes not taken over for fifteen or twenty years, and something should be done by property owners in unmade streets to protect themselves and the public by putting up notices that the roads were not open for use. His Honour gave leave to appeal.

THE chief executive officer of the Irish International Exhibition 1907 has been making inquiries regarding the numbers employed in the exhibition, their nationality, and the rates and amount of wages paid. The total, which has since been increased, was 404, and it was made up as follows:—8 foremen, of whom 5 are not Irish; 68 carpenters and sawyers, all Irish, and members of local branches of the trade societies; 55 plasterers, all members of recognised trade societies (41 of these are Irish born, 5 have worked in Ireland for several years, and 9 not Irish are specialists in fibrous plasterwork); 8 sheeters and zinc workers, who are specialists, one being Irish; 14 painters, all Irish, employes of Messrs. Dockrell, on a sub-contract; 10 gasfitters, all Irish, employes of the Alliance Gas Company; 12 electricians, all Irish but one, employes of Messrs. Coates & Son; 193 carters, scaffolders and labourers, all Irish (majority born in Dublin, or resident for a great number of years); 8 miscellaneous, of whom 7 are Irish; 28 members of the staff at executive offices and at the contractors' office, of whom 22 are Irish. The weekly salaries and wages are, approximately, 550*l.*;

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"A most perfect protection against damp raising in wall. If builders could be persuaded to use such, I feel confident that complaints from damp walls would be reduced to a minimum."

DAMP PROOF. **Builders' Merchants wanted as Agents in all large Towns.**  
IMPERISHABLE.  
CHEAP.

SOLE MAKERS:  
**JOHNSON & PHILLIPS, Ltd.,**  
VICTORIA WORKS.  
CHARLTON, S.O., KENT.

ASK FOR OUR  
PRICE LIST "Y"  
AND SAMPLE.

221 of the workers are receiving pay at rates above those recognised by the Master Builders' Association of Dublin. It will thus be seen that of the 404 persons employed 371 are Irish, while of the remainder several have worked in Ireland for some years, and the rest are specialists in the work which is being carried out.

### VARIETIES.

THE rateable value of the county of London amounts to 43,905,961*l.*, an increase of 449,481*l.* compared with the last quinquennial valuation.

THE Metropolitan Water Board have accepted the tender of Messrs. Pethick Bros. for the construction of six new filter beds and a supply tank on the Board's land at Long Ditton, at the sum of 54,783*l.*

THE Middlesbrough Town Council have adopted a resolution in favour of the promotion of a Bill in the next session of Parliament authorising the Corporation to construct a transporter bridge across the Tees and to discontinue the Middlesbrough and Port Clarence Ferry.

THE municipal authorities of Antwerp invite tenders by December 20 for the erection of metallic structures on the quay side at an estimated cost of 8,300*l.* The specification may be seen at the offices of the Commercial Intelligence Branch, 73 Basinghall Street, London, E.C.

THE British Fire Prevention Committee contemplate undertaking in the near future a series of tests with different ordinary "first aid" appliances, such as buckets of water, buckets of sand, hand pumps and also with proprietary extincteurs, with a view of ascertaining their relative merits.

THE Scarborough Town Council have adopted the minutes of the education committee, which showed that, subject to the consent of the Board of Education, they had authorised the purchase of two houses and 7,533 square yards of land in Seamer Road for the erection of Council schools.

THE East Westmorland Rural District Council have just concluded their deliberations in connection with a proposed water scheme, with the Ravenstonedale hills as source

of supply, for Brough and a number of other villages in the same neighbourhood. The estimated cost is 8,500*l.* It is expected to commence the work in about three months' time.

THE police committee of the City Corporation has adopted a scheme for building at a cost of 16,723*l.* dwellings in Bishopsgate for married officers and constables of the City police force, and likewise for providing accommodation for an ambulance station in connection with the new electric service which will come into force in the new year.

THAT American architecture does not mainly consist of those tall buildings called "skyscrapers" is shown by the collection of photographs, &c., of American work on view at the Builders' Exchange, Birmingham. So attractive has it been found by the numerous architects who have already visited the collection, that by special desire the exhibit will remain on view until January 5 next.

THE Holywell Urban Council on Monday decided to ask the Birkenhead Corporation whether they would be prepared to entertain an application to supply the town with water in bulk—for the purpose of a town water supply—from the main which it is proposed shall convey water to Birkenhead from the river Alwen, and which main, it is proposed, shall go through Northop, a distance of some six miles from the town.

CANON PURCELL, the chairman of St. Austell Board of Guardians, who has visited the new county asylum extensions at Bodmin, told the Board that his inspection was an unpleasant revelation to him. He was perfectly amazed to see the lavish expenditure of the ratepayers' money. The hall was almost burlesque in the extravagance of the decorations, and the dining-room for the inmates was a most magnificent place.

THE Tynemouth Town Council have decided to promote a Parliamentary bill in connection with their water scheme. The Bill proposes to increase the Corporation's borrowing powers to 800,000*l.*, making it possible to raise loans to provide for large extensions of the water undertaking. The Corporation expect to secure contracts for supplying Newbiggin, Ashington, Cramlington, Bedlington and Morpeth with water, and the new works for that purpose will cost 62,000*l.*

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THE Christmas number of *Harper's Magazine* contains abundance of reading matter suitable for the season, copiously illustrated, and among the articles of a more solid character is one on "The Tiber," by M. van Vorst, and another on "New Orleans," by C. H. White.

THE proposal for the completion of the building of the Glasgow School of Art has now taken definite shape. The estimated cost of the proposed completion of the building is as follows:—Western extension, including furniture, fittings, &c., 22,000*l.*; new service stair in east portion of school, 680*l.*; cloak-rooms and lavatories, 500*l.*; architects' and measurer's fees and sundry charges, 1,820*l.*—making a total of 25,000*l.*

THE South Shields Town Council have agreed to petition quarter sessions in favour of the closing of a public landing, in order to then allow the Middle Dock Company to construct a dock 400 feet long, to give accommodation for their increasing ship-repairing business. The scheme will be carried out in a few months, and will necessitate the setting back of a street of houses by 70 feet. The new dock will cost over 70,000*l.* and increase the number of workmen by over 1,000.

THE Institute of Sanitary Engineers held their annual dinner on Monday last at the Holborn Restaurant. Professor E. G. Coker (the retiring president), who occupied the chair, in responding, stated that both financially and numerically the Institute occupied a much better position than it did twelve months ago. They had reduced their debts considerably, and had enrolled eighty-eight new members. Sir William Mather, in proposing the toast of the evening, observed that in the efforts of that institution one saw the awakening of a spirit throughout the whole country to regard sanitation as one of the primary things of life, and by encouraging its associates and members to study the discoveries of science it was doing very great good for the whole of the community.

THE authorities of the Roman Catholic see of Hexham and Newcastle have determined to complete the erection of the partially-built memorial church in the Bowes Museum Park at Barnard Castle. The sum of 27,000*l.* was originally bequeathed to the church, and 8,000*l.* has already been spent upon it. The balance is invested in Consols, which, if

realised, it is thought may produce 17,000*l.* With this sum it is proposed to complete the structure and to create an endowment.

UNDOUBTEDLY one of the most artistic weeklies published in this country is *Country Life*; it is hardly possible to find better printing, and with the advantage of really good paper the blocks produced are always excellent. The Christmas number is just to hand, and is replete with interest from cover to cover. The reproductions of Queen's College, Oxford, and of Vaux le Vicomte, under the title of the "Châteaux and Gardens of France" are beautiful reproductions, and the letterpress is most interesting. In fact, a better shillingsworth is not to be obtained.

It is stated that further changes are in store for the Royal Engineers in consequence of the carrying out of the recommendations of Sir Evelyn Wood's committee on the reorganisation of the corps, and the proposals which are shortly to be carried into effect will further reduce the *personnel*. It is understood that the whole of the barrack work will come under civil control, except that of a fortification type, and that no military foremen of works will be required. This change will also affect the officers, a large number of whom act as building accountants of military works. The clerical staff will also in time be reduced. It is fully intended to make all the sapper branches strictly combative, and free the corps from the incubus of purely civil work.

THE Aston Town Council recently received a petition signed by shopkeepers and residents in favour of the paving of Aston Road from the Cross to Birmingham city boundary with wood blocks instead of granite setts. From the report of the surveyor it would appear that the present cost of keeping the road in repair with macadam averaged 244*l.* per annum, towards which the County Council contributed 200*l.*, leaving 44*l.* to be provided by the Council. Assuming the road to be paved with granite setts, the first cost would be 5,000*l.*, and the cost per annum for maintenance, repairs and repayment of loan would be 441*l.* In the event of the road being paved right across with wood, the first cost would be 7,700*l.* The annual cost for maintenance, repairs and repayment of loan would be 1,034*l.* The matter has been deferred for twelve months.

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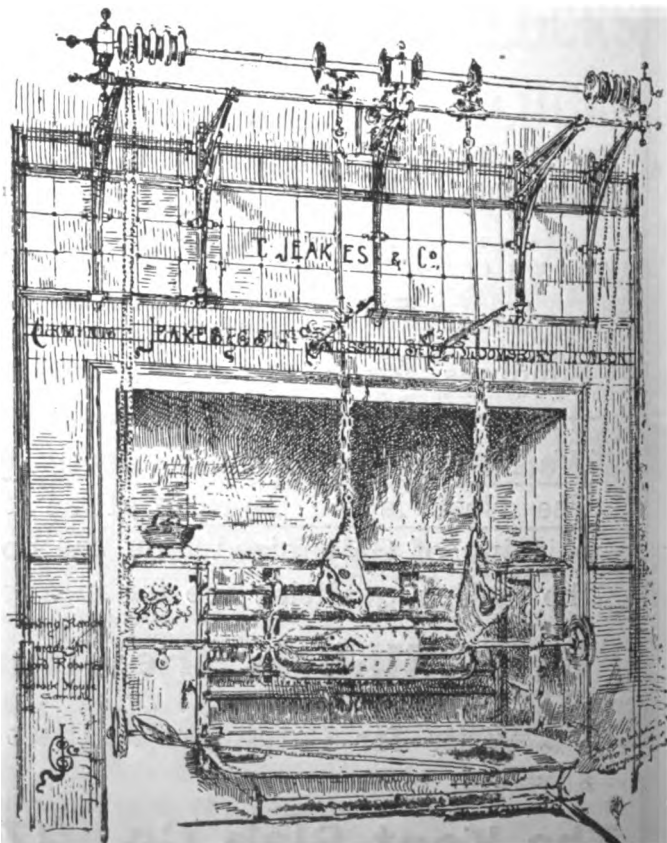
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**COOKING, LAUNDRY, HEATING, VENTILATION, Etc.**



At the Smithfield Club Show in the Agricultural Hall, which closes to-day, Messrs. Barford & Perkins, of Queen Street Iron Works, Peterborough, make an interesting display of agricultural machinery, corn mills, heating apparatus, a vertical steam engine and boiler, also photographs of their well-known motor-rollers, which are much in requisition for asphaltting, cricket grounds, golf links, parks, racecourses and for road-making. Among numerous other exhibitors of implements and machinery are Messrs. Clayton & Shuttleworth, Ltd., Fielding & Platt, John Fowler & Co., Ltd., R. Hornsby & Sons, Ltd., J. B. Petter & Sons and John Bellamy, Ltd.

The Sheffield town clerk has been served with a county court summons in an action by the West Riding of Yorkshire Rivers Board against the Corporation, in which the complainants, after complaining that the defendants caused and continue to cause to fall or flow, or knowingly permitted or still permit to fall or flow, and to be carried into the river Don, certain liquid sewage matter, claim a summary order requiring the defendants to abstain from the commission of the alleged offence, and from otherwise offending against the provisions of the Rivers Pollution Prevention Acts 1876 and 1893. The summons is returnable for January 16 next. The highway and sewerage committee have instructed the town clerk to retain counsel and take such steps as he may think necessary in defence of the action.

Mr. F. H. TULLOCH, Local Government Board inspector, inquired at Blackpool into an application made by the Corporation for powers to borrow 3,000*l.* for the extension further seawards of the existing sewer outfall past Rigby Road. The town clerk explained that a bank had formed not far off the mouth of the outfall, and it was desired to continue the pipes beyond this bank into deep water. In reply to a letter he had received from the Local Government Board, he said that the Acts relating to main roads which the Local Government Board had brought to his notice did not refer to that application, as there were no main roads at the bottom of the sea. Further, he had not given notice to adjoining rural authorities because the work was beyond the sea level and out of their jurisdiction, and he had further not considered it necessary to give notice to owners and oc-

cupiers of land because it was quite obvious that there were none. The only owner would be the King, and notice had been forwarded to him through the Home Secretary. The borough surveyor said he felt sure that the proposed extensions would not be damaged by the heavy seas. The extensions would be 150 yards long, and the pipes would be secured to prevent them from rolling. He thought they would quickly sink into the sand.

Mr. P. C. COWAN, chief engineering inspector, Local Government Board, commenced an inquiry in the City Hall, Dublin, into an application by the Corporation for sanction to loans of 9,000*l.* and 134,842*l.* 8*s.* 6*d.*, for the purposes respectively of completing the Bride's alley area improvement scheme under the Housing of the Working Classes Acts, and providing an additional storage reservoir at Roundwood in connection with the water supply to the city. The inspector severely commented on the fact that in spite of his requests he had not been supplied with plans in connection with the inquiry. The effect of this extraordinary failure to supply the necessary documents would doubtless be to cause much delay that would otherwise be avoidable, for he must now commence *ab initio*. It affected, in the case of the waterworks, a population of 364,000.

THE Guildford Town Council have been considering the question of plans and particulars of the town hall in case of fire. A letter was read from Messrs. Clemence & Moon offering to give certain information for 10*l.*, or to provide a set of drawings with figures for 25*l.* A letter was read from Mr. W. G. Lower, stating that he had certain plans and particulars in his possession which he would place at the disposal of the Corporation if they desired to use the same at any time. A letter was also read from Mr. T. Talford Cummings, A.R.I.B.A., offering to supply to the Corporation a set of drawings and particulars of the town hall free of cost. It was resolved that the offer of Mr. Cummings be accepted and that he be thanked for the same. It was also resolved that Mr. Lower be thanked for his offer, and at the same time the town clerk write and state that if Mr. Lower could see his way to hand over the plans and particulars in his possession to the Corporation the Council would be pleased to accept the same, and place them with the other town records.

GIBBS & CANNING, Limited, TAMWORTH.

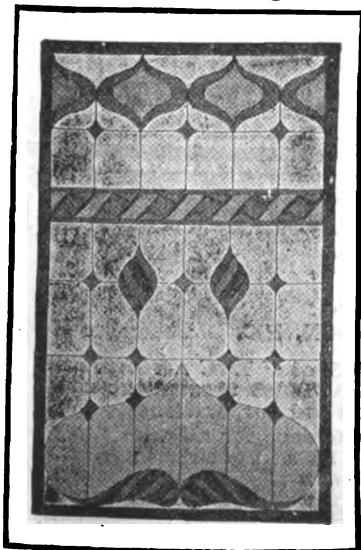
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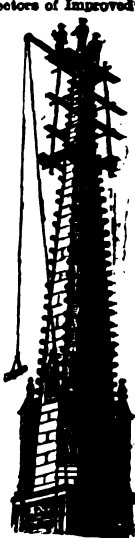
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THE Sheffield City Council are sending a letter to local authorities with reference to the Local Government Board's action in having declined to sanction the borrowing of money with which to purchase 42 acres of land in the suburbs of the city in a district the Council considered suitable for purposes of the housing of the working classes, and urging the desirability of greater powers being acquired by municipalities with respect to the acquisition of lands without being subject to some restrictions imposed by the Local Government Board. They are asked to support the Sheffield City Council's attitude by petition to the Prime Minister and other members of Parliament.

THE Board of Water Supply of New York City, U.S.A. is about to let the first contract for part of the new 160,000,000 gals. system of waterworks to supply the city with 500,000,000 gals. of water daily from the Catskill Mountains. The principal features of the entire system are:—The Ashokan reservoir, a very large impounding reservoir, about 12 miles long, of over 100,000,000,000 gals. capacity; an aqueduct approximately 82 miles long; a large storage reservoir; a filtration plant near Scarsdale; a terminal distributing reservoir in Yonkers, and conduits from it to the various boroughs of the city. The aqueduct will comprise a number of stretches of plain concrete conduit 17 feet high by 17½ feet wide inside, a number of tunnels on the hydraulic gradient, several siphons across shallow valleys, to be made of reinforced concrete or steel pipes, and other siphons, crossing deep valleys and the Hudson river, which will be masonry lined tunnels designed to withstand great pressure. The contract about to be let is for portions of the plain concrete cut-and-cover aqueduct, three tunnels on the hydraulic gradient and a short piece of reinforced concrete pipe.

THE following particulars regarding the progress made by the First Garden City, Ltd., with the Garden City estate of 4,000 acres purchased at Letchworth, Herts, three years ago, are of interest. Over 4½ miles of new roads have been made, and 14½ miles of water mains, 8 miles of gas mains and 8 miles of sewers have been laid. Waterworks and gasworks have been constructed, and extensive railway sidings in direct connection with the Great Northern Railway have been made. Sites for the erection of 520

houses, 25 shops, 12 factories, a church, a chapel, a public hall, schools, &c., have been let or selected. Buildings of a capital value of some 162,000l. have already been erected or are in course of erection. Of these, buildings to the value of 6,500l. have been erected by the company itself. The present water supply is sufficient for a town of 6,000, and the gasworks are capable of producing 6,000,000 cubic feet of gas per annum. The population on the estate at present consists of about 2,000 people, but at the end of the summer of 1907, when all the factories are in working order, it is fully anticipated that between 4,000 and 5,000 people will be resident at Letchworth.

### THE BOROUGH POLYTECHNIC.

THE annual distribution of prizes and certificates at the Borough Polytechnic Institute took place on Tuesday evening last, in the presence of a large gathering of students and friends. The proceedings commenced with the opening remarks of Mr. J. Leonard Spicer, the chairman; and afterwards Mr. C. T. Millis, the principal, read his report, from which it appears that, although some twelve similar institutions have been opened in London during the last twelve years, the work has developed and increased satisfactorily, and at the examinations held last year the number of papers worked was 1,009, as against 849 the previous year, and the number of passes 716, as against 553. That the teaching staff has done excellent work among the students is evident from the results read, while it appears that considerable additions are being made to the equipment of the electro-technical and engineering departments; and thanks to the liberal grants of the London County Council the laboratories, workshops and classrooms are so thoroughly well furnished that it is anticipated the Institute will not only maintain its position, but do even better work for the citizens of London in the future than it has done in the past. A cordial vote of thanks was tendered to Lord Monkswell for distributing the prizes, &c., and also to the central governing body, as well as the London County Council. The proceedings, which were enthusiastic throughout, closed with a vote of thanks to the chairman of the occasion, Mr. Leonard Spicer.

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FIRE ON THE HEARTH GRATES,  
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"**THE ARCHITECT**" is, in its Advertisement Columns, the *most reliable* reference for all who are engaged in Building Operations, and is acknowledged to be *the best medium for Advertisers*. The List of Prices will prove that the expense of a Page Advertisement in this issue would amount to less than *one-fourth the cost* of sending 20,000 Circulars by post, and it is well known that Circulars are frequently thrown into the waste basket unread. Our *New Year's Double Number* always contains beautiful illustrations and valuable letterpress, and is consequently well studied and kept for reference.

The earliest positions will be allotted to first applicants, so that if you wish to secure space for an Advertisement, we shall be much obliged if you will *communicate with us* without delay. For many years past we have had to leave out Advertisements which have reached us after the limited number of pages have been filled.

We are, Dear Sir, yours faithfully,

GILBERT WOOD & CO., LIMITED.

**MODEL COTTAGE EXHIBITIONS.**

UNDER the auspices of the National Housing Reform Council, exhibitions will be opened in Sheffield and Newcastle-on-Tyne about the middle of June, 1907.

In both cases the exhibitions will be held on municipal land, and the average number of houses will not exceed twelve per acre. It is hoped that the exhibitions will provide civic object-lessons in regard to the value of proper planning of new housing areas.

Surveyors and architects will be asked to send in competitive designs for the planning of the site of the exhibition. This is a new departure in the arrangement of model cottage exhibitions.

Great care has been taken to ensure that the maximum prices fixed for cottages competing shall permit a proper combination of cheapness and goodness of construction, and cover architect's fees and builder's profits, as well as cost of construction. As the cost of building is greater in the Newcastle district, the maximum prices there fixed are higher than in the case of Sheffield.

Each cottage will be provided with a bath.

Both committees feel that a great public service was rendered by the Letchworth Exhibition in 1905. They recognise, however, that no effort must be spared to avoid mis-statements of cost, and have decided to make a condition of entry an agreement that each competitor shall, if called upon to do so, sell the cottage to the local authority on whose land the exhibition is being held at the price stated in the catalogue, and, if called upon to do so by the local authority within three months, to build not more than twelve cottages on the adjoining municipal estate at a similar price. The committee feel that in making these conditions they will have the approval of competitors and the public, and that in practice these conditions will secure the *bond-fide* statement of cost.

These exhibitions will be the first model cottage exhibitions ever held on the borders of great cities. The by-laws in both cases are stringent, and the rates of wages are town rates. The cost of cottages built in the exhibitions can, therefore, be taken as representative.

**THE NEW TUBE.**

THE St. Pancras Ironwork Company, Ltd., have carried out for the Underground Electric Railways Company, Ltd., the contract for spiral staircases which have been fixed at all the stations on the following Tube railways:—Baker Street and Waterloo; Great Northern, Piccadilly and Brompton; Charing Cross, Euston and Hampstead. There are upwards of forty stations. The staircases are about 18 feet diameter and vary from 50 feet to 200 feet in height, according to the position of the stations. Treads and landings are covered with a new and improved non-slipping material. The staircases are built entirely of steel, and were designed by the St. Pancras Ironwork Company, Ltd., for the railway company. The design, we are informed, involves an entirely new principle in staircase construction, combining great strength with lightness and economy of material, while being of very neat appearance. Besides the staircases, the St. Pancras Ironwork Company, Ltd., have carried out a large quantity of work for the engineer in the way of iron doors, cabins for station-masters and for the electricians, and steel flooring above and below the lifts; and the architect, Mr. Leslie Green, entrusted them with the work for iron casements, lantern lights, pavement lights and doors at many of the stations on all three lines.

**MARMOR, LTD.**

It is a remarkable circumstance that as time goes on the influence of Greece increases. In its highest and palmiest state Greek art and Greek literature were not appreciated by so large a number of people as at the present day. Homer is better known among Englishmen than Shakespeare, and the finest example of sculpture in an Academy exhibition obtains less praise than the Phidian marbles in the British Museum. Greek architecture is still a potent influence, and the best work that can be produced shows it directly or indirectly. It is remarkable that in a material sense Greece is likely to exercise a sway over us which would have been impossible at an earlier time. Nature endowed Greece with beautiful marble, and there is no doubt the material had much to do with determining the character of the architecture. The quarries

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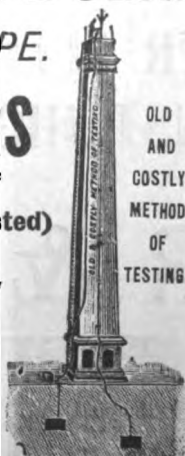
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are so extensive there need be no misgiving about depriving the Greeks of the means of keeping up the old traditions in architecture. Intrinsically Greek marble is most attractive from its qualities. But it has the additional advantage of possessing associations which distinguish it from all other varieties of the material. British enterprise has obtained possession of all the most valuable marble quarries in Greece, and it is now possible to have a building erected in London of stone which corresponds in nature with that of the Parthenon and other glories of ancient Athens. It is not only the fine white Pentelicon marble that is available, or the somewhat softer variety from Paros, but we can also have glorious red, such as the Romans enjoyed, probably more than the white, dark green and other colours. Both for interior and exterior work the marbles will be found charming. Any of our readers, however, who desire information on the subject can obtain it from Mr. William David, the general manager of Marmor, Ltd., who has not only a practical knowledge concerning the marbles, but has a commendable enthusiasm concerning all that relates to them.

### WATER REGULATIONS.

The joint committee on water regulations met at the Guildhall on Monday. Among the authorities and companies represented were:—Birkenhead, Bradford, Birmingham, Bury, Hull, Preston, Newcastle, Weardale, South Staffordshire, Stockport, South Hants and the Metropolitan Water Board. In the absence of Dr. Robert Crawford, of Glasgow, chairman of the committee, Mr. W. D. Caroe, master of the Worshipful Company of Plumbers, was voted to the chair. In opening the proceedings, he said that if the chairman had been present he would, no doubt, have remarked on the work of the committee from the point of view of the Public Health Administrator and Water Authority. He himself regarded the matter rather from the point of view of the architect and consumer. From his own experience he found the greatest difficulty in dealing with the large number of varying regulations, and the Council of British Architects would warmly welcome the codifying of water regulations and the setting up of such standards for fittings

as would represent, at any rate, an irreducible minimum of efficiency.

Mr. E. Antony Lees (Birmingham) presented the report of the general purposes committee, together with a draft annotated model Code of regulations with schedules attached, setting out the specifications of water fittings, &c., compiled from reports of the various sub-committees and prepared in form for publication.

On the motion of Mr. J. Watson (Bradford), seconded by Mr. Bancroft (Hull), the general purposes committee were empowered to conduct the necessary negotiations with the Local Government Board, with a view to the inclusion of the draft Code framed by the committee in the model series of regulations issued by the Board for the purpose of Local Acts and Provisional Orders, enabling regulations to be made on the subject of the prevention of waste or contamination.

It was pointed out that in view of the authoritative character of the conclusions embodied in the Code, representing the majority of the larger water undertakings and three-fourths of the consumers of water in the United Kingdom, and also the practical opinion of architects, plumbers, manufacturers of fittings and others specially conversant with the subject, the Local Government Board might confidently give a wider and more definite interpretation of their present powers, and thus secure greater uniformity of practice in regard to water regulations to the great advantage of all concerned.

Mr. Fitzroy Doll and Mr. W. D. Caroe were added as members of the general purposes committee.

It was reported that the Admiralty had adopted for use in His Majesty's naval establishments the standard specifications for water fittings framed by the joint committee. The report of the standardisation committee was adopted, fixing the meetings of that committee for the last Saturday in January, April, July and October, to deal with new fittings and apparatus offered for standardisation, and tested in London or at Belfast, Birmingham, Bradford, Glasgow, Newcastle and Plymouth. Communications were reported from a number of water authorities and others pressing for copies of the model Code. The committee decided that the publication of the Code should be deferred for a short time, pending the negotiations now in progress with the Local Government Board.

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Queen Anne's Chambers, Westminster, LONDON.



**AN EARLY TOWER.**

THE death occurred on Thursday in last week at Verulam Buildings, Gray's Inn, London, of Mr. Andrew Thomas Turton Peterson, who formerly resided at the Towers, Arnewood, Hordle. The deceased gentleman, who was in his ninety-third year, was a barrister-at-law, and for many years leader of the Calcutta Bar and also a judge of the High Court of Calcutta. Mr. Peterson will be best remembered, says the *Hampshire Advertiser*, by the remarkable tower which he built more than a quarter of a century ago at Hordle, three or four miles to the west of Lymington, which is undoubtedly the most conspicuous landmark in the county. The tower was the culmination of a series of experiments in Portland cement concrete, extending over a long period. In style it is a campanile, to the square of which is incorporated a hexagon, containing a spiral staircase communicating with the upper storeys. In this there are some 330 stairs, each moulded separately, laid in position and incorporated in the walls as the building progressed. The lower storey is entered by a remarkably fine Gothic doorway, moulded in concrete, and the upper storeys are lighted by windows of a Gothic style, which are of a red concrete. At a height of 92 feet from the ground the outline is broken by a bold cornice, and the same occurs at the summit, at an altitude of 198 feet. Above this rises an octagonal tower, or observatory, surmounted with a dome-shaped roof of smaller size than the main tower and bringing the total height to 218 feet. The storeys, or rooms, as they may properly be called, are eleven in number and 18 feet square at the base, being larger towards the top, where the walls diminish in thickness. At the base the walls are 2 feet thick, thus making the tower a square of 22 feet on each side, to which on the north side is added the hexagonal staircase. The effect produced is of massive solidity, but of a fine artistic line, which is pleasing and not monotonous to the eye. The building of the structure was novel, Mr. Peterson being his own architect and builder, both designing and carrying out the work under his own supervision. It was built throughout by local labour. All the frames, moulds, iron and woodwork were made entirely by local carpenters and blacksmiths, while all concreting was done by a band of

unskilled labourers, whom Mr. Peterson had organised and trained. A great deal of the shingle used in the concrete was brought from the beach at Milford-on-Sea. Arnewood Towers, which adjoin the tower, is also built of the same material, as are several farmhouses and buildings on the estate. Visitors are allowed to inspect the tower, and they come from all parts to see the remarkable structure. At the time of building it was generally believed that the tower was built by the deceased gentleman, who was then said to be a spiritualist, as a mausoleum, but after its erection he became a convert to cremation, still retaining the desire that his ashes should be deposited in the vault beneath the tower.

**DISTILLERY WALLS.**

AN accident lately occurred through the collapse of the walls in the draff-house of a distillery in Glasgow. At the inquest on a man who died of injuries received Mr. John Stewart, builder, stated that he went to examine the premises on the day following the accident. The scene of the catastrophe was a mass of ruin so confused that it was in parts dangerous to attempt a close inspection and extremely risky even to approach near to it. On this occasion he only had a general view. He had to postpone his examination until the debris was taken away. He submitted his report prepared on behalf of the Procurator-Fiscal. It stated that the lower part of the structure was brick walls, about 28 inches thick up to a certain height and 23 inches thereafter. The lower structure comprised two storeys. The ground floor was the draff-house; the first floor contained one comparatively small tun; on the top of this were the draff store tanks. This lower structure, he understood, had been about twenty years old. About ten years after two elevated platforms were erected on which were built the upper tanks. The whole composite structure would measure about 84 feet from the street to the top. Continuing, he said the more immediate cause was the giving way of two separate points of the walls. Whether the walls of the draff-house gave way at the two points simultaneously could not be determined, nor could it be said that any indication of crushing was evident previous to the accident, but he was strongly of opinion

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that some cracks must have developed for a considerable period. This might have been due to deterioration caused by the weather outside and by the constantly steamy atmosphere inside acting injuriously on the lime mortar with which the walls were built. He did not think that any fault could be found with the tanks themselves, but the brick walls had been taxed to their utmost capacity by the weight above. The immediate result of the smallest subsidence would be the alteration of the centre of gravity in the liquor in the tanks, causing undue weight on certain parts of the supports.

In cross-examination, Mr. Stewart said he was of opinion that a crushing—a disintegration—had been going on for some time, but that it might not have been observed. It was quite possible, in the dark upper part of the draff-house, that these cracks may have been going on even after the walls had been particularly examined. It was not absolutely necessary that they must have cracks going on for some considerable time before such an accident.

Mr. Frank Burnet, architect, said that, so far as he could make out, two and a half tons per square foot was, as nearly as possible, the weight resting on the walls. This was well within the standard measure of safety recognised by people who had devoted time and experience to such matters.

Mr. Charles Fuller Hogg, civil engineer, corroborated the remarks of previous witness. He was unable to suggest anything in regard to the direct cause, but he was quite satisfied that the disaster was not due to any collapse of the brick wall from superincumbent load.

The jury found that they were unable to say what had directly caused the collapse of the building.

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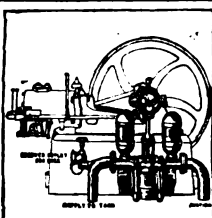
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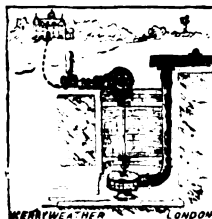
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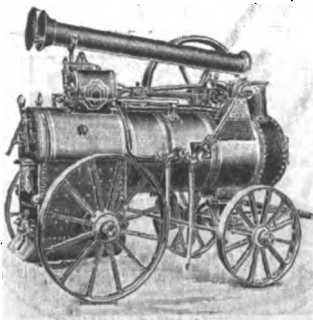
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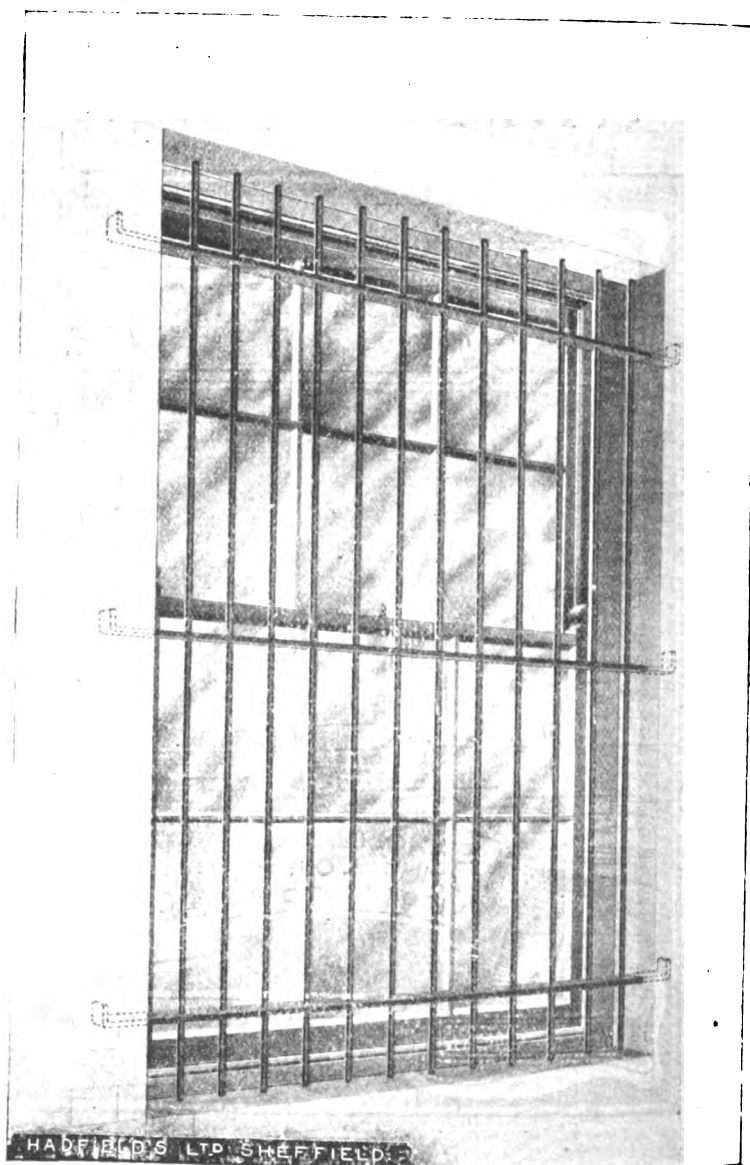
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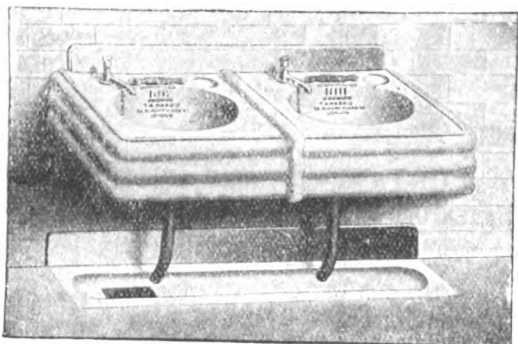
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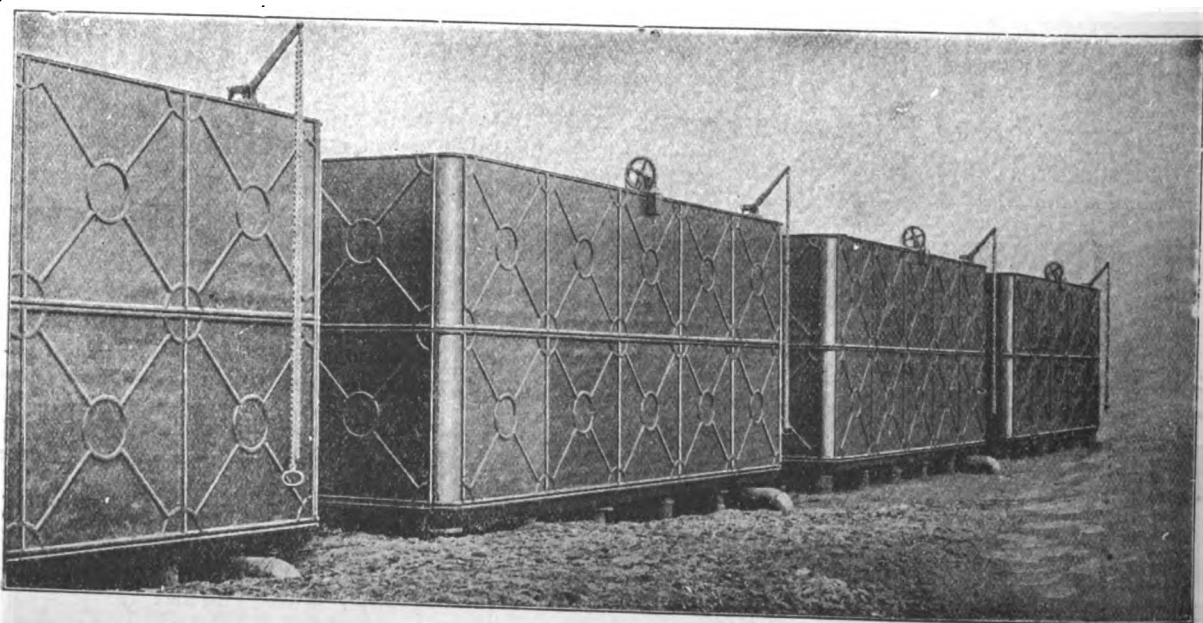
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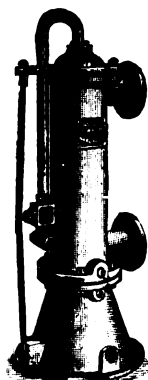
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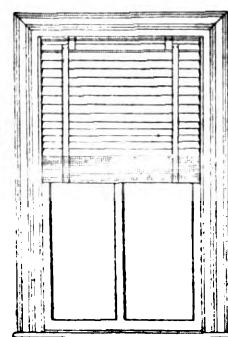
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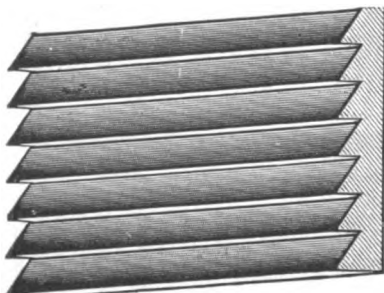
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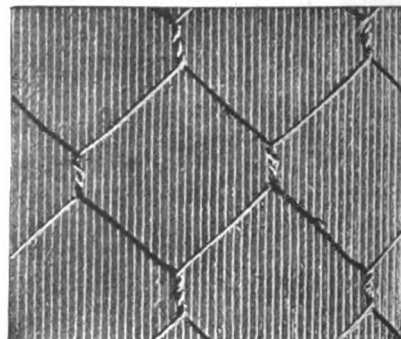
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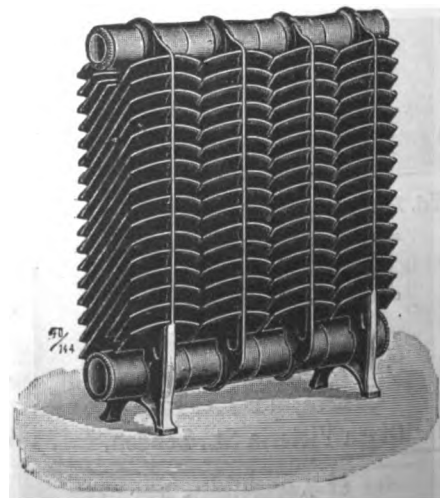
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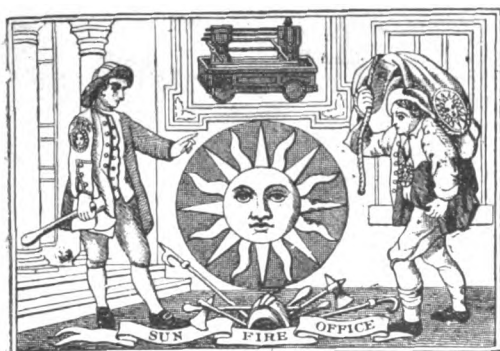
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In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

**TENDERS, ETC.**

\*\* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

**COMPETITIONS OPEN.**

GOOLE.—Dec. 31.—The Goole Joint Body of Governors invite competitive designs for erection of a dual secondary school, accommodating 200 students, with provision for the conduct of technical and evening classes. Premiums of 50*l.* and 25*l.* Deposit 2*l.* 2*s.* Mr. James Wm. Johnson, clerk to the Governors, Council Offices, Goole.

GUISELEY.—Jan. 5.—For a dual Secondary school for the Guiseley district, near Leeds, to accommodate 200 scholars. Names and addresses to M. Rennard, secretary, Guiseley Secondary school, Guiseley, near Leeds.

IRELAND.—Dec. 31.—The Local Government Board for Ireland invite from architects the submission of designs for labourers' cottages in rural districts. Premiums of 50*l.*, 30*l.* and 20*l.* for the three best designs. A copy of the conditions of the competition may be obtained from the Secretary of the Local Government Board, Dublin.

IRELAND.—Feb. 6.—The Galway Board of Guardians invite plans and estimates of a proposed fever hospital. The premium of 25*l.* will be merged in the architect's fees if the winner carries out the work. Particulars from Mr. R. F. Mullery, clerk to the Union, Galway.

NEWCASTLE-ON-TYNE.—Jan. 15.—For the North of England Model Cottage Exhibition. Site planning for this exhibition, which is 16½ acres in extent, twelve houses to the acre. Further particulars from Mr. R. Aldridge, c/o Burt Hall, Newcastle-on-Tyne.

SHEFFIELD.—Jan. 10.—For the Yorkshire and Midlands Model Cottage Exhibition to be held in Firth Park, Sheffield. Site planning for the exhibition to be held, with twelve houses to the acre. Further particulars of the organising secretary, Mr. R. Aldridge, 45 Bank Street, Sheffield.

SUNDERLAND.—Feb. 1.—The committee of the Sunderland infirmary invite designs for a children's hospital. Premiums of 100*l.*, 50*l.* and 25*l.* are offered. Deposit 1*l.* 1*s.* Mr. Thomas Robinson, secretary, Infirmary Offices, Bank Buildings, Sunderland.

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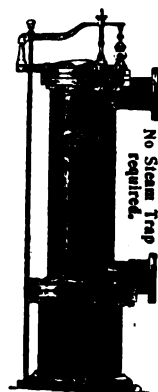
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WOLVERHAMPTON.—Dec. 31.—The Board of Management of the Wolverhampton and Staffordshire general hospital, Wolverhampton, invite competitive designs for a nurses' home adjoining the hospital. Mr. J. Stephen Neil, house governor and secretary.

WALES.—Jan. 12.—The committee of the George Edwards Memorial hall, Cefn, Ruabon, offer a prize of 10*l.* for the best design (including plans and elevations) of the hall. Full particulars may be obtained from Mr. W. Ryland Jones, secretary, High Street, Cefn, Ruabon.

### CONTRACTS OPEN.

BARNLEY.—Dec. 22.—For the erection and completion of slaughter-house, Avon Street. Messrs. Crawshaw & Wilkinson, architects, 13 Regent Street, Barnley.

BOOTLE.—Jan. 18.—For supplying and fixing thirty-one sliding and folding partitions in the schoolrooms at the various Council schools in the borough, for the education committee. The Borough Surveyor, Town Hall, Bootle, Lancs.

BRIDLINGTON.—Dec. 27.—For additions to St. John's Wesleyan chapel. Mr. J. Earnshaw, architect, Carlton House, Bridlington.

BURNLEY.—Dec. 22.—For the erection of proposed technical school in Ormerod Road. Deposit 1*l.* 1*s.* Mr. G. H. Pickles, borough engineer, Town Hall.

CALLINGTON.—Dec. 22.—For erection of a secondary school at Callington, Cornwall. Mr. John Sansom, architect to the committee, Liskeard.

CARLISLE.—Jan. 5.—For the erection of a wall and iron railing at the Warwickland school. Mr. Roden, School House, Penton.

DERBY.—Dec. 31.—For erection of electric-power station, Silk Mill Lane, for the Corporation. Deposit 1*l.* 1*s.* Mr. John Ward, borough surveyor, Babington Lane, Derby.

EAST PRESTON.—Dec. 26.—For the following works at the workhouse, for the Guardians of East Preston Union, Sussex:—(1) Construction of a screening chamber on the

workhouse main drain; (2) erection of a covered way; (3) erection of boundary walls and fences, and making-up grounds. Mr. Harold M. Potter, architect, 41A Warwick Street, Worthing.

EDINBURGH.—Dec. 31.—For executing the following works in connection with the extension of Tower Bank school, Portobello, for the School Board:—(1) Mason and brickworks; (2) carpenter and joinerworks; (3) smith-work; (4) slaterwork; (5) plaster and cementworks; (6) plumberwork; (7) painterwork. Mr. Carfrae, architect, 3 Queen Street.

ELTHAM.—Jan. 22.—For the erection of a refreshment house at Avery Hill, for the London County Council. Mr. G. L. Gomme, clerk, Spring Gardens, S.W.

ENFIELD.—Jan. 15.—For erection of a junior mixed school at Bush Hill Park. Deposit 1*l.* 1*s.* Send names by Dec. 29 to Mr. G. E. T. Laurence, architect, 22 Buckingham Street, Adelphi, W.C.

GATESHEAD.—Jan. 12.—For the erection of additional classrooms, laboratory, &c., at the Secondary schools, Durham Road. Deposit 1*l.* 1*s.* Mr. N. Percy Pattison, borough engineer, Town Hall, Gateshead.

HAMBLEDON.—Jan. 2.—For the following works, for the Guardians of Hambledon Union, near Guildford:—(a) Carrying-out certain small additions to the young women's dormitory, and (b) erection of a range of earth-closets and the extension of the lavatory accommodation in the men's quarters at the workhouse. Mr. Edward L. Lunn, architect, 36 High Street, Guildford.

HOVE.—Dec. 28.—For erecting a public library in Church Road, Hove. Deposit 1*l.* 1*s.* Messrs. Percy Robinson & W. Alban Jones, architects, Yorkshire Post Chambers, Leeds.

LANDPORT.—Jan. 9.—For the erection of a store at the factory of Doudney & Co., Ltd. Messrs. Cook & Tutte, architects, 394 Commercial Road.

LEEK.—Jan. 7.—For the building of coal breaker, waggon tipper and weighbridge pits, gas-engine house, tunnel under Newcastle Road and other appurtenant works at the Council's gasworks, near Leek station. Deposit 2*l.* 2*s.* Mr. W. E. Beacham, surveyor, Town Hall, Leek.

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LICHFIELD.—Dec. 22.—For the erection of wards for the infirm and for children at the workhouse. Deposit 2*l.* 2*s.* Names to Mr. R. J. Barnes, architect, City Chambers, Lichfield.

LONDON.—Jan. 22.—For the execution of certain works to bridges at Highbury station and Holloway Road, in connection with the reconstruction of further portions of the London County Council tramways. Full particulars, Chief Engineer, County Hall, Spring Gardens, S.W.

LONDON.—Dec. 29.—For the construction of an underground convenience at Brockwell Park, S.E., for the Lambeth Borough Council. Deposit 1*l.* 1*s.* Mr. Henry Edwards, borough engineer, 346 Kennington Road, S.E.

LONDON.—Dec. 31.—For the erection of a branch library at Hither Green, S.E., for the Lewisham libraries committee. Deposit 2*l.* 2*s.* Mr. H. Hopton, architect, 37 Ringstead Road, Catford, S.E.

LONDON.—Jan. 3.—For alterations and additions to the Council's slipper-baths and the covering-in of the open swimming-bath, for the Edmonton Urban District Council. Send names by Dec. 17 to Mr. Wm. Francis Payne, clerk, Town Hall, Edmonton.

LONDON.—Jan. 17.—For certain alterations and additions at the infirmary, Lower Road, Rotherhithe, S.E. Deposit 50*l.* Names and addresses before December 8 to Mr. E. Pitts Fenton, clerk, 283 Tooley Street, S.E.

NARBOROUGH.—Dec. 29.—For the erection and completion of farm buildings at the new asylum, together with farm bailiff's house and other works at Narborough, near Leicester. Deposit 2*l.* 2*s.* Messrs. Everard, Son & Pick, architects, 6 Millstone Lane, Leicester.

NESTON.—Jan. 2.—For the erection of a small library. Deposit 1*l.* 1*s.* Messrs. Green, Knowles & Russel, architects, 19 South John Street, Liverpool.

NEW MALDEN.—Jan. 8.—For the erection of buildings at Norbiton Common farm, New Malden, Surrey, for the Guardians of Kingston Union. Mr. William H. Hope, architect and surveyor, Hampton Wick.

NOTTINGHAM.—Jan. 1.—For the erection of a mixed school and additions to the infant school, Sneinton Boule-

vard. Deposit 2*l.* 2*s.* Mr. Frank B. Lewis, city architect, Guildhall.

PORT GATE.—Dec. 29.—For the reseating and all necessary work to the Bible Christian chapel, Port Gate, Devon. Mr. A. Jordan, Down Park, Lewdown.

RIPLEY.—Dec. 28.—For constructing offices and public urinal, and also an additional staircase, at the town hall. Deposit 2*l.* 2*s.* Mr. G. W. Bird, C.E., surveyor, Town Hall, Ripley, Derby.

SCOTLAND.—Dec. 24.—For (1) Feed pump and accessories. (2) Fire general service pump and accessories. (3) Cast-iron tank in water-tower. (4) Cooking apparatus for new combination hospital at Gateside, Greenock. Deposit 5*s.* each schedule. Mr. John Dixon, consulting engineer, 219 St. Vincent Street, Glasgow.

SCOTLAND.—Jan. 10.—For the erection of a police station at Dunning. Mr. David Smart, architect, Perth.

SEACOMBE.—Dec. 29.—For the erection of ferry workshops at Seacombe ferry, Cheshire, for the Wallasey Urban District Council. Deposit 1*l.* Mr. W. H. Travers, engineer and surveyor, Public Offices, Egremont, Cheshire.

SHENFIELD.—Dec. 22.—For the construction of a retaining wall, about 243 feet in length, with deal posts and fence on top, in Priest Lane, Shenfield, Essex. Mr. S. E. Ennals, surveyor, Ongar Road, Brentwood.

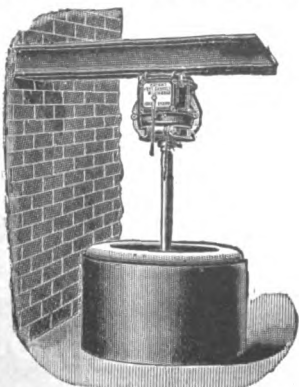
SKIPTON.—Dec. 28.—For the work in connection with the building of a bridge at Gill Beck, Barden. Mr. A. Rodwell, surveyor, Skipton.

SOUTH MOOR.—Jan. 8.—For the erection of Council school at South Moor, Greenland, Durham, for about 950 scholars. Messrs. Clark & Moscrop, architects, Feethams, Darlington.

TREDEGAR.—Dec. 22.—For carrying-out extensions and additions to the Bush inn. Deposit 1*l.* 1*s.* Mr. Osborne Newcombe, architect and surveyor, Tredegar.

WALES.—Dec. 22.—For the construction of a concrete sea defence wall at the Esplanade, Porthcawl, in length 216 lineal feet or thereabouts, with all necessary excavations, &c. Deposit 2*l.* 2*s.* Mr. R. W. Jones, engineer, Council Offices, Porthcawl.

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WALES.—Dec. 27.—For alterations and improvements to the old school at Penygraig, for the Rhondda Urban District Council. Deposit 2/ 2s. Mr. Jacob Rees, architect, Hillside Cottage, Pentre, Rhondda.

WALES.—Dec. 28.—For the erection of a workhouse at Carmarthen. Deposit 2/ 2s. Mr. Arthur I. Jones, architect, 2 Spilman Street, Carmarthen.

WALES.—Dec. 29.—For carrying-out alterations and additions, building boundary walls, &c., and laying-out and asphaltting new playgrounds, with drains, &c., at the Clwydyfagwyr school, for the Merthyr Tydfil education authority. Deposit 1/ 1s. Mr. J. Llewellyn Smith, architect, Town Hall, Merthyr Tydfil.

WALES.—Dec. 31.—For the erection of a dwelling-house at Porthcawl. Messrs. Geo. F. Lambert & Son, Bridgend, or at Gadlys, South Road, Porthcawl.

WALES.—Jan. 1.—For the erection of county offices at Ruthin, Denbighshire. Deposit 1/ 1s. Mr. W. D. Wiles, county architect and surveyor, 42A High Street, Wrexham.

WALLSEND.—Jan. 18.—For the erection of police buildings, Wallsend, Northumberland. Mr. J. A. Bean, county architect, the Moot Hall, Newcastle-on-Tyne.

WALLASEY.—Dec. 29.—For the erection of new ferry workshops at Seacombe Ferry. Deposit 1/ 1s. Mr. W. H. Travers, engineer and surveyor, Public Offices, Egremont, Cheshire.

WARWICK.—Dec. 28.—For the erection of a workshed at the workhouse. Mr. E. P. Trepess, 1 Church Street, Warwick.

WESTON-SUPER-MARE.—Dec. 21.—For alteration and extension of premises, Co-operative Society's stores, Baker Street. Messrs. Wilde & Fry, architects, Boulevard Chambers.

WIDNES.—Dec. 28.—For the erection of an engine and boiler-house at their Stockwell pumping station, for the Corporation. Deposit 2/ 2s. Water Engineer, Town Hall, Widnes.

WINTERTON.—For the erection of three almshouses at Winterton, Lincolnshire. Messrs. Joy, Cross & Son, solicitors, Barton-on-Humber.

WORCESTER.—Dec. 25.—For the erection of warehouse and offices, for Kays, Ltd. Deposit 2/ 2s. Messrs. Simpson & Ayrton, architects, 3 Verulam Buildings, Gray's Inn Road, London, W.C.

### BELGIAN CONTRACTS.

In his report on the trade and commerce of Belgium, Sir Cecil Hertslet, consul-general, comments upon the rarity of a British firm competing for public contracts in Belgium. And yet the Belgian authorities are singularly impartial in dealing with tenders. They are uninfluenced by nationality, provided that the tender for the work of construction is sufficiently low to favourably compare with the offers of firms situated in Belgium. The Consul-General says the principal drawback to the free competition of British firms is the import duties imposed on most finished articles in the way of machinery. Another impediment is the difficulty in obtaining labour to carry out the contract if awarded to a British firm unless such firm appoints a representative on the spot to superintend the engaging of workmen and the carrying out of the construction, or whatever the work may be. Sir Cecil Hertslet suggests that, in view of the difficulties which have to be overcome in the carrying out of contracts by British firms, it might be better for such firms to devote their attention to the firms of Belgian nationality who have been awarded the contract and endeavour to supply them with the necessary material required in the execution of the works. For instance, most of the large towns in Belgium offer from time to time contracts for the supply and laying of paving-stones for the streets and footpaths, which contracts are almost always awarded to local firms who can carry out the work at a lower cost than others established at a distance from the place where the work is to be performed. There would in such cases appear to be an opening for British trade in the supplying of the stone or granite for the work, and the endeavour of British firms should be to get into touch with and supply the material to local firms to which contracts have been awarded.

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For the erection of Council schools. Mr. W. H. SIMPSON, architect, Corridor Chambers, Leicester.

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|---------------------------------------|--------|---|---|
| Hickman                               | £4,465 | 0 | 0 |
| Johnson & Son                         | 4,400  | 0 | 0 |
| Orton                                 | 4,272  | 0 | 0 |
| Lowe & Sons                           | 4,250  | 0 | 0 |
| Griffin Bros.                         | 4,250  | 0 | 0 |
| Fox                                   | 4,240  | 0 | 0 |
| Ball                                  | 4,210  | 0 | 0 |
| Kershaw                               | 4,185  | 0 | 0 |
| Moss                                  | 4,120  | 0 | 0 |
| Sharp                                 | 3,997  | 0 | 0 |
| Orton & Son                           | 3,995  | 0 | 0 |
| Scurr, Jowett & Co.                   | 3,980  | 0 | 0 |
| HAYCOCK & SONS, Great Glen (accepted) | 3,950  | 0 | 0 |

### ALDBOROUGH.

For the erection of school. Mr. C. J. Brown, architect.

|                                                 |        |   |   |
|-------------------------------------------------|--------|---|---|
| Chapman                                         | £2,560 | 0 | 0 |
| Lines                                           | 2,525  | 0 | 0 |
| Porter                                          | 2,470  | 0 | 0 |
| Baker, Ltd.                                     | 2,390  | 0 | 0 |
| Hannant                                         | 2,300  | 0 | 0 |
| McKay                                           | 2,298  | 0 | 0 |
| Mickleburgh                                     | 2,295  | 0 | 0 |
| Blyth & Son                                     | 2,282  | 0 | 0 |
| Young & Son                                     | 2,187  | 0 | 0 |
| Shanks                                          | 2,150  | 0 | 0 |
| Blyth                                           | 2,120  | 0 | 0 |
| Yelf                                            | 2,094  | 0 | 0 |
| Greengrass                                      | 2,076  | 0 | 0 |
| Neale                                           | 2,070  | 0 | 0 |
| Stowers                                         | 2,055  | 0 | 0 |
| WATTS, Buxton, Norfolk (provisionally accepted) | 2,035  | 0 | 0 |

### BATTRAM.

For the erection of Council school, Ibstock parish. Messrs. GODDARD & WAIN, architects, Coalville.

|                                        |        |    |   |
|----------------------------------------|--------|----|---|
| Webster                                | £3,450 | 0  | 0 |
| Blower                                 | 3,398  | 15 | 0 |
| Wileman                                | 3,381  | 0  | 0 |
| Orton                                  | 3,257  | 0  | 0 |
| Harding                                | 3,229  | 8  | 6 |
| Crane & Son                            | 3,206  | 0  | 0 |
| Hewes Bros.                            | 3,050  | 0  | 0 |
| Griffin Bros.                          | 2,986  | 15 | 0 |
| Moss                                   | 2,950  | 0  | 0 |
| BECK & SON, Market Bosworth (accepted) | 2,094  | 0  | 0 |

### BRISTOL.

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|                                  |        |   |   |
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| LOVELL & SON, Bristol (accepted) | £4,130 | 0 | 0 |
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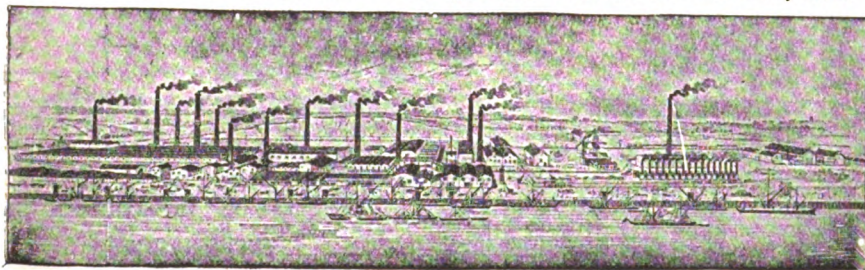
### CANNOCK.

For the supply and laying of about 1,190 yards of 12-inch, 2,030 yards of 9-inch and 650 yards of 6-inch stone-ware pipe sewers, with manholes, &c., and construction of sewage-disposal works at Bushbury. Mr. H. M. WHITEHEAD, engineer, Penkridge, Stafford.

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|-----------------------------------------------------|--------|----|----|
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| Meredith                                            | 4,556  | 0  | 0  |
| Law                                                 | 4,553  | 0  | 0  |
| Owens                                               | 4,336  | 5  | 10 |
| Cottle                                              | 4,333  | 10 | 0  |
| Blewitt                                             | 4,331  | 12 | 4  |
| Barker Bros.                                        | 4,233  | 0  | 0  |
| Sprenger                                            | 4,226  | 10 | 0  |
| G. Holloway                                         | 4,096  | 0  | 0  |
| H. Holloway                                         | 4,059  | 4  | 6  |
| Mackay & Son                                        | 3,983  | 17 | 6  |
| Morley & Sons                                       | 3,974  | 11 | 6  |
| WARD & TETLEY, 147 Swan Arcade, Bradford (accepted) | 3,946  | 16 | 4  |

# MARTIN EARLE & CO., Ltd.

All communications to London Office—139 QUEEN VICTORIA STREET, E.C.



THE LARGEST CEMENT WORKS IN EUROPE.



Contractors to the ADMIRALTY, WAR OFFICE, NATAL GOVERNMENT, LONDON COUNTY COUNCIL (Annual Contracts Eight Years in succession).

MARTIN EARLE & CO., Ltd., brand of CEMENT is extensively used in the construction of the following Works: NILE RESERVOIRS, KEYHAM DOCKYARDS EXTENSIONS (30,000 tons), MERSEY DOCKS, DOVER HARBOUR, MANCHESTER CORPORATION WORKS, GLYDE NAVIGATION EXTENSIONS, HASTINGS HARBOUR, LONDON, BRIGHTON & SOUTH COAST RAILWAY DOCKS, LEITH DOCKS, and in all the principal Colonial and Import Markets. Estimates for large or small quantities on application to the LONDON OFFICE, 139 QUEEN VICTORIA STREET.

ALL CEMENT manufactured by MARTIN EARLE & CO., Ltd., guaranteed to be absolutely free from Kentish Rag or any other deleterious adulteration.

# HEATING

Tele. No. 2141.

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CHERRY ROW,

## LEEDS

ESTIMATES to ARCHITECTS' Plans or SCHEMES submitted free  
For every description of PUBLIC or PRIVATE BUILDING, Greenhouses, &c.

# THE BRISTOL MOSAIC & TERRAZZO CO.

14, NARROW PLAIN, BRISTOL.

**CHESTERFIELD.**

For the erection of the sewage works manager's house with outbuildings.

HOLMES (*accepted*) . . . . . £1,325 0 0

**CLEEVE HILL.**

For laying about 5,070 yards of 6-inch and 9-inch pipe sewers, manholes, &c. Mr. JAMES VILLAR, engineer, Cheltenham.

|                                                    |        |    |   |
|----------------------------------------------------|--------|----|---|
| Ireland.                                           | £3,974 | 0  | 0 |
| Williams & Co.                                     | 3,652  | 15 | 5 |
| Vale & Sons                                        | 3,600  | 0  | 0 |
| Crawford                                           | 3,530  | 0  | 0 |
| Smith & Co.                                        | 3,465  | 15 | 8 |
| Cresswell                                          | 3,494  | 0  | 0 |
| Macdonald                                          | 3,414  | 0  | 0 |
| Jenkins                                            | 3,420  | 0  | 0 |
| Cooper & Co.                                       | 3,363  | 2  | 7 |
| Johnson Bros.                                      | 3,300  | 0  | 0 |
| Bell & Sons                                        | 3,290  | 0  | 0 |
| Osenton                                            | 3,238  | 0  | 0 |
| Meredith                                           | 3,220  | 0  | 0 |
| Meredith Bros.                                     | 3,178  | 3  | 2 |
| Barry                                              | 3,177  | 0  | 0 |
| Wheeler                                            | 3,083  | 2  | 2 |
| Riley                                              | 2,948  | 6  | 1 |
| Byard & Sons                                       | 2,945  | 0  | 0 |
| Westwood                                           | 2,920  | 5  | 0 |
| CHICK, CARDEN & Co., Highworth ( <i>accepted</i> ) | 2,857  | 17 | 8 |

**DUBLIN.**

For supply of two boilers at the East Road pumping station. MOFFATT & SONS, Belfast (*accepted*) . . . £1,270 0 0

**DURHAM.**

For levelling the sewage irrigation land and constructing a catchpit at Shincliffe.

|                            |      |    |   |
|----------------------------|------|----|---|
| Carriek                    | £200 | 0  | 0 |
| Bradley                    | 145  | 0  | 0 |
| OLIVER ( <i>accepted</i> ) | 116  | 19 | 5 |

**EASTHAMPTSTEAD.**

For the erection of school for 200 scholars, at Priestwood, Berks. Mr. E. FISHER, architect, 19 Buckingham Street, Strand. Quantities by Messrs. HICKS & LYNAM.

|                                            |        |    |    |                       |
|--------------------------------------------|--------|----|----|-----------------------|
| Sargeant                                   | £3,700 | 0  | 0  | Extra for Tiled Dado. |
| Kimberley                                  | 3,218  | 0  | 0  | £190 0 0              |
| Knight                                     | 3,200  | 0  | 0  | 179 0 0               |
| Fryer & Co.                                | 3,179  | 15 | 0  | 182 0 0               |
| Drowley & Co.                              | 3,146  | 0  | 0  | 172 0 0               |
| Bissley                                    | 3,125  | 0  | 0  | 168 0 0               |
| Romain & Sons                              | 3,008  | 1  | 10 | 137 0 0               |
| Gibson                                     | 2,988  | 0  | 0  | 126 13 3              |
| Burfoot & Son                              | 2,980  | 0  | 0  | 200 0 0               |
| Watson                                     | 2,931  | 0  | 0  | 165 0 0               |
| Faulks                                     | 2,886  | 1  | 4  | 162 0 0               |
| Brown                                      | 2,881  | 6  | 10 | 207 0 0               |
| Colborne                                   | 2,880  | 8  | 6  | 135 14 0              |
| Chick, Carden & Co.                        | 2,875  | 0  | 0  | 48 0 0                |
| Fitt                                       | 2,846  | 0  | 0  | 147 2 2               |
| Cox & Sons                                 | 2,829  | 0  | 0  | 150 0 0               |
| F. & G. Foster                             | 2,764  | 0  | 0  | 171 0 0               |
| Hughes                                     | 2,756  | 0  | 0  | 157 0 0               |
| PAYNE & Co., Bracknell ( <i>accepted</i> ) | 2,603  | 15 | 0  | 171 19 6              |
|                                            |        |    |    | 160 0 0               |

**EASTVILLE (BRISTOL).**

For the erection of a fire and police station for the Eastville district, for the Bristol City Council.

COLBORNE, SWINDON (*accepted*) . . . £3,500 0 0

**ENFIELD.**

For providing and laying about 1,075 yards of granite kerbing, 1,985 yards of granite channelling, 65 yards super of granite crossings, 5,619 yards super of artificial stone paving, streets and roads. Mr. RICHARD COLLINGS, surveyor.

|                                  |        |    |    |
|----------------------------------|--------|----|----|
| Napier & Sons                    | £2,559 | 10 | 8  |
| Jackson                          | 2,429  | 15 | 7  |
| Imperial Stone Co.               | 2,409  | 15 | 0  |
| Bell & Sons                      | 2,397  | 7  | 9  |
| Griffiths ( <i>alternative</i> ) | 2,338  | 7  | 10 |
| Grounds & Newton                 | 2,335  | 8  | 6  |

# HAM HILL STONE. DOULTING STONE.

**THE HAM HILL AND DOULTING STONE CO., LTD.**

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NATURAL STONE, AND HAVE  
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HORSFORTH, LEEDS.**

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FLOORING BLOCKS in DEAL, PITCH PINE, OAK, and other Hardwoods.**

**HIGH QUALITY. LOW PRICES. PLEASE WRITE US.**



ENFIELD—continued.

|                                             |        |    |    |
|---------------------------------------------|--------|----|----|
| Mayhew . . . . .                            | £2,330 | 10 | 3  |
| Adams . . . . .                             | 2,288  | 13 | 0  |
| Wallace & Innes . . . . .                   | 2,281  | 15 | 6  |
| Fry Bros. . . . .                           | 2,270  | 1  | 9  |
| Griffiths . . . . .                         | 2,268  | 3  | 1  |
| Atlas Stone Co. . . . .                     | 2,225  | 6  | 3  |
| Jennings & Grenfell . . . . .               | 2,220  | 0  | 0  |
| Monk . . . . .                              | 2,211  | 15 | 3  |
| Knifton . . . . .                           | 2,194  | 7  | 9  |
| Free & Sons. . . . .                        | 2,169  | 7  | 5  |
| Bower Bros. . . . .                         | 2,154  | 15 | 6  |
| Ellis & Sons. . . . .                       | 2,127  | 7  | 11 |
| Empire Stone Co. . . . .                    | 2,112  | 15 | 10 |
| Walker & Son . . . . .                      | 2,036  | 0  | 0  |
| BETTS, Enfield Highway (accepted) . . . . . | 1,927  | 2  | 0  |

For the erection of an infirmary for fifty beds at The Chase Farm schools, Enfield, for the Guardians of the Edmonton Union. Mr. STUART HILL, architect, 106 Cannon Street, E.C. Quantities by Mr. JOSEPH PEEBLES, 7 Southampton Street, Bloomsbury, W.C.

|                                 |        |    |   |
|---------------------------------|--------|----|---|
| Collins . . . . .               | £8,500 | 0  | 0 |
| Roberts & Co. . . . .           | 7,200  | 0  | 0 |
| Hyde & Co. . . . .              | 7,080  | 0  | 0 |
| Jackson & Co. . . . .           | 6,997  | 0  | 0 |
| Faulks . . . . .                | 6,986  | 0  | 0 |
| Patman & Fotheringham . . . . . | 6,965  | 0  | 0 |
| Thomas . . . . .                | 6,929  | 0  | 0 |
| Webster & Son . . . . .         | 6,850  | 0  | 0 |
| L. & W. H. Patman . . . . .     | 6,780  | 0  | 0 |
| Knight & Son . . . . .          | 6,749  | 0  | 0 |
| Loasby & Salmon . . . . .       | 6,600  | 17 | 0 |
| Greenwood & Co., Ltd. . . . .   | 6,571  | 0  | 0 |
| Rowley Bros. . . . .            | 6,558  | 0  | 0 |
| Allen Fairhead & Son . . . . .  | 6,497  | 0  | 0 |
| Monk . . . . .                  | 6,492  | 0  | 0 |
| Nightingale . . . . .           | 6,474  | 0  | 0 |
| Wall, Ltd. . . . .              | 6,440  | 0  | 0 |
| Mattock Bros. . . . .           | 6,375  | 0  | 0 |
| Lawrence & Son . . . . .        | 6,294  | 0  | 0 |
| Fitch & Cox. . . . .            | 6,264  | 0  | 0 |
| F. & G. Foster . . . . .        | 6,155  | 0  | 0 |

HINGHAM.

|                                                                             |      |    |   |
|-----------------------------------------------------------------------------|------|----|---|
| For the reconstruction of offices and other improvements at school. . . . . |      |    |   |
| Cubitt & Gotts . . . . .                                                    | £433 | 16 | 0 |
| Youngs & Son . . . . .                                                      | 417  | 0  | 0 |
| Monument . . . . .                                                          | 400  | 10 | 0 |
| Mickleburgh . . . . .                                                       | 375  | 0  | 0 |
| Woodward . . . . .                                                          | 370  | 0  | 0 |
| Smith . . . . .                                                             | 370  | 0  | 0 |
| Bowden . . . . .                                                            | 364  | 0  | 0 |
| Ebbs & Barton . . . . .                                                     | 363  | 16 | 6 |
| Harrison . . . . .                                                          | 349  | 0  | 0 |
| Hofts . . . . .                                                             | 346  | 8  | 7 |
| Durrant . . . . .                                                           | 346  | 2  | 0 |
| Springall & Son . . . . .                                                   | 341  | 0  | 0 |
| SHANKS, Chatteris (accepted) . . . . .                                      | 320  | 0  | 0 |

For enlargement of Wendling school.

|                                      |      |    |    |
|--------------------------------------|------|----|----|
| Larner . . . . .                     | £623 | 0  | 0  |
| Crane . . . . .                      | 602  | 6  | 6  |
| Youngs & Son . . . . .               | 577  | 0  | 0  |
| Fisher . . . . .                     | 571  | 4  | 5  |
| Cubitt & Gotts . . . . .             | 570  | 5  | 6  |
| Mickleburgh . . . . .                | 563  | 0  | 0  |
| Smith . . . . .                      | 525  | 0  | 0  |
| Springall & Son . . . . .            | 512  | 0  | 0  |
| Ebbs & Barton . . . . .              | 510  | 15 | 10 |
| Tofts . . . . .                      | 505  | 1  | 11 |
| Tash & Langley . . . . .             | 497  | 13 | 10 |
| Mack . . . . .                       | 495  | 4  | 2  |
| Shanks . . . . .                     | 495  | 0  | 0  |
| Burton & Sons . . . . .              | 483  | 11 | 6  |
| NEEDS, Fakenham (accepted) . . . . . | 474  | 0  | 0  |
| Brummitt & Co. . . . .               | 472  | 14 | 0  |
| Durrant . . . . .                    | 435  | 4  | 8  |

NORFOLK.

For 1,034 yards of channelling at Sprowston, for the County Council.

|                                        |      |    |   |
|----------------------------------------|------|----|---|
| Mousehold Heath Stone Company. . . . . | £135 | 16 | 0 |
| Howes . . . . .                        | 130  | 0  | 0 |
| EDWARDS (accepted) . . . . .           | 103  | 8  | 0 |

**FIRE ESCAPES, VERANDAHS, And COVERED WAYS.**  
SLOAN & DAVIDSON, Ltd., Carrick Foundry, STANNINGLEY, LEEDS.

**STEEL ROOFS**



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**CONSTRUCTIONAL STEELWORK.**  
W. & J. OAKES,  
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Capital, £2,000,000.  
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**Glazed Bricks.**

The Farnley Iron Co. Ltd., Leeds.

**STRUCTURAL WORK. ROOFS.**

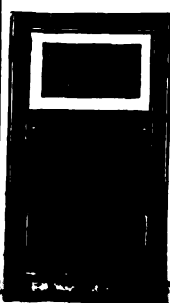
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ESTABLISHED 1870. Tel. Address, "May, Sheffield."

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TRIUMPH WORKS, SHEFFIELD.

Manufacturers of all kinds of Desks and Furniture for Schools, Churches, Colleges, Technical and Higher Grade Schools, Lecture Halls, Unions, Offices, &c. Also Makers of FOLDING SLIDING SCREENS (running on ball bearings), for Dividing Schoolrooms, Mission Halls, &c. Priced Catalogues, showing 200 different designs of Desks, Furniture, &c., free on application.

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By sending a current of Hot Air, on the injector principle, up the chimney, prevents Down Draughts and Smoke Trouble. Fitted with Patent Valves, Indicator, Blower and Slow Combustion Swinging Fire.

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No more Cold Chimneys. For Private Houses, City Offices, Dining and Smoking-Rooms, &c.

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Full particulars on application.  
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**Iron Fire Escape STAIRCASES**

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Made to L.C.C. Requirements.

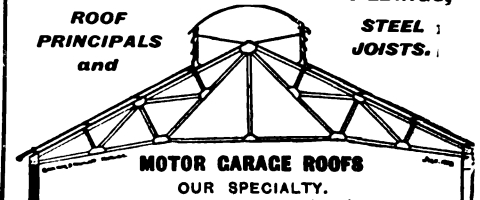
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**CONSTRUCTIONAL ENGINEERING in all its Branches.**

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Special Estimates on receipt of particulars of requirements.

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OLDEST HOUSE in the TRADE  
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**James Bedford & Co.**

(Successors to  
CHAR. WATSON, F.R.S. & HILL & HEY  
Ventilating Engineers,  
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**"EXCELSIOR" EXHAUST and SYPHON VENTILATORS**

Well made in strong Zinc throughout.

Adapted to any style of Architecture.

Price Lists, Catalogues, Estimates, &c., forwarded on application.

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REG. No. 821,522.

## LONDON.

For supply and erection of internal fencing required at Ruskin Park.

|                                                               |      |    |   |
|---------------------------------------------------------------|------|----|---|
| Rowell & Co. . . . .                                          | £359 | 10 | 0 |
| Hope Foundry Co. . . . .                                      | 340  | 15 | 0 |
| Faulkner & Son . . . . .                                      | 323  | 0  | 0 |
| Bayliss, Jones & Bayliss . . . . .                            | 316  | 0  | 0 |
| Gratrix & Sons . . . . .                                      | 295  | 11 | 9 |
| Raybould & Co. . . . .                                        | 288  | 1  | 3 |
| Elwell . . . . .                                              | 279  | 0  | 0 |
| McVey . . . . .                                               | 275  | 9  | 9 |
| HILL & SMITH, Brierley Hill Ironworks<br>(accepted) . . . . . | 270  | 13 | 7 |

For improvements at the British Street school, Poplar, for London County Council education committee.

|                                                                           |         |   |   |
|---------------------------------------------------------------------------|---------|---|---|
| Appleby & Sons . . . . .                                                  | £12,660 | 0 | 0 |
| W. Lawrence & Son . . . . .                                               | 12,387  | 0 | 0 |
| Gregar & Son . . . . .                                                    | 11,997  | 0 | 0 |
| J. & M. Patrick . . . . .                                                 | 11,735  | 0 | 0 |
| E. Lawrance & Sons . . . . .                                              | 11,697  | 0 | 0 |
| Kirk & Randall . . . . .                                                  | 11,690  | 0 | 0 |
| Lascelles & Co. . . . .                                                   | 11,597  | 0 | 0 |
| Parsons . . . . .                                                         | 11,442  | 9 | 5 |
| Leng . . . . .                                                            | 11,419  | 0 | 0 |
| Wallis & Sons . . . . .                                                   | 11,203  | 0 | 0 |
| Treasure & Son, Cottenham Road, Upper<br>Holloway (recommended) . . . . . | 10,559  | 0 | 0 |
| Architect's estimate . . . . .                                            | 10,620  | 0 | 0 |

For decorations and repairs at the Napier Restaurant, High Holborn. Mr. C. W. CALICOTT, architect, 58 Theobald's Road, W.C.

|                                    |      |    |   |
|------------------------------------|------|----|---|
| Adams & W. rd . . . . .            | £987 | 0  | 0 |
| Goodall & Son . . . . .            | 868  | 0  | 0 |
| Millman & Co. . . . .              | 857  | 15 | 6 |
| Courtney & Fairbairn . . . . .     | 825  | 0  | 0 |
| Hawkins . . . . .                  | 750  | 0  | 0 |
| Eames . . . . .                    | 732  | 0  | 0 |
| McLaughlin & Harvey . . . . .      | 699  | 0  | 0 |
| Higgs . . . . .                    | 681  | 0  | 0 |
| Withers . . . . .                  | 653  | 0  | 0 |
| GREEN & SMITH (accepted) . . . . . | 646  | 10 | 0 |

## LONDON—continued.

For supplying and fixing a penstock on the southern high-level sewer No. 2.

|                                              |      |    |   |
|----------------------------------------------|------|----|---|
| Glenfield & Kennedy . . . . .                | £319 | 10 | 0 |
| Cochrane . . . . .                           | 315  | 0  | 0 |
| Hunter & English . . . . .                   | 283  | 0  | 0 |
| Ashton, Frost & Co. . . . .                  | 270  | 0  | 0 |
| Blakeborough & Sons . . . . .                | 230  | 0  | 0 |
| WALLER & SON, Stroud (recommended) . . . . . | 214  | 0  | 0 |

For the construction of an underground convenience in Theobald's Road and for additions to convenience in Shaftesbury Avenue. Mr. E. F. SPURRELL, borough surveyor.

|                                       | Theobald's Road. | Shaftesbury Avenue. |
|---------------------------------------|------------------|---------------------|
| F. & E. Davey . . . . .               | £4,850           | 0 0                 |
| Clayton . . . . .                     | 4,360            | 0 0                 |
| Doulton & Co. . . . .                 | 4,340            | 0 0                 |
| Killingback & Co. . . . .             | 4,330            | 0 0                 |
| JENNINGS, LTD. . . . .                | 4,063            | 3 4                 |
| Dearing & Sons . . . . .              | 4,060            | 0 0                 |
| Martin, Wells & Co. . . . .           | 3,999            | 0 0                 |
| Price . . . . .                       | 3,950            | 0 0                 |
| F. & G. Foster . . . . .              | 3,896            | 0 0                 |
| Mellowes & Co. . . . .                | 3,878            | 0 0                 |
| Spencer, Santo & Co. . . . .          | 3,870            | 0 0                 |
| Davis, Bennett & Co. . . . .          | 3,849            | 0 0                 |
| Parsons . . . . .                     | 3,826            | 0 0                 |
| Patman & Fotheringham . . . . .       | 3,683            | 0 0                 |
| Paterson . . . . .                    | 3,647            | 6 8                 |
| Nightingale . . . . .                 | 3,590            | 0 0                 |
| JOHNSON & Co.† . . . . .              | 3,507            | 0 0                 |
| Borough surveyor's estimate . . . . . | 3,856            | 0 0                 |

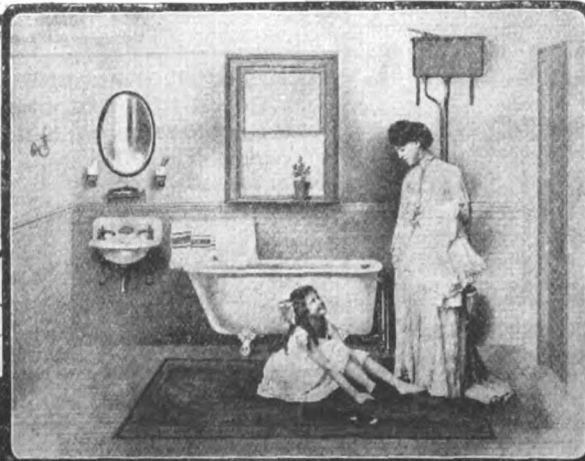
\* Accepted for Shaftesbury Avenue.

† Accepted for Theobald's Road.

For supply of fittings, &c., for underground convenience in Lower Richmond Road, for the London County Council.

|                                                  |      |    |    |
|--------------------------------------------------|------|----|----|
| Doulton & Co. . . . .                            | £403 | 0  | 0  |
| Finch & Co. . . . .                              | 397  | 0  | 0  |
| G. & D. Musgrave . . . . .                       | 386  | 16 | 6  |
| Jennings, Ltd. . . . .                           | 302  | 15 | 10 |
| Adams, Ltd., Westminster (recommended) . . . . . | 297  | 19 | 3  |

# "Standard"



"Standard" Porcelain Enamel Ware is moderate in cost, beautiful in its finish and extremely durable. Absolute freedom from cracks or crevices assures the maximum sanitary protection. A bathroom fitted with "Standard" Ware greatly increases property value.

Write for our elaborate booklet, "MODERN BATHROOMS," also for our special lavatory booklet, showing many new patterns. Ask for Booklet No. 6, post free on application to Dept. F.,

**Standard Sanitary Mfg. Co.**  
22 HOLBORN VIADUCT, LONDON, E.C.

## HIGHFIELD FOUNDRY CO., LTD. WELLINGBOROUGH.

COLUMNS, STANCHIONS, SASHES, TANKS, ROOFS, MANHOLES, and all kinds of Builders and Contractors' Ironwork.

## WELDON STONE.

A WEATHER STONE OF THE FIRST QUALITY. Suitable for all kinds of BUILDING and ORNAMENTAL WORK, as testified by its use for upwards of three centuries.

WELDON STONE tools with facility, and combines CHEAPNESS with GREAT DURABILITY and EVEN COLOUR.

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CONTRACTOR TO H.M. GOVERNMENT ESTABLISHED 1851

Every description of Asphalt laid and supplied.

**THOMAS FALDO & CO. LTD.,**  
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For the best of everything in

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HODDESDON, HERTS.

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English and Swedish Designs.

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For Index of Advertisers, see page x.

**LONDON—continued.**

For completing carriageways and footways, Totterdown Fields estate.

|                                    |        |    |   |
|------------------------------------|--------|----|---|
| Kavanagh & Co.                     | £6,926 | 0  | 9 |
| Killingback & Co.                  | 6,643  | 6  | 7 |
| Mowlem & Co.                       | 6,290  | 0  | 0 |
| Griffiths & Co.                    | 6,120  | 11 | 7 |
| E. & E. Iles                       | 5,910  | 7  | 0 |
| Wimpey & Co.                       | 5,841  | 11 | 2 |
| Gibbons                            | 5,474  | 19 | 1 |
| Manders                            | 5,401  | 4  | 4 |
| Coxhead, Leytonstone (recommended) | 5,391  | 0  | 0 |
| Architect's estimate               | 5,990  | 0  | 0 |

For erecting four shops and premises, Highgate Hill, N. Mr. C. W. CALLCOTT, architect, 58 Theobald's Road, W.C.

Higgs (accepted) £4,692 0 0

For the erection of Archway assembly hall, Hargreave Road, N. Messrs. COLEMAN & HOLMES, architects.

|                               |        |   |   |
|-------------------------------|--------|---|---|
| McCormick & Sons              | £2,882 | 0 | 0 |
| Galbraith Bros.               | 2,500  | 0 | 0 |
| Mattock & Parsons             | 2,279  | 0 | 0 |
| GRAINGER, Southend (accepted) | 2,250  | 0 | 0 |

**MAIDSTONE**

For additions to the administration block at the sanatorium, Fant Lane.

|                               |      |    |   |
|-------------------------------|------|----|---|
| Barden & Head                 | £470 | 0  | 0 |
| Cox Bros.                     | 459  | 0  | 0 |
| Elmore & Son                  | 452  | 17 | 0 |
| Pearce & Sons                 | 450  | 0  | 0 |
| Avard                         | 447  | 0  | 0 |
| Corben & Co.                  | 445  | 0  | 0 |
| Smith & Son                   | 399  | 18 | 0 |
| Clarke & Epps                 | 381  | 10 | 0 |
| BURROWS, Maidstone (accepted) | 378  | 2  | 0 |

**MARDY.**

For the erection of buildings for the Ferndale Industrial Co-operative Society. Messrs. LEWIS & MORGAN, architects, Pontypidd.

|                                           |        |    |   |
|-------------------------------------------|--------|----|---|
| Richards                                  | £2,971 | 9  | 3 |
| Harries                                   | 2,855  | 0  | 0 |
| Jenkins                                   | 2,101  | 0  | 0 |
| Williams                                  | 2,099  | 0  | 0 |
| Smith-Jones & Sons                        | 2,039  | 15 | 7 |
| William Bros.                             | 2,001  | 7  | 7 |
| Davies                                    | 1,960  | 0  | 0 |
| MUNDY, Llandaff North, Cardiff (accepted) | 1,870  | 14 | 0 |

**ST. ALBANS.**

For providing and laying new sewer and making certain alterations to existing sewer in Bull Lane, Wheat-hampstead. Mr. HENRY F. MENCE, surveyor.

|                                             |      |    |   |
|---------------------------------------------|------|----|---|
| Miskin & Sons                               | £838 | 0  | 0 |
| Williams                                    | 432  | 4  | 5 |
| Jackson                                     | 404  | 13 | 6 |
| Williamson                                  | 380  | 15 | 0 |
| COUSINS, Avenue Road, St. Albans (accepted) | 388  | 5  | 9 |

**SCOTLAND.**

For carrying-out the Johnshaven waterworks, for the St. Cyrus district committee.

THOM & STRACHAN, Aberdeen (accepted) £825 0 0

**SLOUGH.**

For making-up, &c., Gray's Road. Mr. W. W. COOPER, town surveyor.

|                                  |      |   |   |
|----------------------------------|------|---|---|
| Burfoot & Son                    | £325 | 0 | 0 |
| Bowyer                           | 319  | 0 | 0 |
| Ripley & Co.                     | 302  | 0 | 0 |
| Free & Son                       | 291  | 0 | 0 |
| Gibbons                          | 264  | 0 | 0 |
| Lee & Son                        | 262  | 0 | 0 |
| Langley & Co.                    | 260  | 0 | 0 |
| Hardy, Bates & Co.               | 255  | 0 | 0 |
| SMITH & SON, Nap Hill (accepted) | 249  | 0 | 0 |

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For erecting headquarters, riding school, stables, shops and club premises for the 2nd County of London (Westminster Dragoons) Imperial Yeomanry, at the corner of Horseferry Road and Elverton Street, S.W. Mr. D. B. HEDDERWICK, architect, 38 Great James Street, Bedford Row, W.C. Quantities by Mr. A. R. HENDERSON, 46A Pall Mall, S.W.

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|-----------------------|-----------|----------------|
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| Free & Sons . . .     | 289 5 1   | 368 2 1        |
| Hardy, Bate & Co. . . | 248 18 0  | 343 14 0       |
| Langley & Johnson . . | 239 16 7  | 315 3 3        |
| Smith & Sons . . .    | 225 0 0   | 301 0 0        |
| Lee . . .             | 218 7 6   | 294 7 6        |
| Gibbons . . .         | 228 7 9   | 299 15 3       |

**TRADE NOTES.**

In the description of No. 5 Cheapside in our last issue, we omitted to mention that the whole of the carving and sculpture, as also the plasterwork, had been carried out for the architect by Mr. Gilbert Seale, of 22 George Street, Camberwell Road, London.

The whole of the locks and hardware for the new railway known as the Brompton and Piccadilly Tube were supplied by Messrs. Yale & Towne, Ltd., of City Road, London, E.C., and consisted of door furniture, Blount door checks, butts, &c., as well as Yale locks. The Bakerloo Tube was also fitted with Yale locks, both on the master key system. All the stations on each tube are controlled by a separate grand master key, which will actuate any and every lock. Each station in turn is controlled by a separate sub-master key, which will only control the locks on that particular station. The Yale and Towne Company have also received the contract for the furnishing of all the hardware for the new Charing Cross, Euston and Hampstead Tube.

THE Allington schools, near Grantham, are being warmed and ventilated by means of Shorland's patent Manchester grates and exhaust roof ventilators, the same being supplied by Messrs. E. H. Shorland & Brother, of Manchester.

MESSRS. OETZMANN & Co. have adhered to their annual custom of preparing a special catalogue of Christmas presents, in which everything required for adornment or use in residences is comprised and all at prices which are alluring.

A BILL was deposited in Parliament on Monday to incorporate the Channel Tunnel Company and to authorise the construction of works which shall form part of the scheme intended to connect England and France by means of a railway under the English Channel. Powers are sought to execute such works up to the three-mile limit, and it is proposed that a new company shall hereafter be registered for the purpose of carrying out the entire project. It is estimated that the scheme will involve a total outlay of 16,000,000l.

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## ILLUSTRATIONS.

CATHEDRAL SERIES.—MANCHESTER: THE CHOIR, WESTWARDS.

DESIGN FOR THE PEACE PALACE, THE HAGUE.

GRANTSWOOD, HORSHAM.

NORNEY, SHACKLEFORD, NEAR GODALMING, SURREY.

THE ORCHARD, CHORLEY WOOD, HERTS.

HOUSE ON THE HOG'S BACK, NEAR GUILDFORD, SURREY.

PERRYCROFT, COLWALL, HEREFORDSHIRE.

HOUSE AT CASTLEMORTON, WORCESTERSHIRE.

## BUILDING AND BUILDERS.

At Birmingham a daily supply of 19,000,000 gallons of water is obtained from Elan Valley reservoirs, and the quantity of compensation water running through the sluice at the bottom of Oaban dam is 27,000,000 gallons per day. If no rain fell for nine months it is estimated that Birmingham would still have a sufficient supply.

THE Lancashire education committee announce their intention of providing a new public elementary school for 600 children at Clifton, near Lytham, and in the meantime to accept the transfer to them of the Clifton and St. Anne's Church of England school as a public elementary school. The education committee also intend to erect a new public elementary school for 450 children at Cadishead.

THE Scarborough Corporation are about to apply to the Local Government Board for sanction to borrow 29,000*l.* already sanctioned by the provisional order, both on the Marine Drive and Approach Road. Three years ago the Corporation obtained a sanction to borrow 4,000*l.* for the Approach Road, and last year another order to borrow 25,000*l.* for the Marine Drive, both being subject to the approval of the Local Government Board.

AFTER a long spell of depression, it has been evident for some time, says the *Liverpool Courier*, that the North Wales slate trade is again looking up. Reports, on the whole of a favourable character, come from most of the quarry centres, and these show that for several weeks the stocks have been steadily diminishing. The increased demand has encouraged the quarry owners in the Carnarvonshire district to put up

the prices on all sizes, and the revised list will come into force in January. Prices have been advanced to bring them into line with Penrhyn and Dinorwic.

At Rutherglen Dean of Guild Court, a Glasgow builder was charged with having, in building a villa at Rutherglen, deviated from the original plans submitted before a previous court at which lining was granted in his favour. The procurator-fiscal stated that the deviations with which Mr. Glen was charged were thirty-five in number, and the Act provided that for each a fine of 50*l.* could be inflicted. If builders were allowed to deviate in the way he had done there would be no use for a Dean of Guild Court at all. After considering the case the court fined the respondent in the sum of 21*l.* for the deviations, and 1*l.* for a breach of the by-laws in covering up the "damp course."

At the last meeting of the Chelsea Borough Council the surveyor was asked for an explanation touching a communication from the London County Council enclosing a copy of a letter addressed to a householder intimating that the correct number of the house at present known as 12 Tedworth Square is 13. The surveyor said that the position had arisen solely in consequence of the popular superstition with regard to the number 13. The lady who occupied the house said the number was unlucky and she had therefore obliterated it and substituted 12. All the other houses in the square had odd numbers. No harm had really been done to anyone. The Council declined to interfere.

A GARDEN suburb has been planned for Wolverhampton. It is proposed to carry out the scheme on an estate of about 400 acres belonging to the Right Hon. Sir Richard H. Paget, Bart. The centre of the estate is 2 miles from the centre of the town, and the site is from 450 feet to 500 feet above sea level. It is well timbered and picturesque in character. The design of the whole area is being prepared in advance on garden city principles. Ample provision will be made for wide roads and open spaces for gardening and recreation. The plan of development is being prepared by Mr. Detmar Blow and Mr. Fernand Billerey, architects, and Mr. Thomas Adams, late secretary and manager of the First Garden City, Limited, is acting as agent for the owner in carrying out the scheme. Sites will be sold under certain

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restrictive covenants, which, while giving full security to the individual, will prevent haphazard speculation to the public detriment in the future, and it is hoped to make arrangements to ultimately give the community sufficient control over the area to be developed, including all open spaces, to enable it to prevent overcrowding and to secure permanence to the principles underlying the scheme. It is also proposed to hold a model housing exhibition on the estate in the late summer and autumn of 1907, when prizes amounting to at least 250l. will be awarded for the best houses containing four and five rooms, and erected at a cost not exceeding 250l.

### ELECTRIC NOTES.

THE electric-light installation at the Guildhall, London, is about to be extended at a cost of 1,000l.

MESSRS. BRUCE PEEBLES & CO., LTD., have been given a contract to the value of 300,000l. for the electrification of the Athens tramways.

THE electricity committee of the Darlington Corporation on Saturday decided to put down an additional 500-kilowatt generating set at a cost of 3,700l. The maximum possible output of all plant now available is 540 kilowatts, and during the present winter it will have to be worked at 9 per cent. above its safe output to meet the demand.

THE Beckenham Council have decided to purchase that portion of the South Metropolitan Electric Light Company's undertaking which is within the portion of the parish of Beckenham known as the Crystal Palace district. The Beckenham Council already owns an undertaking for supplying electric light and power, and this acquisition gives it power over the whole of Beckenham.

A CIRCULAR letter has been sent by the Poplar Borough Municipal Alliance to the secretaries of the various ratepayers' associations and kindred societies within the area affected by the London County Council electric power scheme, with a view to advising the association that some progress has been made, and that no delay will occur in submitting particulars of the Bill to the various organisations and arranging concerted action to oppose the Bill.

THE Dundee Town Council have resolved to employ an electrical expert to consult with and report upon the proposals made by the resident engineer as to the most desirable extension policy to be pursued, as to whether a new station should be laid down, and as to whether extension of the present station on the lines suggested or otherwise should be adopted. It was further provided that whatever recommendations might be agreed on, that the relative works should be carried out under the direction of the Dundee electrical engineer.

A LOCAL GOVERNMENT BOARD inquiry was held at Manchester on the 14th inst. into the Corporation's application for power to borrow 60,000l. for extensions at the electricity works. The first object is to extend and complete the plant at the Dickinson Street station and sub-station plant, at a cost of 11,094l. It is desirable further converting power should be provided in order to meet the increasing demands of the future. A second object is to provide additional generating plant at Stuart Street. The work could be done very conveniently. It was determined to put in additional turbine units and gear, &c., incidental to them, at a cost of 25,250l. The provision of meters would cost 7,500l. and motors 16,156l.

### VARIETIES.

THE Devonshire County Council have now approved of a scheme for erecting, in conjunction with the Corporation, a large secondary school at Torquay.

THE education committee at Boston, Lines, have recommended the Town Council to build a school on the west side of the town to accommodate 400 children at an estimated cost of £4,000.

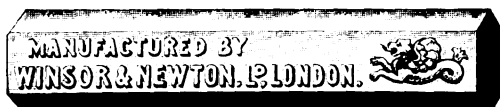
THE Leeds City Council last week decided by thirty votes to eleven, after a prolonged debate, to promote a Bill in Parliament for power to carry out a sewage scheme which is estimated to cost 1,250,000l.

EXTENSIVE new sidings, providing accommodation for 2,000 waggons, are to be built at Hull, at a cost of nearly 50,000l., by the North-Eastern Railway Company, to meet the exceptional increase in coal shipments from that port.

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Mr. HALDANE has stated, in reply to Mr. James Mason, that it is proposed to erect barracks on the site lately acquired by the War Office adjoining the Victoria Barracks at Windsor, but the details are not yet definitely settled.

THE Local Government Board have sanctioned the loan asked by the Gainsborough Urban Council for their markets' extension and town improvement scheme. The Council intend to widen Church Street and Lord Street at a cost of 3,593*l.*, and 6,717*l.* will be spent upon extending and improving the covered market area.

THE Tunbridge Wells Town Council have resolved to proceed with the Bill to enable them to compulsorily acquire the chalybeate springs on the historic Pantiles. The Council will also apply for powers to advertise and otherwise popularise the town, the total expenditure involved being 50,000*l.*

THE Glasgow Master Painters' Association, under the auspices of the National Association of Master Painters, in connection with the annual conference of the trade which takes place in the city early in January, have arranged a Decorative Trades exhibition, which will open in the Fine Art Institute, Glasgow, on the 26th inst.

THE plans and works committee of Edinburgh Town Council have received a letter from the secretary of the Institution of Civil Engineers, London, offering for acceptance by the Corporation plans of the Dean Bridge, Edinburgh, 1829, and design for a bridge over the Water of Leith, near Edinburgh, 1829. It was agreed to accept the offer.

THE second International Congress on School Hygiene will be held at the University of London, South Kensington, from August 5 to August 7, 1907. The work will be divided into eleven sections. An exhibition of school building and furnishing and appliances will be organised by the Royal Sanitary Institute. Lectures will also be given and general discussions held.

THE London education committee have agreed:—"That it be referred to the buildings and attendance sub-committee to consider and report as to the practicability and comparative cost of providing the 1,200 school places in Stepney by a school to be erected on or near some open space, at or outside the county boundary, to and from which the senior

scholars of Stepney could be conveyed daily by London County Council trams."

THE Wesleyan Twentieth Century Fund has now paid for new chapel schemes built largely through its instrumentality the sum of 232,102*l.* in grants, and the present debt is 16½ per cent. on the entire outlay. In the last ten years the chapel department has had to do with the building of 1,013 new chapels, many of which are paid for entirely. Of this number 391 are in places where previously no Wesleyan chapel existed.

THE Liverpool tramways committee have decided to fit fifty cars, at a cost not exceeding 4*l.* per car, with a new sanding device invented by Mr. Mallins, the traffic manager, with the object of preventing skidding. The device will, it is claimed, make the skidding of wheels impossible with ordinary care on the part of the driver, and will always insure the effectual working of both the electric and hand brakes.

THE surveyor to the Abergele Town Council has reported to the Council that during the last storm a large stretch of a groyne on the shore had been swept away. He confessed that the portion destroyed had done but little good. The work of the portion left had been wonderful. In the course of a few days the remains of the groyne had collected thousands of tons of gravel, and in one place the accumulation was about 8 feet thick. Nothing of the kind had ever been seen on the Abergele beach.

A FINE piece of joinery worthy of inspection by architects is the canopy for the Archbishop's throne, Westminster Cathedral, just completed by Mr. F. A. Fawkes, of the Joinery Works, Chelmsford. It is constructed of fumed oak and walnut, inlaid with holly and ebony, and enriched with artistic carving. The architects are Messrs. J. F. Bentley & Son, 13 John Street, Adelphi, architects to the cathedral. This canopy, together with the new baldachino, will be inaugurated at High Mass on Christmas Eve.

PARAFFIN paper has been found to be useful in protecting beams and columns of iron and steel against rust. The iron was first thoroughly cleansed from rust by means of wire brushes. A coat of sticky paint was then applied, and the paper pressed lightly on the surface of the fresh paint.

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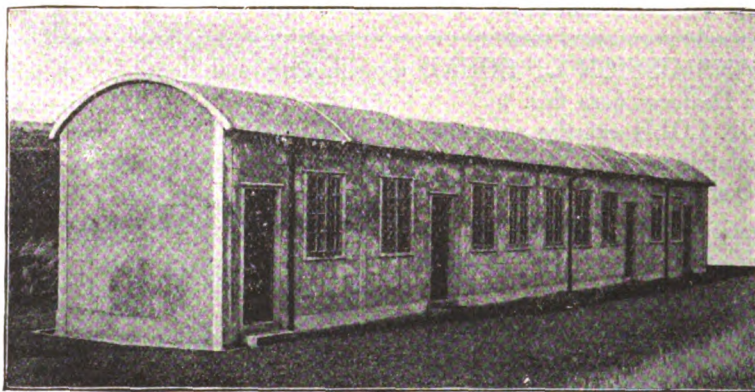


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Other coats of paint were then put on the papered surface. It was found that iron and steel thus protected remained in the same state as at first after two years and three months' constant exposure to smoke and dust and damp. The first sticky layer of paint was also intact, and in some places still not dry. Iron and steel so treated will also resist the effect of sewer gases.

A MODEL cottage is to be erected at the forthcoming Building Trades Exhibition at Olympia. The theatres and music-halls committee of the London County Council have decided that all woodwork, flimsy materials, artificial floral decorations, &c., used in connection with the building be rendered satisfactorily non-inflammable; that before the building is used by the public a certificate from the district surveyor as to its stability be forwarded to the Council; that the position of the building be to the satisfaction of the Council; and that the regulations of the Council with regard to lighting be complied with.

THE town hall at Wootton Bassett, Wiltshire, is probably the only building of its kind in the country for which there is no owner. It was erected in 1700 by the first Earl of Rochester, and until a few months ago it belonged to Lady Meux, who, when appealed to by the inhabitants of the town to withdraw it from the sale of her estate, which was then taking place, did so, and announced that she had decided to give it to the town. Recently it was stated by her ladyship's agent that the building belonged to no one, but it is expected to be transferred to the town trust shortly.

THE Glasgow Corporation have approved of a scheme for the extension of the fruit market, which will cost 17,000*l.* in addition to the 30,000*l.* paid for the site. This plan entails the demolishing of the old police station buildings, with the exception of the front wall in Albion Street, to which should be extended the steel roof from the western portion of the markets. The scheme suggested that the proposed covering of Albion Street should be set aside in the meantime, and this would bring a saving of 2,000*l.* The total cost of the scheme would represent 2,350*l.* per annum for interest and sinking fund, and to meet that charge the market floorage of 12,959 square feet at 3*s.* 6*d.*, and the basement of 14,867 square feet at 3*d.*, would bring an estimated return of 2,453*l.*

THE gas committee of the Manchester Corporation have resolved to recommend the Council to apply for sanction to borrow 300,000*l.* for extension purposes. The sum of 100,000*l.* is needed for the construction of a new holder at the Bradford Road works—already the largest in the city and among the biggest in the whole kingdom. The new holder will be able to contain 10,000,000 cubic feet of gas. It will be the second largest holder in the country. There is only one—in London—with a greater capacity, viz. 12,000,000 cubic feet. A sum of 50,000*l.* is required for the completion of the retort-house at Gaythorn, and the balance will be devoted to the construction of street mains, service pipes, meters and stoves.

THE Mersey Docks and Harbour Board have been considering the question of what course it would be best to adopt in order to prevent the further narrowing by silting, &c., of Crosby Channel between Taylor's Bank and the Askew Spit. Mr. A. G. Lyster, the engineer-in-chief, entered into consultation with various experts. It is believed that it has been substantially decided that an improvement scheme shall be proceeded with at once, and no doubt, therefore, the matter will at an early date be mentioned at one of the weekly meetings of the Dock Board. The idea, it is stated, is to provide a training wall or walls along the Crosby Channel, and altogether the operations will necessitate an expenditure of something like 50,000*l.*

THE special committee of the Manchester Corporation who have to consider the question of sewer ventilation met at the town hall last week. Some time ago the city surveyor presented a report on the subject, and it was decided to carry out experiments in Wilmslow Road for ventilating the sewers by means of the tramway poles. Eleven of these special poles were used, and they had the effect of discharging the sewer gas at a height of 25 feet above the level of the road. The Withington committee have ordered a number of these poles to be used in a very much larger area. It has now been decided that the city surveyor should select a considerable area on which to carry out extensive experiments by means of carrying away the gas at the gable ends of houses. The committee decided further to make arrangements with Professor Delépine to conduct experiments as to the effects of sewer gas on the public health, extending over a period of two years.

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KEEPS OUT HEAT OR COLD exactly as do the feathers of a bird; providing innumerable minute dead-air spaces, giving highest insulating power. Will save enough fuel in a single Winter to pay for itself. Keeps a room warm in Winter, cool in Summer. DECAY, MOTH, AND VERMIN PROOF, AND UNINFLAMMABLE.

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**BUILDING IN JOHANNESBURG.**

DURING the month of October the following plans of separate buildings or tenements were approved by the Johannesburg Town Council, including alterations and additions:—

Within one mile of Market Square a total of 55 plans were passed, from one to two miles distant from the square there were 94, from two to three miles 76, and from three to six miles 74. Of these totals 44 represent new dwellings, 68 additions (domestic), 93 rooms, 15 shops, stores and offices, and the remainder additions and buildings other than to residential quarters.

Compared with the corresponding month of last year, when the number of plans for new dwellings passed was 201, the month shows a falling off in this respect of 157. And in the same particular for the period of four months ending in October last, compared with a corresponding period of the previous year, there is a decrease of 446. In the matter of shops, while last month there were only 15 in contemplation of erection, during the same month last year there were 111, showing a decrease of 96.

The estimated cost of the buildings and alterations for which plans have been passed during last month was 70,616*l.*, as compared with 173,072*l.* for the month of October 1905. Taking the four months ended on October 31 last in comparison with the same period of the previous year there is a decrease of 603,245*l.* in the estimated cost of erections during the former period.

Compared with the month of September of this year there is a decrease in the number of plans passed of 47, and a decrease in the estimated cost of erections of 6,060*l.* Since January last, when the estimated cost of erections was 173,298*l.*, there has been a gradual falling off, with one or two notable exceptions about the middle of the year.

THE School of Oriental Studies at Manchester University has, through the generosity of Professor Schuster, been enriched by the gift of a collection of Babylonian documents dating from the third millennium, B.C. The tablets illustrate the conditions prevailing in the period immediately following the reign of Khammurabi.

**VENTURENE WALL TILES.**

If a collection of the products which best exemplified English supremacy in manufactures had to be brought together, the numerous varieties of glass identified with Messrs. Chance Bros. & Co., Ltd., would hold prominent place. Their improvements form an important chapter in the history of English industry. They have utilised not only chemistry but geometry. The constant success by which translucency, lustre, colourlessness, and, we may add, strength are combined, could only be attained by a close study of chemistry as seen in phenomena both within and without furnaces. But surprising as are the vast sheets of glass which are turned out of Messrs. Chance's works, as if no trouble were required to produce them, yet to the student of science they will appear less wonderful than one of those combinations of lenses which Messrs. Chance build up for the use of lighthouses. Every element in one of the reflectors is an example of the application of geometry, and an error in the curve of a prism would be sufficient to interfere with the optical laws which rule dioptric apparatus, and might cause a disaster at sea. Simple as they may seem, the Venturene wall tiles also exemplify the scientific principles which have been the guides of Messrs. Chance. Like the revolving lights, they are solutions of a definite problem and not accidental results. Realising that a sanitary lining was required for a great many places, it was concluded that a variety of non-transparent glass would be adapted for that end. In order that the tiles might be placed as closely as possible together, so as to allow no interstices for germs or other dangers, it was necessary that the angles should be perfect right angles, and, indeed, a Venturene tile could be used as a set-square. Curves are, however, in favour in Messrs. Chance's works, and we imagine workmen and others must find greater pleasure in those tiles which serve to cover angles of walls, and which are laid out on a curve generally of 2-inch radius. They can also be obtained in or double curves. In that way what often is a weak part in a sanitary sense is securely closed. The material almost resembles porcelain. One surface is left rough in order to afford a better key to the cement; the other side is embossed and delicately

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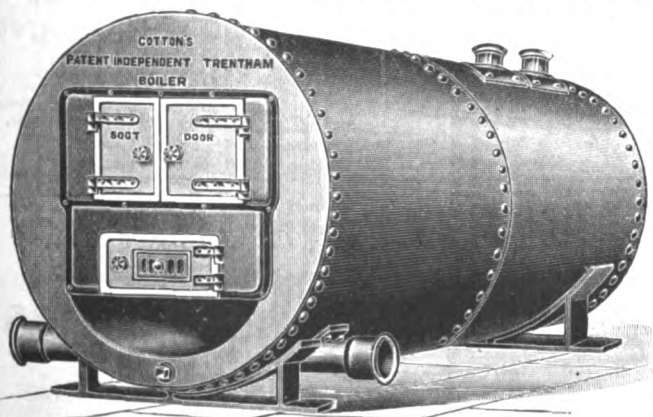
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glazed. There are two kinds, white and tinted. The tiles are unchangeable in colour, and are suggestive of rigorous cleanliness and safety. They are not only pleasant to look upon, but they embody desirable sanitary qualities. They are made in various sizes, viz. 3 by 3 inches; 6 by 3 inches; 9 by 3 inches; 6 by 6 inches. The prices are very moderate. Messrs. Chance can supply a special cement for setting the tiles, and full instructions for rendering walls and fixing are given. As a sanitary wall-lining it will be evident that the tiles, from the peculiar character and material, need no recommendation.

### AMENITY OF PROVINCIAL TOWNS.

Efforts are being made to form societies for the following purposes:—

To preserve natural beauty in and around the city.

To promote such systematic planning of suburban extension as would create garden suburbs all round the city.

To secure parks, open spaces and playgrounds for young and old.

To encourage the erection of picturesque houses.

To encourage the planting of trees, shrubs, &c., in new streets, in churchyards, in open spaces and wherever possible round schools, churches and other public buildings.

To encourage and assist householders to beautify their houses and streets by the cultivation of garden plots, window boxes, &c.; by enlisting the assistance of practical gardeners and by giving advice as to suitable plants for town growth; by arranging with firms to supply seeds to members of the association at special rates; by getting the Corporation and also private individuals to lend shrubs and plants for beautifying districts where permanent growth is difficult.

To encourage flower shows and gardening competitions.

To get the public generally to become the guardians of all trees, plants and flowers in private gardens, in public parks, and in the fields and lanes around the city. Careless plucking of wild flowers and unwise attempts to transplant them into town gardens are responsible for much damage.

As a rule wild flowers will only grow in their native haunts, and never look so well elsewhere.

To get people to abstain from throwing waste paper, orange peel, banana skins, &c., into the streets, and to remove such rubbish wherever possible.

To discourage picnic parties from leaving waste paper, empty bottles, &c., in lovely country spots.

To get people to assist in preserving private parks and grounds thrown open to the public.

To induce owners of fine grounds to open them to the public at stated times.

To promote a purer atmosphere and a greater supply of sunlight by encouraging (a) owners of works to adopt the most improved appliances for smoke prevention, and to offer prizes to their employes for successful stoking, (b) householders to adopt more economic fireplaces, and to exercise greater care in the management of fires. Smoke is unconsumed fuel. It pollutes the atmosphere, obscures the sun, endangers health, renders our buildings ugly, and injures, where it fails to destroy, vegetable life.

To create enthusiasm among children for the object of this branch by means of (a) lessons in school, (b) a children's league.

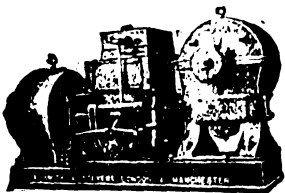
### BUILDING PROSPECTS IN DUNDEE.

ACCORDING to the *Dundee Advertiser*, the prospects before the trade are of the brightest. While it is true that the requirements of the municipality in regard to the provision of sanitary accommodation have been generally met—and in this connection it must be remembered that such formed a very valuable source of employment in slack times—works of great magnitude will be commenced during the ensuing year. These are mostly of a public character. So far as the municipality is concerned there is the scheme of library extension to be carried out in terms of the Carnegie gift—two district libraries, one in the west, at Blackness Avenue and the other in the north end, at Strathmartine Road, and it may be a central reading-room. The expenditure on these works will be about 24,000l. Then there is the new technical institute, funds for which have been secured. On the site of Chapelshade jute works, Bell Street, it will be erected. The buildings, from the

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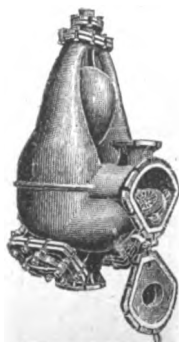
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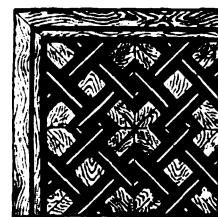
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contractor's point of view, are the most important of recent times. The structural cost will run from 35,000*l.* to 40,000*l.* Then in connection with University College, arrangements are being made for the erection of the new physical laboratory, the funds for which are gifted by Mr. Andrew Carnegie, LL.D. This important adjunct of University College, the site of which is on the grounds at Union Mount, represents an expenditure of 12,500*l.* The area cleared by the great Seagate fire is a field for the tradesmen. As soon as circumstances permit a start will be made with the building of the new "Bonds." Some idea of the magnitude of this undertaking may be gathered when it is stated that the estimated cost runs from 30,000*l.* to 35,000*l.* With this promise before it the trade looks forward to the incoming year with satisfaction. So far as the operations of the past year are concerned, villa building, as stated, has been fairly brisk. The erection of tenement buildings, it seems, has got a check. Investors, realising that the supply of house property of this description, if it does not actually exceed, as some assert, is fully adequate to meet demand, have exercised restraint.

### ROOF COVERINGS.

THE "Eternit" roofing slates and insulating sheets, although recently introduced, are making their way in this country as they merit. There are many buildings which they are admirably adapted to cover, and hence it is that the Admiralty, the War Office, the Office of Works and many others in Great Britain are employing "Eternit," and it is found to be no less adapted for use in the Colonies. It is produced in the form of slates or tiles, and the three colours, grey, blue and terra-cotta, are always in stock. The material has the advantage of imparting to roofs, walls, ceilings and partitions in which it is used a pleasing appearance. It is needless to say it can be rapidly fixed, and when once in position there need be no fear of cracking or shrinking. It is equally adapted to curved as to plane surfaces. The fact that British and colonial fire insurance companies accept "Eternit" as fire-resisting enhances its other qualities. Messrs. G. R. Speaker & Co. have the sole patent rights for Great Britain, Ireland and the Isle of Man.

### SCOTTISH BUILDING TRADES FEDERATION.

THE Scottish Building Trades Federation, of which the headquarters are in Edinburgh, have sent a petition to the Home Secretary with reference to the proposed regulations as to the erection of scaffolding and measures for the safeguarding of the lives of workmen while employed in the erection or repair of buildings. The Federation urge that if the regulations are to apply to Scotland the Scottish building trades should be directly represented on the departmental committee appointed by Mr. Gladstone to inquire into the subject. The different centres of the Federation throughout Scotland have been communicated with, in order that witnesses may be sent from Aberdeen, Dundee, Inverness, Glasgow and Edinburgh to give evidence before the committee. Mr. W. Graham Yool, president of the Building Trades Exchange of the City and District of Edinburgh, made reference to the proposed regulations at the dinner of the building trades in Edinburgh recently, and said that the framers of the regulations knew absolutely nothing about the conditions which obtained as to the erection of scaffolding and the way building operations were carried out in Scotland. The regulations required to be seriously considered by all interested in the building trade.

### SMOKE ABATEMENT.

AN interdepartmental committee of the London County Council have been considering some subjects relating to physical deterioration. One of the subjects was smoke pollution. The recommendations have been considered by public control committee No. 2 with the following result:—

"The committee strongly advocate that cases of pollution of the air by smoke and noxious vapours in the manufacturing districts should be heard by a stipendiary magistrate. A stricter enforcement of the law and a change in legislation, giving higher penalties, would produce a greater improvement without imposing any serious burden on manufacturers. It should also be considered whether the responsibilities of the ordinary householder in regard to domestic smoke pollution might not be brought home to him."

With regard to this recommendation we may say that proceedings in respect of smoke nuisance in London are

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almost invariably taken before stipendiary magistrates, generally with satisfactory results.

In connection with the suggestion for the stricter enforcement of the law, it has long been realised that a smoke-laden atmosphere diminishes the vitality of those who habitually breathe it, increases their liability to disease and finally shortens their lives, and, in consequence, the Council has done all that is possible to secure in London the strict enforcement of the law as to smoke nuisance.

The Council cannot take direct action in the case of smoke nuisance from trade premises, as the enforcement of the powers contained in sections 23 and 24 of the Public Health (London) Act, 1891, for dealing with such nuisance is entrusted to the borough councils. The Council is, however, vested with the power of acting in default should a borough council fail to carry out its duty, and close observation is kept by the Council's officials in cases of emission of smoke in order that the attention of the borough councils may be at once directed to any serious nuisance coming under notice. Up to October 31, 1906, attention had been directed to 9,381 infringements of the law, with the result that "trade smoke" in London has been reduced to what may be regarded as the possible minimum under the existing law.

The emission of smoke from locomotives on railways and roads is prohibited in special Acts dealing with such traffic, and under these Acts the Council is able to take direct action, although only as a common informer. Since August 1899, when the Council commenced taking action under these Acts for suppressing the then serious smoke nuisance from railway locomotives, proceedings have been taken in no less than 1,095 cases against various railway companies whose locomotives enter London, and penalties including costs amounting to 3,061*l.* 17*s.* 6*d.* have been imposed. In consequence of the action taken, nuisance from this source has been much reduced, and the railway companies now take special precautions to prevent undue emission of smoke from their locomotives, at any rate whilst they are in London.

We have repeatedly advocated the strengthening of the law as to smoke nuisance. Very little advantage can be taken of sections 23 and 24 (a) of the Public Health (London) Act, 1891, which deal with smoke of any colour provided it

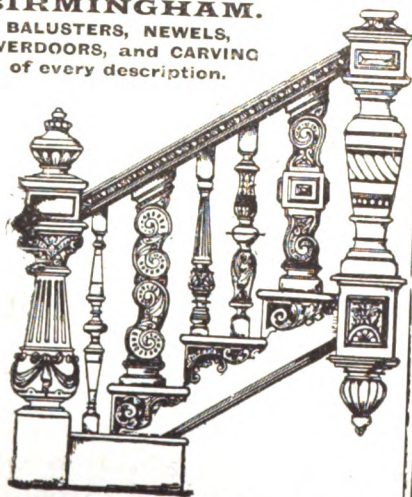
is a nuisance, as the usefulness of these sections is impaired by the insertion of qualifying words. Section 24 (b), which deals with black smoke only, is usually relied on by the borough councils undertaking prosecutions, but the present procedure involves much unnecessary delay, as statutory notices have to be served before legal proceedings can be commenced and an order for abatement of the nuisance or the imposition of a penalty can be obtained, so that in the meantime the nuisance may be continued with impunity. If the word "black" were omitted this section would meet most cases of nuisance, and several of the borough councils have asked the Council to take steps when opportunity arises for extending the usefulness of the section by amending it in this direction. We have accordingly asked the public health committee, when dealing with the amendment of the Public Health Act, to provide for a modification of section 24 (b) so that it will deal not only with black smoke, but with all smoke causing a nuisance, and at the same time provide for direct procedure and cumulative penalties, so as to end the present cumbrous procedure. We have also advocated an amendment of the Railway Acts so as to provide heavier penalties on railway companies for persistent nuisance. If these amendments are secured there should be no difficulty in successfully dealing with smoke nuisance arising in London from trade premises or locomotives.

It is estimated that half of the smoke in London comes from private houses, which are unaffected by the present law. The smoke from each individual chimney may be slight, but when it is remembered that in winter probably one million domestic chimneys in London pour forth smoke daily into the atmosphere, it is evident that the total volume of smoke must be huge.

Dr. W. N. Shaw, of the Meteorological Office, states that he finds from comparison of records that, owing to its smoke, London loses half of its sunshine in winter and one-sixth in summer, and there can be no doubt that domestic grates contribute largely towards this evil. Many people advocate the abolition of the open fire in favour of the closed stove system in use on the Continent, but while undoubtedly the general adoption of such a system of heating would result in a purer external atmosphere, this would be secured at the sacrifice of much of the fresh air

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inside living rooms for which open fires, by providing a good deal of ventilation, are largely responsible. It is therefore unlikely that English people will abandon the open fire. Although, owing to the very nature of its construction, it seems impossible to combine in the open grate the essentials of smokeless combustion unless anthracite coal or coke be exclusively used, careful experiment and inquiry have shown that there are several open fire-grates on the market which secure excellent combustion of coal and largely reduce the amount of smoke. At the request of H.M. Office of Works, the Coal Smoke Abatement Society recently conducted a series of elaborate tests on open grates in the Government buildings now being erected in Parliament Street, in order to ascertain which form of grate effected the most perfect combustion and consequently gave rise to the least smoke. The primary object of this experiment was doubtless the choice of the best form of grate for the new buildings, but it is hoped that the tests will result in stove makers realising the necessity of carefully studying the problem of proper firegrate construction.

Much reduction of smoke nuisance from private houses may be expected through the growing use of gas and electricity for the purpose of heating and cooking, as it has been found that nearly half a million gas-cooking stoves are now in use in London, and their use is steadily increasing. It has been suggested that the amount of smoke could also be considerably reduced by adopting systems of central heating, and we have asked the housing committee to consider this suggestion in connection with the erection of dwellings for the working classes. To greatly diminish domestic smoke, however, it is necessary to educate public opinion on the subject, and a step in this direction is the instruction which is given to children in elementary schools in the principles of combustion, so as to make them grasp the fact that smoke is not inevitable, but often results from the wasteful use of fuel.

We would remind the Council that the subject has on several occasions engaged its attention and that the under-mentioned resolutions thereon have been passed:—

1. "That it be referred to the public control committee to report the steps they are taking to enforce the Public Health (London) Act so far as it relates to the smoke nuisance, and whether they need additional powers for this purpose."

2. "That it be referred to the public control committee to consider and report upon the whole question of the smoke nuisance in London, and the means which may be adopted to remedy the evil."

3. "That the resolution of the conference [with representatives of local authorities on the administration of the Public Health (London) Act, 1891] with respect to smoke nuisance, be referred to the public control committee for consideration and report."

4. "That whereas large manufacturing works situate outside the limit of the county of London, but immediately adjacent to the same, are not subject to the provisions of the Smoke Prevention Act, and dense masses of smoke from the same are daily blown over London, it be referred to the public control committee to consider and report how the Smoke Prevention Act can best be applied and enforced within the area outside, but immediately adjacent to, the county of London."

In connection with these references we have had prepared a report giving a detailed historical survey of the subject, and dealing with the smoke arising from railway locomotives, road locomotives and private houses, and containing valuable suggestions for minimising the nuisance. We have given directions for the report to be circulated to members and to be placed on sale.

#### TESTS OF CONCRETE BUILDING BLOCKS.

So much has been said about the need of more complete information regarding the physical properties of concrete building blocks that it is gratifying to observe, says the *Engineering Record*, the attention paid to this subject for a long time by the engineering department of Iowa State College at Ames. This school is one of the leading American engineering institutions, and is supported largely by appropriations by the legislature of a State which is generally believed to show the highest average education of its citizens of all in the country. It has a rather remarkable record for taking part in the moulding of public opinion on engineering subjects, and for supplying as promptly as practicable technical information of value to the people of

## THE "DRAWWELL" GRATE

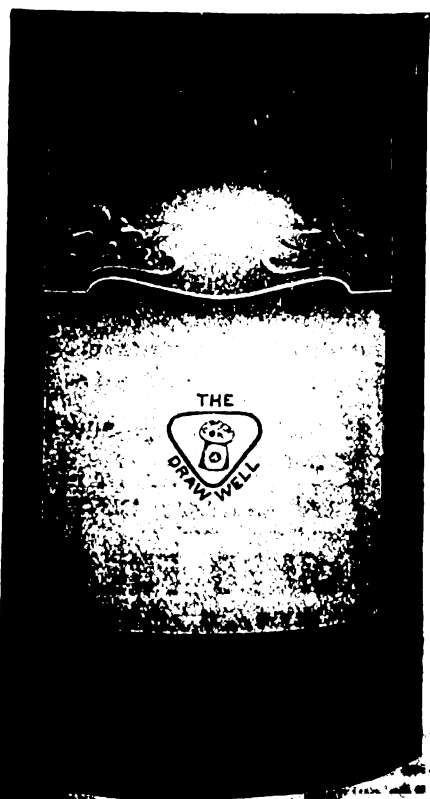
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at the recent test with Firegrates at the New Government Offices in Whitehall, under the direction of a sub-committee of the Coal Smoke Abatement Society, in conjunction with Sir Henry Tanner and a committee of experts, for smoke abatement, heating power, fuel economy, and suitability for public and private buildings.

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where the "Drawwell" can be seen in action.

the State. What its engineering department has done regarding concrete blocks is typical of its methods in other technical directions, and the evidence of interest in current problems which this work shows is probably one reason for the high favour with which the college is regarded in the Iowa legislature.

When the manufacture of concrete blocks was first established on a business basis in the State the engineering department of the college recognised that until the new building material had been subjected to thorough tests it would be regarded with suspicion by architects and engineers. The publicity given to such blocks came almost exclusively from builders of machines rather than the makers and users of the blocks, and their properties were largely unknown. The dry mixtures employed in the moulding of the blocks were not in accord with the general trend of engineering progress, while the conflicting claims made by advocates of different types of machines tended to raise some suspicion that none of them was good for much. On the other hand, there was manifestly an excellent opening for the new material in the State provided it could be shown to be reliable and not too expensive. The cost of it was not a subject of special interest to the college, but the determination of the characteristics of the blocks was a proper field for investigation. Nearly three years ago tests were accordingly begun for the purpose of determining just what these blocks, as made in Iowa, could be relied upon to do, and this investigation has been continued ever since, thus affording the public just the data which are lacking in most parts of the country.

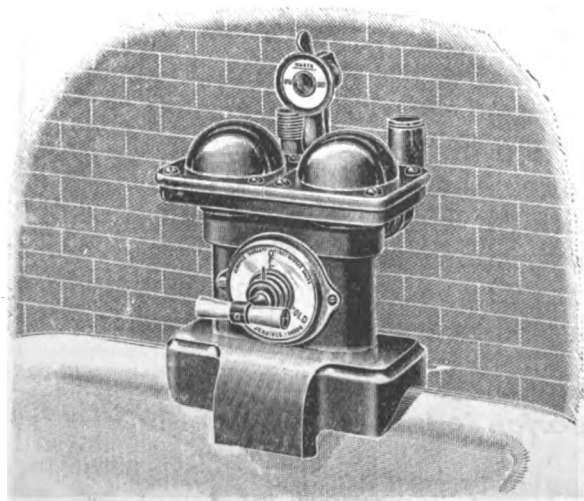
When the first tests were made it was evident that some of the blocks showed opportunity for improvement. There was a skimping of cement in some cases, a poor quality of cement in others, poor aggregate in others, bad curing in others and a pretty general failure to appreciate the importance of producing impermeable blocks. Some blocks crushed under a load of 28.5 tons per square foot, and others were not crushed until a load of 48.8 tons was applied; some of them disintegrated after three alternate periods of freezing and thawing, while others lasted for twelve alternations. In short the early tests showed that the manufacture of such blocks demanded good materials and skilled supervision, and was not a business that could be

safely started by anybody with enough money to buy a machine and a supply of materials. The results of these tests were made public by Messrs. Marston & Reinhart, of the college, and unquestionably this publicity acted as a spur toward better work on the part of the manufacturers in the State. Tests made during the present year show that the minimum crushing strength of seasoned Iowa blocks is now about 45 tons per square foot, which was about the best figure reached two years ago. The most important advance has been made in the direction of impermeability, however, for more than fifty alternations of freezing and thawing have been necessary to produce any marked disintegration of the blocks. Tests are also being made with an apparatus which subjects the face of blocks to a spray of water for periods of several hours in order to determine the length of time it will take a driving rain to produce moisture on the inside of a wall. While these tests are a novelty, and it may be found that their practical value will be somewhat less than now seems likely, the experiments will furnish useful data regarding a property of concrete blocks which is of vital importance to the designer of buildings in which they are used.

Attention is called to this work which Dean Marston has been conducting because it suggests a field of usefulness for the laboratories of other colleges. In most institutions of this character there are testing facilities for determining all the essential properties of the concrete blocks made in their districts. The work is not so difficult that it cannot be conducted by students under the direction of the laboratory instructors, and if it is kept up continuously, as is done at Ames, it will afford information of much value to those people engaged in the block industry who are endeavouring to turn out a good product, as well as to engineers and architects. The difference in climate and materials in various parts of the country makes it desirable to have such tests carried out in all sections where concrete blocks are used, and the National Cement Users' Association affords an admirable opportunity for discussing the reasons for the variations shown by the product of different sections. It is safe to say that an advance in the industry toward uniformly better blocks will surely follow a general adoption in college testing laboratories of the work that has been going on for some time in the Iowa State College.

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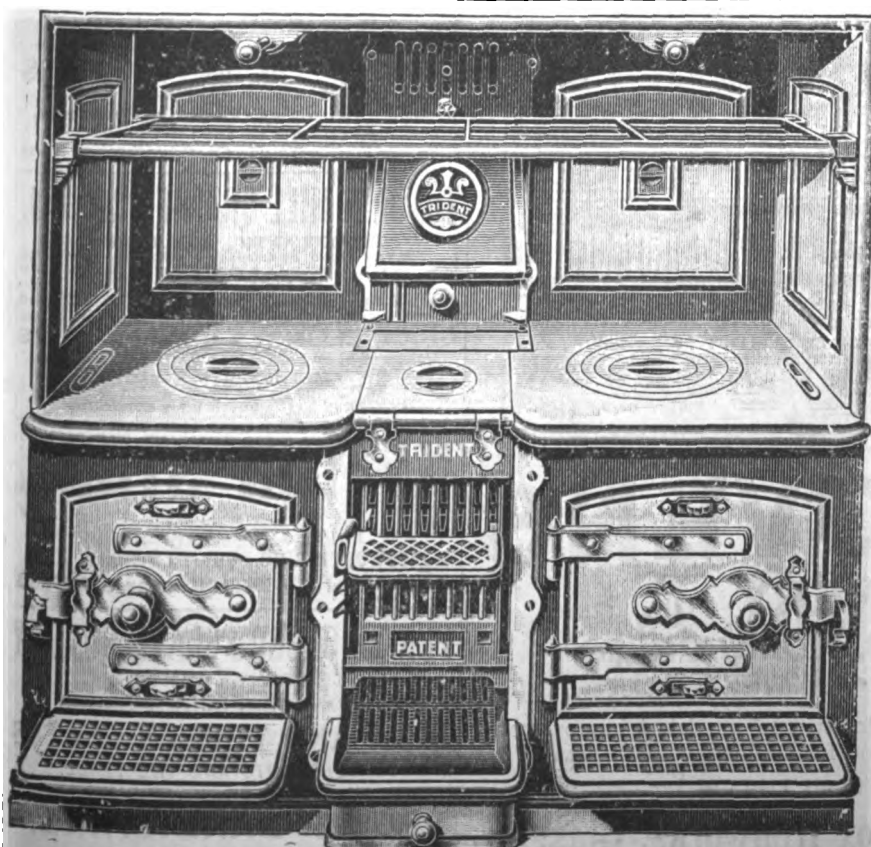
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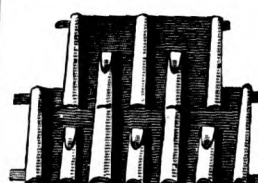


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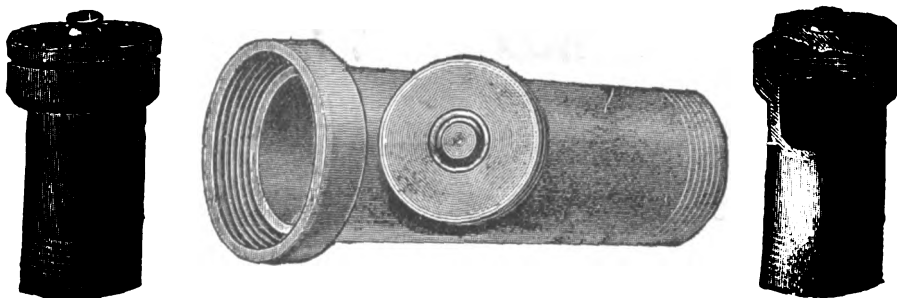
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## The ARCHITECT and CONTRACT REPORTER.

*New Year's Special Issue.*

*77th Volume.*

6 to 11 IMPERIAL BUILDINGS,

LUDGATE CIRCUS, LONDON, E.C. December 1906.

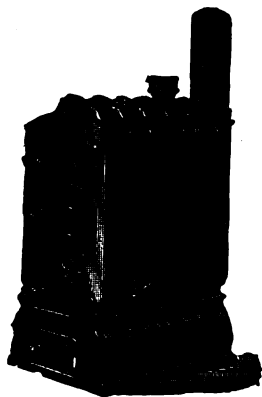
Dear Sir,—On Friday, January 4th next, TWENTY THOUSAND (20,000) COPIES of "THE ARCHITECT AND CONTRACT REPORTER" will be sent to ARCHITECTS, BUILDERS, and CONTRACTORS throughout the United Kingdom, America, and the Colonies, and to the Clerks and Surveyors of Local Boards and Corporations.

"THE ARCHITECT" is, in its Advertisement Columns, the *most reliable* reference for all who are engaged in Building Operations, and is acknowledged to be *the best medium for Advertisers*. The List of Prices will prove that the expense of a Page Advertisement in this issue would amount to less than *one-fourth the cost* of sending 20,000 Circulars by post, and it is well known that Circulars are frequently thrown into the waste basket *unread*. Our *New Year's Double Number* always contains beautiful illustrations and valuable letterpress, and is consequently well studied and kept for reference.

The earliest positions will be allotted to first applicants, so that if you wish to secure space for an Advertisement, we shall be much obliged if you will *communicate with us* without delay. For many years past we have had to leave out Advertisements which have reached us after the limited number of pages have been filled.

We are, Dear Sir, yours faithfully,

GILBERT WOOD & CO., LIMITED.



## THE QUORN BOILER.

A new Sectional Boiler of the independent type now largely in use for Heating to

**RESIDENCES, PUBLIC BUILDINGS, SCHOOLS, CLASSHOUSES, &c.**

Requires no brick-setting. Most economical in fuel.

HEATING POWER 400 FT. TO 3,000 FT. OF 4-INCH PIPE.

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**RADIATORS A SPECIALTY.**

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**LOUGHBOROUGH, LEICESTERSHIRE.**

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WILL COVER ABOUT  
90 SQUARE YARDS

**TRYING**

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ONE OR MORE FRESH LETTERS WILL APPEAR EACH TIME.  
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The Velure has given me very great satisfaction. It is decidedly better than paint or varnish and wears well in strong sunlight without blistering.  
July 4th, 1906. ROWLAND H. HALLS, Civil Engineer, Seving Chambers, High Street, LEWIS.

**Nothing in the Market to Compare.**  
I am quite convinced that there is nothing in the market to compare with Velure. A. HEWETT, Houseboat Carlton, July 1906. Tates' Island.

Hundreds of unsolicited letters like these.  
WRITE FOR PARTICULARS AND PRICES TO  
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13, CLERKENWELL, ROAD, LONDON, E. C.

**STANDS ANY AMOUNT OF EXPOSURE TO FROST OR SUN, HEAT OR DAMP, WITHOUT CRACK OR BLISTER.**

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IN USE AT

ON THE

AND AT

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SANDRINGHAM OSBORNE HOUSE.  
HOUSES OF PARLIAMENT, Kew Gardens  
THE ROYAL YACHTS VICTORIA & ALBERT & OSBORNE, also on SHAMROCK III. ERIN, MARGARITA, JOSEPHINE, etc. etc.  
LONDON, MIDDLESEX, WESTMINSTER, METROPOLITAN ADDENBROOKS and MANY OTHER HOSPITALS, HOTELS, ESTATES, MANSIONS, etc. etc.

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**Price 1d.—56 Long Columns.**

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Oldest and leading County Newspaper, comprising 8 pages (64 long columns). Price 1d. Established May 2, 1720.

Circulates extensively throughout the town and county and in the adjoining counties of Bedford, Buckingham, Huntingdon, Leicester, Lincoln, Oxford, Warwick, Cambridge, &c. Published Fridays at 4.0, 5.20, and 6.45 p.m. Price per news post, 1s. 8d. per quarter prepaid; 2s. booked.

### The Northampton Daily Reporter.

Oldest and Leading Daily in Northampton and District, comprising 4 pages (24 long columns). Price 1d. Established February 9, 1880.

Published daily (at 3.30, 4.0, 5.20, 6.15, and 6.45 p.m.), Fridays excepted. Price per news post, 5s. per quarter prepaid 5s. 6d. booked.

These journals have the largest circulations, and are the recognised Organs of the Boot and Shoe Trade.

### THE LLANGOLLEN ADVERTISER, Denbighshire, Merionethshire, and North Wales Journal.

Published every Friday Morning.

The *Advertiser*, which has been established thirty years, has a very large and influential circulation throughout North Wales. Being conducted entirely on neutral principles, it finds its way into families of all classes. As it is also the only paper printed and published in this district, it offers peculiar advantages to advertisers.

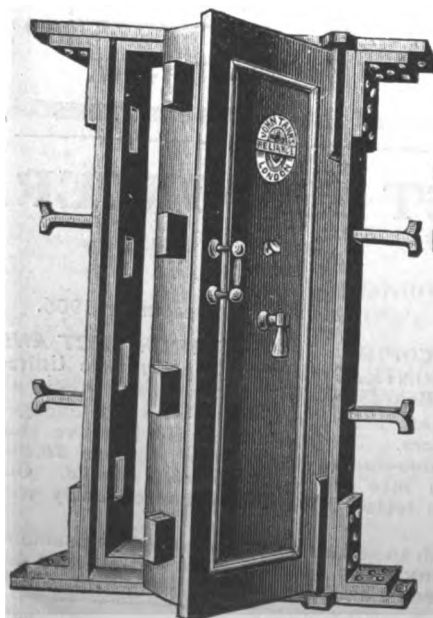
HUGH JONES, Castle Street, Proprietor.

**SOUTH WALES DAILY NEWS.**—Pre-eminent as an advertising medium, affording exceptionally wide and effective publicity throughout Wales and the West of England, particularly amongst the commercial and moneyed classes. No appeal for capital in the above-named district can be successful without recourse being had to the *South Wales Daily News*, which each day has a special article on "South Wales Finance."—Chief Offices: Cardiff. London: 46 Fleet Street, E.C.

**SOUTH WALES ECHO.**—Eight editions daily, 36 columns, 1d. One of the largest and most attractive evening papers in the provinces. Circulation greater than that of all the other evening papers in Wales and Monmouthshire added together.—Chief Offices: Cardiff. London: 46 Fleet Street, E.C.

**CARDIFF TIMES** (Weekly, 1d.)—For thirty years at the head of the weekly press of Wales and the West of England. One of the largest penny weeklies in the world. On being reduced from a 2d. to a 1d. paper it attained a circulation of 81,155 copies. Chief Offices: Cardiff. London: 46 Fleet Street, E.C.

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"ANCHOR RELIANCE"  
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ESTIMATES AND LISTS FREE.

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LONDON.

For Index of Advertisers, see page x.

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To Take Down, in Town or Country.  
The full value given and quick despatch  
guaranteed by

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makes a speciality of  
High - class Electrical  
Fittings in Hammered  
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**HARDWOOD TREADS.**

STOCKED in EIGHT SIZES up to 30ft. (extended height).

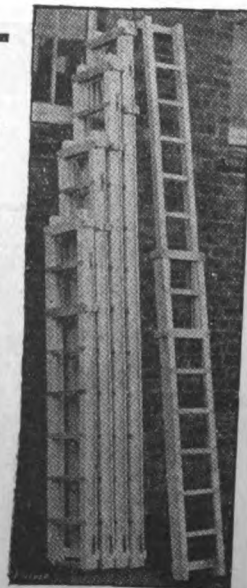
Possess the following advantages over all others.

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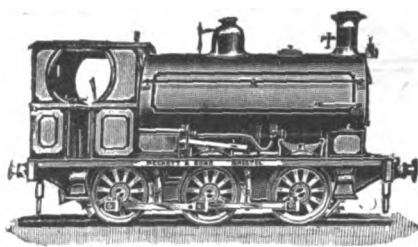
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**ALLAN JONES & CO. (Dept. A), Hatherley Works, GLOUCESTER.**

Telegrams, "LATTISTEP, GLOUCESTER."



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LOCOMOTIVES of all sizes and gauges specially constructed for Main and Branch Lines, Contractors, Docks, Gas Works, Collieries, Iron Works, Brick and Cement Works, &c. Locomotives of various sizes always in Stock, ready for immediate delivery. PHOTOGRAPHS, SPECIFICATIONS, AND PRICES ON APPLICATION.

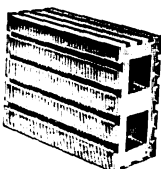
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SUSSEX COUNTY HOSPITAL,  
LONDON HOSPITAL,  
&c., &c., &c.

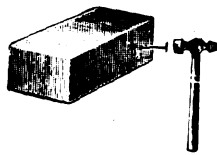
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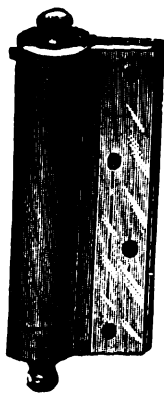
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*Will take and retain Nail or Screw.*

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WARING'S,  
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&c., &c., &c.

Being made of Burned Terra-Cotta Clay these goods do not disintegrate with heat as do plaster, cement and other calcareous materials.

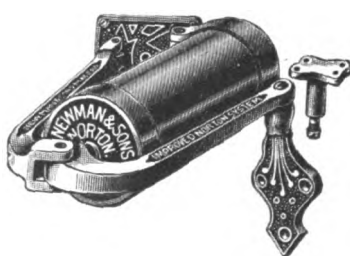
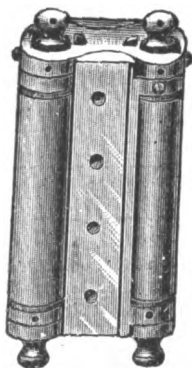
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**NEWMAN'S PATENT REGULATING HELICAL SPRING HINGES,**  
With Patent Stop to Prevent Overwinding.

The power can be instantly taken off while the Hinges are being fixed and afterwards adjusted to close the Door conveniently. They cannot be overwound.

Made in Brass and Iron, 3, 3½, 4, 4½, 5, 6 and 7 inches



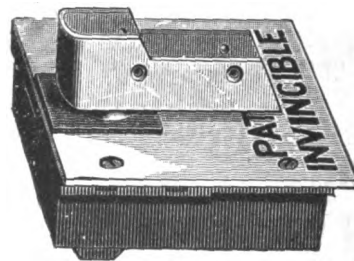
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MADE IN MALLEABLE IRON.

The Best Door Spring and Check for closing Doors without noise.

Pressure is direct, but diminishes pleasantly as Door is opened.

Also made with Patent Regulator to latch stubborn bolts.



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With and Without Pneumatic Check.

Will hold Door rigidly to centre, but diminishes in power as Door is opened, allowing comfortable passage through.

The Best Spring to close Door against wind pressure, and the most suitable for Banks, Schools, and other public buildings. Made in sizes to suit all Doors.

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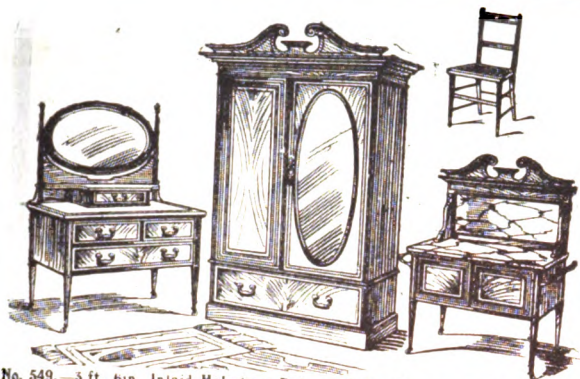
Or from Publisher,  
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Owing to the demand for the Cathedral Series, all numbers previous to Dec. 31, 1905, are now charged at 6d. each.

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Publishers, "The Architect,"  
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NOTE.—The joints of our Sashes are perfectly rigid and absolutely immovable.  
The Corners of our Casements are SOLID (not Brazed).

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Great Variety of Designs. Prompt Delivery. See our new improved Openers and Fittings.

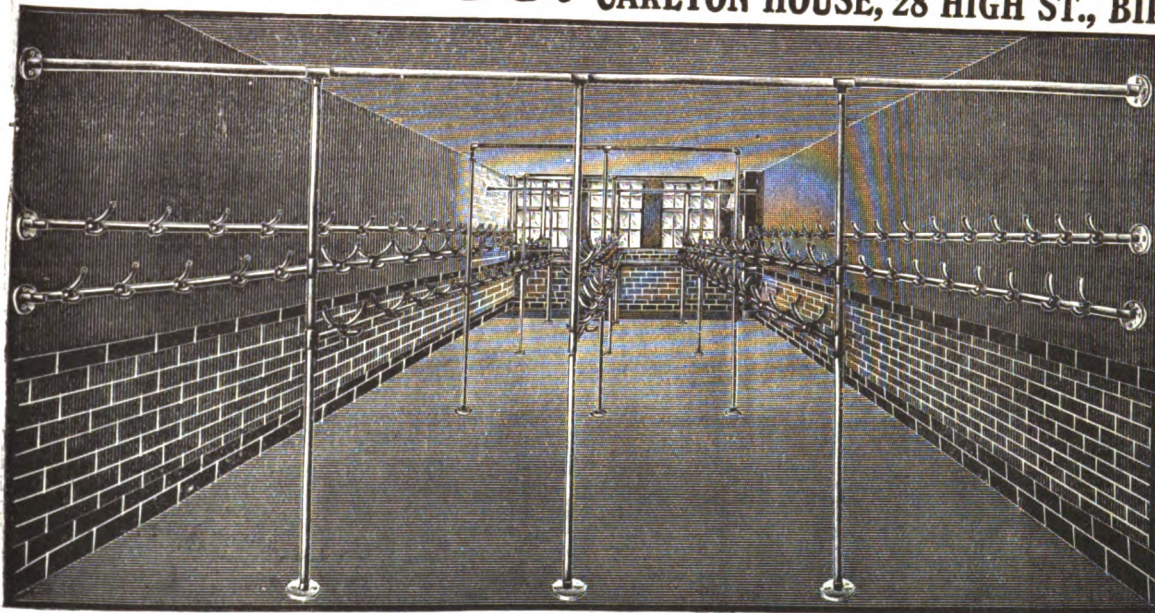
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Outward Opening Casement  
Also Works at London, Deptford,  
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PATENT NO. 7895.

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Telegrams, "DISTEND, LONDON."

THE  
**Architect and Contract Reporter.**

FRIDAY, DECEMBER 28, 1906.

*Published weekly, subscription 19s. per annum for Great Britain, and for Colonial and Foreign subscriptions £1 6s. 6d. All business communications to the Managing Director,*

**P. A. GILBERT WOOD,**

*Publishing Offices, 6-11 Imperial Buildings, Ludgate Circus London, England.*

*\*\* Entered in the United States of America as second-class matter. Agents for America, The International News Co., 5 Bream's Buildings, Chancery Lane, London, England, and New York.*

*As Westminster has become one of the most important centres of the professions of Architecture and Civil Engineering, arrangements have been made by Messrs. GILBERT WOOD & CO., Ltd., to establish Branch Offices in that district at 43 OLD QUEEN STREET, S.W., Messrs. W. HAY FIELDING & CO. becoming the representatives for all business purposes.*

*The Birmingham Offices are at 102 COLMORE ROW. E. D. AINSWORTH, Manager.*

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*Telephone No. 4725 Holborn.*

**NOTICE TO ADVERTISERS.**

*Under no circumstances whatever can the Proprietors of this Journal guarantee alteration of copy if received after the first post on Tuesday mornings, and no proofs can be submitted if copy arrives later than first post on Saturday mornings.*

**EDITORIAL NOTICES.**

*In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.*

*Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.*

*The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which may be interested.*

*No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.*

*The authors of signed articles and papers read in public must necessarily be held responsible for their contents.*

**TENDERS, ETC.**

*\*\* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

**COMPETITIONS OPEN.**

**GOOLE.**—Dec. 31.—The Goole Joint Body of Governors invite competitive designs for erection of a dual secondary school, accommodating 200 students, with provision for the conduct of technical and evening classes. Premiums of 50*l.* and 25*l.* Deposit 2*l.* 2*s.* Mr. James Wm. Johnson, clerk to the Governors, Council Offices, Goole.

**GUISELEY.**—Jan. 5.—For a dual Secondary school for the Guiseley district, near Leeds, to accommodate 200 scholars. Names and addresses to M. Rennard, secretary, Guiseley Secondary school, Guiseley, near Leeds.

**IRELAND.**—Dec. 31.—The Local Government Board for Ireland invite from architects the submission of designs for labourers' cottages in rural districts. Premiums of 50*l.*, 30*l.* and 20*l.* for the three best designs. A copy of the conditions of the competition may be obtained from the Secretary of the Local Government Board, Dublin.

**IRELAND.**—Feb. 6.—The Galway Board of Guardians invite plans and estimates of a proposed fever hospital. The premium of 25*l.* will be merged in the architect's fees if the winner carries out the work. Particulars from Mr. R. F. Mullery, clerk to the Union, Galway.

**NEWCASTLE-ON-TYNE.**—Jan. 15.—For the North of England Model Cottage Exhibition. Site planning for this exhibition, which is 16½ acres in extent, twelve houses to the acre. Further particulars from Mr. R. Aldridge, c/o Burt Hall, Newcastle-on-Tyne.

**SHEFFIELD.**—Jan. 10.—For the Yorkshire and Midlands Model Cottage Exhibition to be held in Firth Park, Sheffield. Site planning for the exhibition to be held, with twelve houses to the acre. Further particulars of the organising secretary, Mr. R. Aldridge, 45 Bank Street, Sheffield.

**SUNDERLAND.**—Feb. 1.—The committee of the Sunderland infirmary invite designs for a children's hospital. Premiums of 100*l.*, 50*l.* and 25*l.* are offered. Deposit 1*l.* 1*s.* Mr. Thomas Robinson, secretary, Infirmary Offices, Bank Buildings, Sunderland.

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**CONTRACTS OPEN.**

**BOOTLE.**—Jan. 18.—For supplying and fixing thirty-one sliding and folding partitions in the schoolrooms at the various Council schools in the borough, for the education committee. The Borough Surveyor, Town Hall, Bootle, Lancs.

**BRADFORD.**—Dec. 31.—For carpenters and joiners' work in repairs and reinstatement after fire at Dumb Mill, Frizinghall, for the Corporation. City Architect, Whitaker Buildings, Brewery Street, Bradford.

**BURNLEY.**—Jan. 1.—For new Sunday school. Names to Mr. W. A. Quarmby, architect, Imperial Chambers, Grimshawe Street, Burnley.

**CARLISLE.**—Jan. 5.—For the erection of a wall and iron railing at the Warwicksland school. Mr. Roden, School House, Penton.

**DERBY.**—Dec. 31.—For erection of electric-power station, Silk Mill Lane, for the Corporation. Deposit 1*l.* 1*s.* Mr. John Ward, borough surveyor, Babington Lane, Derby.

**DUTTON.**—Jan. 5.—For the erection of a nurses' home at Dutton workhouse and the alteration of certain existing buildings, for the Runcorn Union, Cheshire. Deposit 3*l.* 3*s.* Messrs. W. & S. Owen, architects, Warrington.

**EDINBURGH.**—Dec. 31.—For executing the following works in connection with the extension of Tower Bank school, Portobello, for the School Board:—(1) Mason and brickworks; (2) carpenter and joinerworks; (3) smith-work; (4) slaterwork; (5) plaster and cementworks; (6) plumberwork; (7) painterwork. Mr. Carfrae, architect, 3 Queen Street.

**ELTHAM.**—Jan. 22.—For the erection of a refreshment house at Avery Hill, for the London County Council. Mr. G. L. Gomme, clerk, Spring Gardens, S.W.

**ENFIELD.**—Jan. 15.—For erection of a junior mixed school at Bush Hill Park. Deposit 1*l.* 1*s.* Send names by Dec. 29 to Mr. G. E. T. Laurence, architect, 22 Buckingham Street, Adelphi, W.C.

**ERITH.**—For extension of the electricity supply station, Erith, Kent, for the Urban District Council. Deposit 2*l.* 2*s.* Mr. Charles H. Fry, clerk, Bexley Road, Erith.

**GATESHEAD.**—Jan. 12.—For the erection of additional classrooms, laboratory, &c., at the Secondary schools, Durham Road. Deposit 1*l.* 1*s.* Mr. N. Percy Pattison, borough engineer, Town Hall, Gateshead.

**HAMBLEDON.**—Jan. 2.—For the following works, for the Guardians of Hambledon Union, near Guildford:—(a) Carrying-out certain small additions to the young women's dormitory, and (b) erection of a range of earth-closets and the extension of the lavatory accommodation in the men's quarters at the workhouse. Mr. Edward L. Lunn, architect, 36 High Street, Guildford.

**IRELAND.**—Dec. 31.—For the erection of seven artisans' and two semi-detached residences, Londonderry. Mr. J. M'Carry, C.E., architect and surveyor, Carlisle Chambers, Waterside, Londonderry.

**IRELAND.**—Jan. 7.—For the erection of a manse in Milford, co. Donegal. Mr. John M. Robinson, architect, 7 East Wall, Londonderry.

**LANDPORT.**—Jan. 9.—For the erection of a store at the factory of Doudney & Co., Ltd. Messrs. Cook & Tutte, architects, 394 Commercial Road.

**LEEK.**—Jan. 7.—For the building of coal breaker, waggon tipper and weighbridge pits, gas-engine house, tunnel under Newcastle Road and other appurtenant works at the Council's gasworks, near Leek station. Deposit 2*l.* 2*s.* Mr. W. E. Beacham, surveyor, Town Hall, Leek.

**LONDON.**—Jan. 22.—For the execution of certain works to bridges at Highbury station and Holloway Road, in connection with the reconstruction of further portions of the London County Council tramways. Full particulars, Chief Engineer, County Hall, Spring Gardens, S.W.

**LONDON.**—Dec. 29.—For the construction of an underground convenience at Brockwell Park, S.E., for the Lambeth Borough Council. Deposit 1*l.* 1*s.* Mr. Henry Edwards, borough engineer, 346 Kennington Road, S.E.

**LONDON.**—Dec. 31.—For the erection of a branch library at Hither Green, S.E., for the Lewisham libraries committee. Deposit 2*l.* 2*s.* Mr. H. Hopton, architect, 37 Ringstead Road, Catford, S.E.

**LONDON.**—Jan. 3.—For alterations and additions to the Council's slipper-baths and the covering-in of the open

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swimming-bath, for the Edmonton Urban District Council. Send names by Dec. 17 to Mr. Wm. Francis Payne, clerk, Town Hall, Edmonton.

LONDON.—Jan. 4.—For the enlargement of the sorting office at Catford, S.E. Deposit 1*l.* 1*s.* Mr. J. Wager, H.M. Office of Works, S.W.

LONDON.—Jan. 17.—For certain alterations and additions at the infirmary, Lower Road, Rotherhithe, S.E. Deposit 5*0*l.** Names and addresses before December 8 to Mr. E. Pitts Fenton, clerk, 283 Tooley Street, S.E.

MARGATE.—Jan. 9.—For the erection of laundrymaids' quarters at East Cliff House, Cliftonville, for the Metropolitan Asylums Board. Mr. W. T. Hatch, M.I.C.E., M.I.M.E., engineer-in-chief, office of the Board, Embankment, London, E.C.

NARBOROUGH.—Dec. 29.—For the erection and completion of farm buildings at the new asylum, together with farm bailiff's house and other works at Narborough, near Leicester. Deposit 2*l.* 2*s.* Messrs. Everard, Son & Pick, architects, 6 Millstone Lane, Leicester.

NESTON.—Jan. 2.—For the erection of a small library. Deposit 1*l.* 1*s.* Messrs. Green, Knowles & Russel, architects, 19 South John Street, Liverpool.

NEW MALDEN.—Jan. 8.—For the erection of buildings at Norbiton Common farm, New Malden, Surrey, for the Guardians of Kingston Union. Mr. William H. Hope, architect and surveyor, Hampton Wick.

NOTTINGHAM.—Jan. 1.—For the erection of a mixed school and additions to the infant school, Sneinton Boulevard. Deposit 2*l.* 2*s.* Mr. Frank B. Lewis, city architect, Guildhall.

PORT GATE.—Dec. 29.—For the reseating and all necessary work to the Bible Christian chapel, Port Gate, Devon. Mr. A. Jordan, Down Park, Lewdown.

ROMFORD.—Jan. 14.—For the erection of four sanitary annexes at the workhouse, for the Guardians of Romford Union. Deposit 3*l.* Application by December 29 to Mr. James Kennedy, architect, 25 Bedford Row, London, W.C.

SCOTLAND.—Dec. 31.—For the carpenter, slater, plaster, plumber, painter and glazier's work required in restoring

dwelling-house, Buckie. Messrs. D. & J. R. M'Millan, 105 Crown Street, Aberdeen.

SCOTLAND.—Jan. 10.—For the erection of a police station at Dunning. Mr. David Smart, architect, Perth.

SCOTLAND.—Jan. 10.—For (1) Digger, brick and mason-work in one contract; (2) carpenter and joiner works; (3) slater and plumber works in connection with keeper's house, &c.; (4) plaster, cement and rough-cast works; and (5) drainage, levelling and road-making at Stewarton cemetery, for the Parish Council office. Deposit 1*l.* Messrs. J. & J. Armour, architects, Irvine.

SEACOMBE.—Dec. 29.—For the erection of ferry workshops at Seacombe ferry, Cheshire, for the Wallasey Urban District Council. Deposit 1*l.* Mr. W. H. Travers, engineer and surveyor, Public Offices, Egremont, Cheshire.

SOUTHAMPTON.—Jan. 8.—For the erection of stabling accommodation at Clock House, Shirley. Deposit 3*l.* 3*s.* Borough Engineer's Office, Municipal Offices, Southampton.

SOUTH MOOR.—Jan. 8.—For the erection of Council school at South Moor, Greenland, Durham, for about 950 scholars. Messrs. Clark & Moscrop, architects, Feethams, Darlington.

SUTTON VENY.—Jan. 3.—For building additions to and repairing Fosters, Sutton Veny, Warminster. Deposit 1*0*s.** 6*d.* Messrs. Long & Glass, architects, 53 Market Place, Warminster.

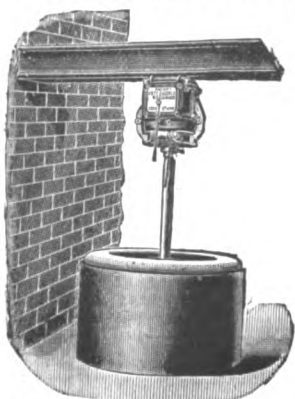
SWALLOWFIELD.—Jan. 11.—For building a school for 250 scholars at Swallowfield, Berks. Deposit 3*l.* 3*s.* Names by January 2 to the Secretary to the Education Committee, The Forbury, Reading.

THIRSK.—Dec. 31.—For the erection of cattle mart, Thirsk, Yorks. Mr. W. Hargreaves Bourne, architect, Darlington.

TOTTEN.—Jan. 14.—For (1) Erection of a school at Totton, Hants; (2) installation of low-pressure hot-water apparatus therein. Deposit 2*l.* 2*s.* for each specification. Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

WALES.—Dec. 29.—For carrying-out alterations and additions, building boundary walls, &c., and laying-out and asphaltting new playgrounds, with drains, &c., at the Clwydyfagwyr school, for the Merthyr Tydfil education

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authority. Deposit 1*l.* 1*s.* Mr. J. Llewellyn Smith, architect, Town Hall, Merthyr Tydfil.

WALES.—Dec. 31.—For the erection of a dwelling-house at Porthcawl. Messrs. Geo. F. Lambert & Son, Bridgend, or at Gadlys, South Road, Porthcawl.

WALES.—Jan. 1.—For the erection of county offices at Ruthin, Denbighshire. Deposit 1*l.* 1*s.* Mr. W. D. Wiles, county architect and surveyor, 42A High Street, Wrexham.

WALES.—Jan. 10.—For building a vestry adjoining Methodist chapel, Trimsaran. Mr. D. Williams, 31 New Houses, Trimsaran.

WALES.—Jan. 12.—The committee of the George Edwards Memorial hall, Cefn, Ruabon, offer a prize of 10*l.* for the best design (including plans and elevations) of the hall. Full particulars may be obtained from Mr. W. Ryland Jones, secretary, High Street, Cefn, Ruabon.

WALES.—Jan. 16.—For the erection of cloak-room, shelter, &c., at the Castle Street Council school, Aber-gavenny, Monmouthshire. Mr. C. Dauncey, solicitor, secretary to the Monmouthshire education committee, County Council Offices, Newport.

WALLASEY.—Dec. 29.—For the erection of new ferry workshops at Seacombe Ferry. Deposit 1*l.* Mr. W. H. Travers, engineer and surveyor, Public Offices, Egremont, Cheshire.

WALLSEND.—Jan. 18.—For the erection of police buildings, Wallsend, Northumberland. Mr. J. A. Bean, county architect, the Moot Hall, Newcastle-on-Tyne.

WHITBY.—Jan. 3.—For the raising of the choir floor, &c., at St. John's Church. Messrs. Woodwark & White, 53 Baxtergate, Whitby.

WOLVERHAMPTON.—Dec. 31.—The Board of Management of the Wolverhampton and Staffordshire general hospital, Wolverhampton, invite competitive designs for a nurses' home adjoining the hospital. Mr. J. Stephen Neil, house governor and secretary.

THE Columbian Fireproofing Company, Ltd., have obtained the contract for the fireproof floors in the Mitchell Library, Glasgow.

## TENDERS.

## BIRMINGHAM.

For alterations to the Castle and Falcon, Digbeth. Mr. W. H. WARD, architect, Birmingham.

|                               |        |   |   |
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| Sapcote & Sons . . . . .      | £1,388 | 0 | 0 |
| Webb . . . . .                | 1,325  | 0 | 0 |
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| Gibbs . . . . .               | 1,285  | 0 | 0 |
| ROBINSON (accepted) . . . . . | 1,212  | 0 | 0 |

## CARDIFF.

For the erection of National schools, St. Mary's parish, to accommodate 448 children. Messrs. VEALL & SANT, architects.

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| Griffiths & Son . . . . .                   | 7,050  | 0  | 0 |
| Shepton & Sons . . . . .                    | 7,032  | 0  | 0 |
| Page & Co. . . . .                          | 6,789  | 0  | 0 |
| Gibson . . . . .                            | 6,795  | 0  | 0 |
| Hallett . . . . .                           | 6,770  | 0  | 0 |
| Melhuish Bros . . . . .                     | 6,582  | 0  | 0 |
| Allan & Sons . . . . .                      | 6,565  | 0  | 0 |
| Thomas & Co. . . . .                        | 6,545  | 10 | 9 |
| Davies & Sons . . . . .                     | 6,486  | 0  | 0 |
| Bevan . . . . .                             | 6,399  | 0  | 0 |
| Haines & Sons . . . . .                     | 6,387  | 0  | 0 |
| Turner & Sons . . . . .                     | 6,364  | 0  | 0 |
| Evans & Bros. . . . .                       | 6,340  | 0  | 0 |
| Dunn . . . . .                              | 6,188  | 5  | 1 |
| Knox & Wells . . . . .                      | 6,145  | 0  | 0 |
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| Turner                  | 846    | 1  | 0 |
| Potter                  | 828    | 19 | 4 |
| Etheridge               | 812    | 14 | 4 |
| Iles                    | 802    | 2  | 8 |
| May                     | 787    | 0  | 0 |
| AEDY, Sutton (accepted) | 777    | 16 | 4 |
| Surveyor's estimate     | 966    | 10 | 4 |

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|----------------------|--------|----|---|
| Fisher Bros.         | £2,800 | 11 | 9 |
| Bastow               | 2,562  | 0  | 0 |
| McC. Fitt            | 2,538  | 6  | 6 |
| Holden               | 2,442  | 0  | 0 |
| Harris               | 2,439  | 0  | 0 |
| Chick & Carden       | 2,438  | 0  | 0 |
| Roberts              | 2,398  | 0  | 0 |
| Newberry             | 2,390  | 0  | 0 |
| Pilgrim              | 2,385  | 0  | 0 |
| Lewis Bros.          | 2,370  | 0  | 0 |
| Baxter Bros.         | 2,365  | 0  | 0 |
| Norman               | 2,350  | 0  | 0 |
| Colbourne            | 2,329  | 0  | 0 |
| Gibson               | 2,326  | 0  | 0 |
| Faulks               | 2,323  | 0  | 0 |
| Harris               | 2,299  | 0  | 0 |
| Robinson             | 2,292  | 15 | 0 |
| Godwin               | 2,279  | 0  | 0 |
| Bell & Son           | 2,200  | 0  | 0 |
| Architect's estimate | 2,257  | 0  | 0 |

**CREWE.**

For the erection of offices and stores at the municipal electric light works. Mr. G. EATON-SHORE, borough surveyor.

|                                                       |      |    |   |
|-------------------------------------------------------|------|----|---|
| Williams & Son                                        | £896 | 3  | 1 |
| Atkinson                                              | 878  | 15 | 2 |
| Smith & Sons                                          | 815  | 0  | 0 |
| Morrey                                                | 792  | 5  | 0 |
| Micklewright & Sons                                   | 785  | 10 | 0 |
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| Neal             | £980 | 0 | 0 |
| Bell & Son       | 975  | 0 | 0 |
| King             | 950  | 0 | 0 |
| Ward             | 850  | 0 | 0 |
| Light            | 792  | 0 | 0 |
| Dugan            | 776  | 0 | 0 |
| Grounds & Newton | 773  | 0 | 0 |
| Osenton          | 757  | 0 | 0 |
| Wood             | 752  | 0 | 0 |
| DASH (accepted)  | 657  | 0 | 0 |

**GLASGOW.**

For the erection of the Mitchell library in North Street. Mr. W. B. WHITE, architect, 219 St. Vincent Street, Glasgow.

|                                         |         |    |   |
|-----------------------------------------|---------|----|---|
| <i>Accepted tenders.</i>                |         |    |   |
| P. & W. Anderson, masonwork             | £25,874 | 19 | 4 |
| Cochrane, jun., wrightwork              | 8,232   | 11 | 6 |
| Mundy, metalwork                        | 4,870   | 9  | 1 |
| D. & J. Mackenzie, plasterwork          | 2,830   | 0  | 4 |
| Columbian Co., Ltd., fireproof flooring | 2,250   | 0  | 0 |
| Ingleton & Co., plumberwork             | 1,901   | 7  | 0 |
| Pennycook Glazing Co., roof glazing     | 904     | 5  | 5 |
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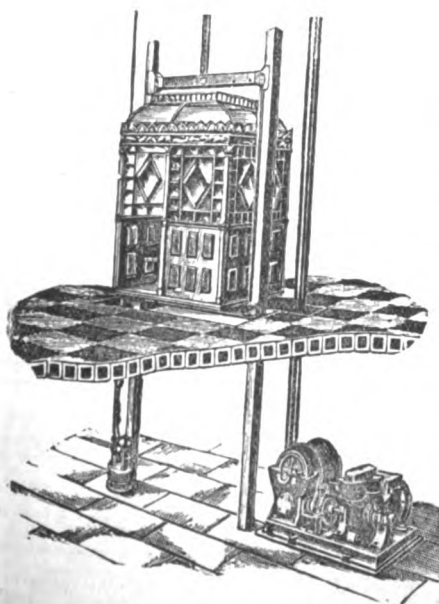
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| Watkins . . . . .                         | 1,640  | 0 | 0 |
| Lovell & Son . . . . .                    | 1,468  | 0 | 0 |
| Brown . . . . .                           | 1,423  | 0 | 0 |
| Dix . . . . .                             | 1,392  | 0 | 0 |
| Jarvis, Brentwood (recommended) . . . . . | 1,365  | 0 | 0 |

**HERNE BAY.**

For the construction of about 3½ miles of brick and concrete pipe sewers complete, the construction of a pumping station, cottage, &c., and the provision of pumping machinery. Mr. BALDWIN LATHAM, M.I.C.E., Westminster. Mr. F. W. J. PALMER, surveyor.

|                                                |         |   |   |
|------------------------------------------------|---------|---|---|
| Pearson & Son . . . . .                        | £12,400 | 0 | 0 |
| Crawford . . . . .                             | 11,879  | 0 | 0 |
| Neale, Ltd. . . . .                            | 11,218  | 0 | 0 |
| Goodwin . . . . .                              | 11,159  | 0 | 0 |
| Lock, Andrews & Price . . . . .                | 11,134  | 0 | 0 |
| Hill . . . . .                                 | 11,039  | 0 | 0 |
| Underwood & Co. . . . .                        | 10,946  | 0 | 0 |
| Browning . . . . .                             | 10,896  | 0 | 0 |
| Trim . . . . .                                 | 10,415  | 0 | 0 |
| Cope & Co. . . . .                             | 10,321  | 0 | 0 |
| Johnson & Langley . . . . .                    | 10,239  | 0 | 0 |
| Miskin, Ltd. . . . .                           | 9,997   | 0 | 0 |
| E. & E. Iles . . . . .                         | 9,987   | 0 | 0 |
| J. & T. Binns . . . . .                        | 9,628   | 0 | 0 |
| A. G. Osenton . . . . .                        | 9,595   | 0 | 0 |
| Ryley . . . . .                                | 9,406   | 0 | 0 |
| F. Osenton . . . . .                           | 9,366   | 0 | 0 |
| Moran & Son . . . . .                          | 9,349   | 0 | 0 |
| Bentley & Sons . . . . .                       | 9,182   | 0 | 0 |
| Dean, Ltd. . . . .                             | 9,012   | 0 | 0 |
| Ingleton Bros. . . . .                         | 8,942   | 0 | 0 |
| Smith & Co. . . . .                            | 8,776   | 0 | 0 |
| Saunders . . . . .                             | 8,638   | 0 | 0 |
| Macdonald . . . . .                            | 8,618   | 0 | 0 |
| Bell . . . . .                                 | 8,554   | 0 | 0 |
| Blackwell & Co. . . . .                        | 8,245   | 0 | 0 |
| HARDY, BATE & Co., Slough (accepted) . . . . . | 7,955   | 0 | 0 |

**HUDDERSFIELD.**

For additions to cleaning works at Seed Hill. Messrs. STOCKS & SYKES, architects.

*Accepted tenders.*

|                                    |      |    |   |
|------------------------------------|------|----|---|
| Law, Stead & Sons, mason . . . . . | £577 | 10 | 0 |
| Tarbutt, joiner . . . . .          | 361  | 0  | 0 |
| Marsden, plumber . . . . .         | 169  | 10 | 0 |
| Brook & Co., ironfounder . . . . . | 160  | 4  | 0 |
| Jowitt, slater . . . . .           | 63   | 0  | 0 |
| Beevers & Son, painter . . . . .   | 33   | 0  | 0 |
| Jowitt, plasterer . . . . .        | 20   | 0  | 0 |

**ILFORD.**

For the erection of Baptist church and schools, High Street. Messrs. GEORGE BAINES & SON, architects, 5 Clement's Inn, Strand, London, W.C.

Estimate "A."

|                                                       |        |    |    |
|-------------------------------------------------------|--------|----|----|
| Parkins & Co. . . . .                                 | £5,787 | 0  | 0  |
| Walter . . . . .                                      | 5,496  | 0  | 0  |
| Garbett . . . . .                                     | 4,995  | 0  | 0  |
| North . . . . .                                       | 4,993  | 0  | 0  |
| Smith & Son . . . . .                                 | 4,944  | 0  | 0  |
| Hammond & Miles . . . . .                             | 4,850  | 9  | 10 |
| Gregar & Son . . . . .                                | 4,820  | 0  | 0  |
| W. Lawrence & Son . . . . .                           | 4,781  | 0  | 0  |
| Carter . . . . .                                      | 4,692  | 0  | 0  |
| Parker . . . . .                                      | 4,687  | 0  | 0  |
| Battley, Sons & Holness . . . . .                     | 4,687  | 0  | 0  |
| Symes . . . . .                                       | 4,660  | 11 | 0  |
| Coxhead . . . . .                                     | 4,655  | 0  | 0  |
| Maddison . . . . .                                    | 4,521  | 0  | 0  |
| Willmott . . . . .                                    | 4,498  | 0  | 0  |
| Mattock & Parsons . . . . .                           | 4,485  | 0  | 0  |
| Kerridge & Shaw, Sturton Street, Cambridge* . . . . . | 4,444  | 0  | 0  |
| Castle & Son . . . . .                                | 4,421  | 0  | 0  |
| Hammond & Son . . . . .                               | 4,404  | 0  | 0  |

\* This estimate accepted, together with estimates "A," "B," "D," "A-1" (a), "A-4," "A-6," "A-7" (b), "A-8" (b), "A-8" (d), "A-8" (c), giving a total of £4,491 2s., which was the lowest tender submitted.

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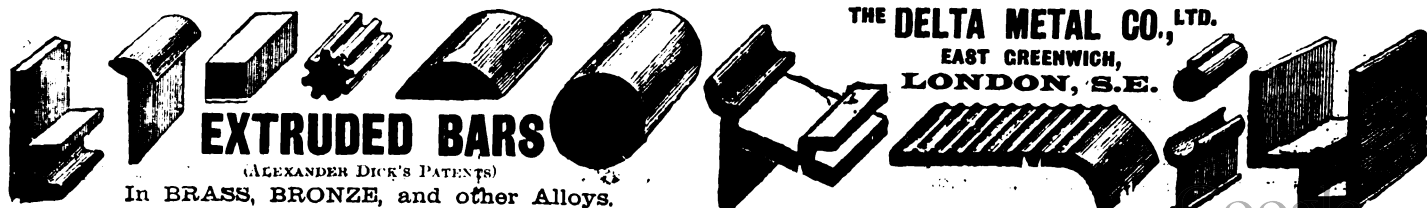
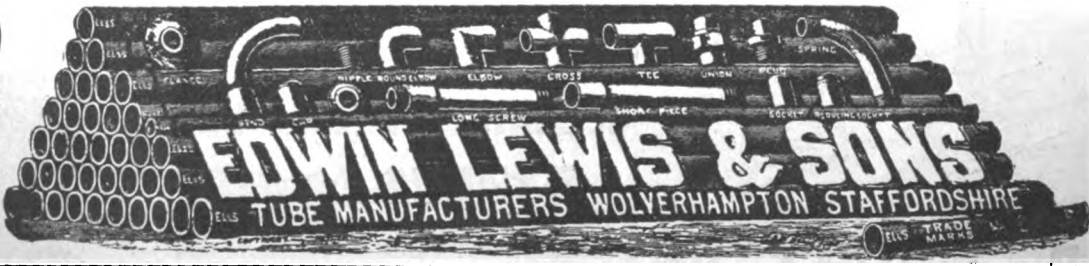
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AND  
FITTINGS**





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|                                                                                                                 |        |      |
|-----------------------------------------------------------------------------------------------------------------|--------|------|
| For construction of about 1 mile of 12-inch sanitary pipe sewers. Mr. AMBROSE W. CROSS, engineer, King's Heath. |        |      |
| Sutherland & Thorpe                                                                                             | £6,663 | 10 2 |
| Hobrough & Co.                                                                                                  | 5,293  | 16 4 |
| Holloway                                                                                                        | 5,250  | 0 0  |
| Currall, Lewis & Martin                                                                                         | 4,869  | 0 0  |
| Lock, Andrews & Price                                                                                           | 4,408  | 0 0  |
| Trentham                                                                                                        | 4,000  | 0 0  |
| Riley                                                                                                           | 3,918  | 13 4 |
| Macdonald                                                                                                       | 3,893  | 0 0  |
| Cunliffe                                                                                                        | 3,890  | 0 0  |
| Osenton                                                                                                         | 3,408  | 0 0  |
| NEAL, LTD., Plymouth (accepted)                                                                                 | 3,317  | 9 10 |

LONDON.

|                                                                                              |        |      |
|----------------------------------------------------------------------------------------------|--------|------|
| For the erection of a mortuary, coroner's court, &c., Deptford. Mr. H. T. BONNER, architect. |        |      |
| Stuart & Sons                                                                                | £5,640 | 15 1 |
| Thompson Bros.                                                                               | 5,483  | 0 0  |
| Scott                                                                                        | 5,137  | 5 7  |
| Ware                                                                                         | 5,127  | 0 0  |
| Gorham                                                                                       | 5,080  | 10 2 |
| Blay                                                                                         | 4,997  | 3 0  |
| McLaughlin & Harvey                                                                          | 4,979  | 0 0  |
| Roberts & Co.                                                                                | 4,880  | 0 0  |
| Roberts                                                                                      | 4,863  | 0 0  |
| Mattock & Parsons                                                                            | 4,838  | 0 0  |
| J. & C. Bowyer                                                                               | 4,828  | 0 0  |
| Mills                                                                                        | 4,796  | 0 0  |
| Leng                                                                                         | 4,756  | 1 0  |
| Hollingsworth                                                                                | 4,687  | 0 0  |
| F. & G. Foster                                                                               | 4,663  | 0 0  |
| Kent                                                                                         | 4,639  | 0 0  |
| Sharpton                                                                                     | 4,635  | 0 0  |
| Loasby & Salmon                                                                              | 4,634  | 19 0 |
| Nightingale                                                                                  | 4,610  | 0 0  |
| Holloway                                                                                     | 4,594  | 0 0  |
| Roberts                                                                                      | 4,556  | 4 7  |
| Martin, Wells & Co.                                                                          | 4,548  | 0 0  |
| Groves                                                                                       | 4,535  | 0 0  |
| Courtney & Fairbairn                                                                         | 4,357  | 7 0  |

LONDON—continued.

|                                                                                                                                                                              |         |      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|
| Hyde & Co.                                                                                                                                                                   | 4,349   | 0 0  |
| Dennison                                                                                                                                                                     | 4,265   | 0 0  |
| BALDWIN, Croydon (accepted)                                                                                                                                                  | 4,144   | 9 18 |
| For widening of Edgware Road (Contract No. 9A). Mr. H. T. WAKELAM, county engineer.                                                                                          |         |      |
| Pedrette & Co.                                                                                                                                                               | £9,992  | 4 6  |
| Muirhead & Co.                                                                                                                                                               | 9,097   | 19 0 |
| T. W. Pedrette                                                                                                                                                               | 8,070   | 0 0  |
| Griffiths & Co.                                                                                                                                                              | 7,570   | 1 4  |
| E. & E. Iles                                                                                                                                                                 | 7,565   | 8 3  |
| Neave & Son                                                                                                                                                                  | 7,492   | 0 0  |
| Champniss                                                                                                                                                                    | 7,316   | 0 0  |
| Mann                                                                                                                                                                         | 7,300   | 0 0  |
| Moran & Son                                                                                                                                                                  | 7,200   | 0 0  |
| Bell                                                                                                                                                                         | 7,066   | 0 0  |
| Fry Bros.                                                                                                                                                                    | 7,027   | 10 0 |
| Rutter                                                                                                                                                                       | 6,915   | 0 0  |
| Free & Sons                                                                                                                                                                  | 6,815   | 0 0  |
| Zadig & Co.                                                                                                                                                                  | 6,759   | 0 0  |
| Adams                                                                                                                                                                        | 6,586   | 3 4  |
| Wimpey & Co.                                                                                                                                                                 | 6,538   | 0 0  |
| Brummell                                                                                                                                                                     | 6,412   | 14 5 |
| Bower Bros.                                                                                                                                                                  | 6,150   | 16 0 |
| FORD, Willesden (accepted)                                                                                                                                                   | 5,886   | 0 0  |
| Engineer's estimate                                                                                                                                                          | 6,495   | 0 0  |
| For erecting headquarters, riding school, stables, shops and club premises for the 2nd County of London Imperial Yeomanry, Horseferry Road. Mr. D. B. HEDDERWICK, architect. |         |      |
| Colls & Sons and Trollope & Sons                                                                                                                                             | £14,300 | 0 0  |
| Hibberd Bros.                                                                                                                                                                | 13,657  | 8 3  |
| Shepherd & Co.                                                                                                                                                               | 12,888  | 0 0  |
| Higgs & Hill                                                                                                                                                                 | 12,838  | 0 0  |
| Lorden & Son                                                                                                                                                                 | 12,674  | 0 0  |
| Sabey & Sons                                                                                                                                                                 | 12,616  | 0 0  |
| Patman & Fotheringham                                                                                                                                                        | 12,583  | 0 0  |
| Wallis                                                                                                                                                                       | 12,436  | 0 0  |
| Sheffield Bros.                                                                                                                                                              | 12,288  | 0 0  |
| F. & H. F. Higgs                                                                                                                                                             | 12,247  | 0 0  |
| LONGDEN & SONS (accepted)                                                                                                                                                    | 12,098  | 0 0  |

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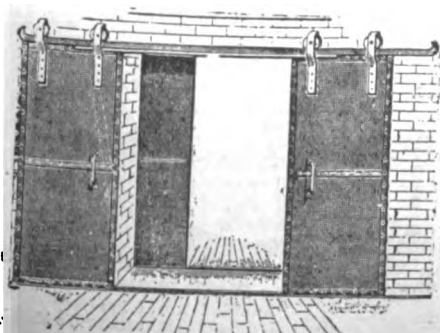
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For Index of Advertisers, see page X.

**LOWER WHITWOOD.**

For erecting two dwelling-houses and shop and stables, Castleford Road. Mr. A. HARTLEY, architect, Castleford.

WRIGHT & SONS, Castleford (*accepted*) . . . £660 0 0

**MIDDLETON.**

For the construction of brick conduits, chambers, wood divisions and other works, at the sewage works at Rhodes. Mr. W. WELBURN, borough surveyor.

Partington & Son . . . . . £390 0 0

Totty . . . . . 383 0 0

Etheridge & Clark . . . . . 334 0 0

**MILL HILL.**

For the erection of a sorting office at Mill Hill.

Lawrance & Sons . . . . . £2,009 0 0

Lissner . . . . . 1,916 0 0

Tout . . . . . 1,815 0 0

Martin, Wells & Co. . . . . 1,799 0 0

Patman & Fotheringham . . . . . 1,793 0 0

Speechley & Smith . . . . . 1,775 0 0

F & A. Willmott . . . . . 1,761 0 0

Wallis . . . . . 1,756 0 0

Banyard & Son . . . . . 1,750 0 0

Galbraith Bros. . . . . 1,735 0 0

Brown & Son . . . . . 1,732 5 0

Ansell . . . . . 1,717 0 0

Barker & Co. . . . . 1,693 0 0

Fairhead & Son . . . . . 1,687 0 0

Gough & Co. . . . . 1,684 0 0

Perry Bros. . . . . 1,667 0 0

Nightingale . . . . . 1,594 0 0

F. & G. Foster . . . . . 1,590 0 0

WIGGS (*accepted*) . . . . . 1,588 0 0

Hyde & Co. . . . . 1,567 0 0

**MONMOUTH.**

For the erection of house and stables on the Red House estate. Mr. E. G. DAVIES, architect.

HALL, Monmouth (*accepted*) . . . . . £695 0 0

**PORTSMOUTH.**

For the Hilsea drainage works.

Smith & Co. . . . . £19,411 0 0

Quick . . . . . 19,200 0 0

Priver . . . . . 15,574 0 0

Croad . . . . . 15,215 0 0

Crockerell . . . . . 15,045 0 0

Clark & Sons . . . . . 14,988 0 0

Binns . . . . . 14,704 0 0

Neal & Co. . . . . 14,681 0 0

Bell & Sons . . . . . 13,866 0 0

Osenton . . . . . 13,728 0 0

LEARMOUTH, Portsmouth (*accepted*) . . . 13,290 0 0

**SCOTLAND.**

For the construction of a fish mart at Lerwick.

LYALL, jun., Aberdeen (*accepted*) . . . £3,104 10 0

**SLEAFORD.**

For the erection of Sleaford Council school, for the Kesteven County Council.

Kirk, Knight & Co. . . . . £8,395 0 0

Corah . . . . . 8,089 0 0

Fish & Son . . . . . 7,912 0 0

Hockley & Co. . . . . 7,895 0 0

H. S. & W. Close . . . . . 7,868 0 0

Maxey & Son . . . . . 7,850 0 0

Sherwin & Son . . . . . 7,797 0 0

Wright & Son . . . . . 7,770 0 0

Evans . . . . . 7,680 0 0

Faulks . . . . . 7,548 0 0

Parker & Son . . . . . 7,538 0 0

Banks & Son . . . . . 7,533 0 0

WRIGHT & SON, Lincoln (*accepted*) . . . 7,442 0 0

**WALES.**

For the erection of a chapel adjoining Pontrhythallt station. Mr. E. F. WHITE, architect and surveyor, Carnarvon.

Jones & Son, Llanwnda . . . . . £1,440 0 0

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| Stanton Ironworks . . . . .                         | £463 | 8  | 6  |
| Holwell Iron Co. . . . .                            | 454  | 5  | 5  |
| Sheepbridge Coal and Iron Co. . . . .               | 439  | 5  | 0  |
| Cochrane & Co. (Cochrane Grove branch) . . . . .    | 415  | 2  | 0  |
| Cochrane & Co. (Dudley branch) . . . . .            | 395  | 13 | 11 |
| Clay Cross Co. . . . .                              | 395  | 11 | 10 |
| BLAKEBOROUGH & SONS, Brighouse (accepted) . . . . . | 390  | 12 | 6  |

(Received too late for classification.)

**CHORLEY WOOD.**

For additions to Beaumont House, Chorley Wood, for Mr. W. Giffard. Mr. A. H. RYAN-TENISON, F.R.I.B.A., architect, 12 Little College Street, Westminster.

|                                            |        |    |   |
|--------------------------------------------|--------|----|---|
| Hill Bros. . . . .                         | £1,112 | 12 | 0 |
| Bates . . . . .                            | 1,112  | 0  | 0 |
| Barker & Co. . . . .                       | 1,093  | 0  | 0 |
| Limpus & Son . . . . .                     | 1,090  | 0  | 0 |
| Parker . . . . .                           | 1,089  | 0  | 0 |
| Hobbs . . . . .                            | 1,075  | 0  | 0 |
| Darvell (conditionally accepted) . . . . . | 1,006  | 0  | 0 |

**DOVERCOURT.**

For the erection of two blocks of semi-detached residences, The Avenue, Dovercourt. Mr. H. STEWARD WATLING, architect, Kingsway House, Dovercourt, Ipswich, Felixstowe, and Lowestoft.

ROSE & WOOLNOUGH, Ipswich (accepted) . £1,330 0 0

For making, levelling and sewerage a new road forming a continuation of Lee Road, Dovercourt. Mr. H. STEWARD WATLING, architect.

SAUNDERS, Dovercourt (accepted) . £260 0 0

For fittings, counters and showcases to shop, High Street, Dovercourt, for Messrs. Tewson & Smith.

SAUNDERS, Dovercourt (accepted) . £97 15 0

**FELIXSTOWE.**

For the erection of a detached residence, Penfold Road, Felixstowe. Mr. H. STEWARD WATLING, architect, 24 Victoria Parade, Felixstowe, Ipswich, Dovercourt, and Lowestoft.

H. LINZELL, Felixstowe (accepted), as per schedule.

**IPSWICH.**

For the erection of a detached house and motor-house, for Mrs. Carlyon-Hughes, Rushmer Road, Ipswich. Mr. H. STEWARD WATLING, architect, 4 Tavern Street, Ipswich, Dovercourt, Felixstowe, and Lowestoft.

H. LINZELL, Ipswich (accepted) . £905 0 0

**TRADE NOTES.**

MESSRS. SMITH & Co. announce that on account of the continued advances in the price of material used in the manufacture of their new "triple expansion drain plugs" they are compelled to raise the prices of them. The same course is followed for their gradient rules and levels. By this arrangement the high quality of their manufactures will be upheld.

At the annual general meeting of Redpath, Brown & Co., Ltd., it was announced that the year's profit was 29,418/. The chairman said that if the business increased as it had increased during the past year the directors might find the capital account small enough. The surplus profits for the preference shares would be sufficient to pay an extra dividend at the rate of 1 per cent. per annum, in addition to 5 per cent. already paid, and the surplus profits for the ordinary shares would be sufficient to make up the dividend on these shares to the rate of 10 per cent. for the year.

THE picture post-card deserves to be mentioned with respect, for it has helped to make ancient and modern buildings familiar to all. In the *Picture Post-Card and Collectors' Chronicle*, edited by Mr. E. W. Richardson, a periodical is available which can be read with interest by others as well as collectors. By careful printing on good paper the numerous illustrations do justice to the originals, and the articles suggest how vast are the relations which the post-card can subserve.

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**ELECTRIC NOTES.**

It is reported that a provisional arrangement has been entered into between a committee of the York Corporation and the York Tramways Company for the purchase of the company's undertaking at the expiration of their lease next year.

Mr. A. WRIGHT, consulting electrical engineer to the Marylebone Borough Council, who, pursuant to agreement, is paid a commission of 4 per cent. on all capital expenditure connected with the local municipal electric undertaking, has already received 19,875*l.* 5*s.* 5*d.*, and a further payment to him "on account" of 1,600*l.* is recommended by the finance committee.

The electricity committee of the Manchester Corporation had before them last week several tenders for a 5,000-kilowatt turbo alternator to be erected at the Stuart Street station from makers in this country, the Continent, and the United States. After considering reports by the chief engineer and the deputy chairman of the electricity committee, who have visited power stations in this country and on the Continent, it was resolved to accept the tender of Messrs. Willans & Robinson, Ltd., of Rugby. The whole of the plant will be manufactured in England. The original estimate of 20,000*l.* will not be exceeded.

**VARIETIES.**

THE *City Press* states that, whereas the successful tender of Sir William Arrol & Co., Ltd., for the widening of Blackfriars Bridge amounted to 203,006*l.*, that of Sir John Aird & Co., Ltd., was for 203,119*l.* Tenders were received from eight firms out of the fourteen that were invited.

THE Tottenham District Council has accepted an offer by a manufacturing firm in London for the purchase of 12½ acres of land in the district which was acquired some years ago for the purpose of erecting workmen's dwellings. The Council has abandoned its housing scheme.

A SCHEME has been propounded to cut a road 1½ mile long through the Sussex Downs to provide work for the unemployed and to relieve the traffic between Brighton, id-

Sussex and London of the steep and dangerous decline at Clayton Hill. Representatives of the numerous Sussex councils, meeting at Hassocks, approved of the scheme, which will entail a cost of from 12,000*l.* to 15,000*l.*

THE Scarborough Harbour Commissioners have adopted a scheme for increased accommodation which includes the widening of the west pier, but to postpone for the present the building of the spur, and, instead, to deepen the inner harbour and, if found practicable, to substitute a jetty inside that harbour. They estimate the probable cost of the amended scheme at about 15,000*l.*

MESSRS. JOHN AIRD & Co. have received the contract from Messrs. Smith's Dock Company, of North and South Shields, for the construction of large graving docks and a shipbuilding yard on a site of 160 acres of the Tees foreshore at Cargo Fleet, near Middlesbrough. Two graving docks will be established on the Tees, one 550 feet long by 66 feet entrance by 25 feet depth at high water, ordinary spring tides, and the other dock 450 feet by 60 feet entrance and 25 feet depth.

THE baths committee of the Manchester Corporation have decided to proceed with the making of plans for new baths at Bradford, Harpurhey and Withington. In their annual report the committee state that there are now twelve sets of baths at work in the city. The accommodation comprises 25 swimming-baths, 508 wash-baths, four Roman baths, three Turkish baths, one Russian bath and in the two washhousesthere are 40 washing stalls. The total capital outlay by the Corporation on baths and washhouses at March 31, 1906, was 214,424*l.* 8*s.* 9*d.*

At a meeting of the housing committee of the Liverpool Corporation a letter to Mr. F. T. Turton, the deputy city surveyor, was read from the Chief Engineer of Public Works in Brussels, in connection with a visit in November to Liverpool and other cities by a deputation from Brussels for the purpose of studying the methods of housing the working classes. Mons. Emmanuel Putzeys wrote as follows:—"I have safely received the set of plans of Liverpool's workmen's dwellings, which you have been good enough to send me, and I must thank you for your extreme kindness. Thanks to these plans, it will be possible for the Brussels Corporation to commence without

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further scheming the blocks of dwellings which it proposes to erect, as we intend to profit by your great experience. It is impossible for us to estimate sufficiently the measure of the service you have rendered us, and I cannot say how pleased I am to have met with so obliging a colleague."

THE Preston borough treasurer has issued his annual return comparing the rates of various towns. According to it, West Ham is the highest rated town in England with 10s. 4d. and Oxford the lowest with 4s. 6d. The rates in Preston total 8s. 11d., of which 1s. 10d. is for the Ribble undertaking and 6½d. for education. The rates are reduced by 7d. owing to a profit of 11,036l. per annum from the markets and estates owned and from other sources. Blackpool's rates are 5s. 6d., an annual profit of 22,300l. being made on electric light, trams and markets, which is equivalent to 1s. in the pound. Big profits are made on trams in some cities, Leeds making 48,000l., Liverpool 25,320l. and Manchester 56,000l. Gas is also a productive source of municipal income, Leicester making 30,000l. profit and Manchester 68,898l. Carlisle made a reduction in the rates of 1s. 10d. through profits on gas, water, estates and other sources. The free library and museum rates throughout the country range from ½d. to 3d.

For the convenience of hunting ladies and gentlemen the Great Central Railway Company have issued a very attractive folder showing the various meets through which their line passes on the route between London and Nottingham. Within this area, it may be mentioned, the Great Central Company's system serves the Old Berkeley East, Old Berkeley West, Lord Rothschild's Stagbonds, Whaddon Chase, Bicester, Grafton, Pytchley, Atherstone, Mr. Fernie's and Quorn Hunts. The folder contains an excellent coloured

sketch map, suitably illustrated, showing the boundaries of these hunts, places of the principal meets and distances from the nearest Great Central station, in addition to an excellent service of express trains, composed of first and third-class vestibuled corridor carriages, with breakfast, luncheon, dining and restaurant cars heated throughout. Hunting tickets have also been arranged from London, full particulars of which are shown on the folder. The information is given in a concise form for easy reference, and the folder being of a convenient size should prove very useful to ladies and gentlemen hunting in these districts. Copies can be obtained free on application at Marylebone Station, and at the Great Central Company's town offices, agencies or Publicity Department, 216 Marylebone Road, N.W.

## WROUGHT-STEEL SHOP FRONTS.

WHEN Owen Jones sent to the Royal Academy a design for a shop front in iron, neither his eminence as an artist nor the novelty of the subject was sufficient to secure its admission. The Academy began with setting up Old Masters for imitation, and up to the present time it has a terror of innovations. But the interests of a nation of shopkeepers cannot be sacrificed to a doubtful proposition in aesthetics. In paintings and in old-fashioned towns shops with small panes of glass in the windows may appear to be picturesque. But in modern streets it is essential that the areas of windows should be as extensive as possible. What is demanded is uninterrupted space. For that purpose metal serves better than timber or columns of costly marble. Architecture was made for man, not man for architecture, and the bold attempt of Owen Jones would now be considered as antiquated. There can be no better illustration of the extent to which the principle of unobstructed area prevails than the special sectional bars which are made at Mannstädt. We see channels, angles and tees which are rolled of a size adapted to the construction of shop fronts, as well as a variety of sections of a more elaborate kind which are employed as supplementary to the ordinary bars, and serve decorative and connecting as well as constructive ends. Messrs. H. & F. Bonten, Ltd., supply either the sectional bars which are made of a special

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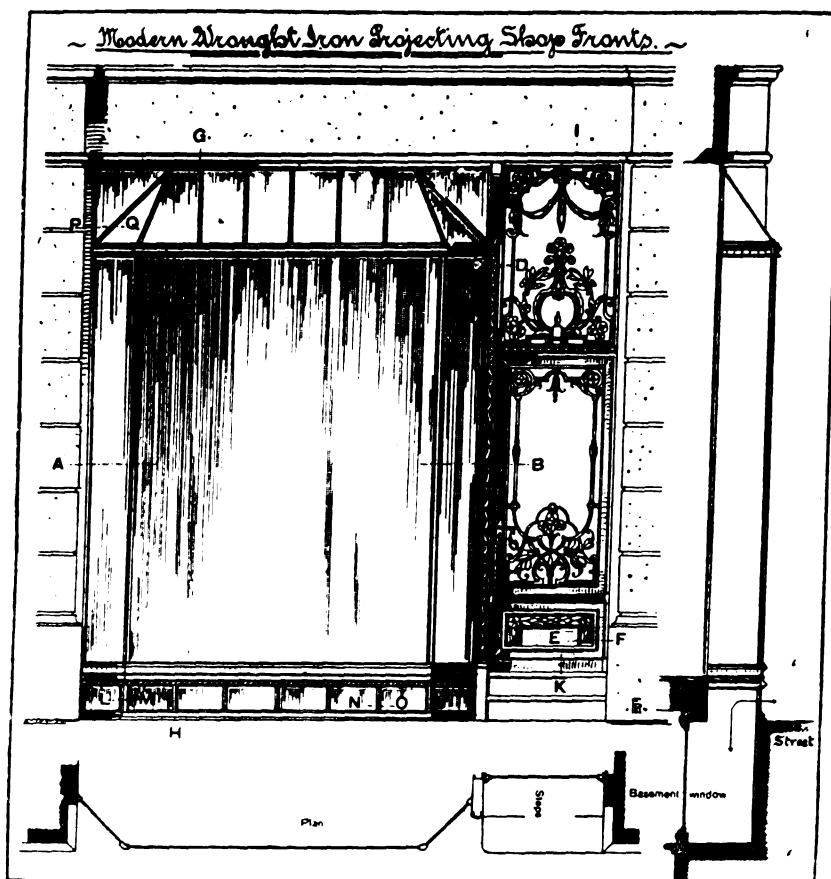
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soft steel in lengths, or ready cut, bent, mitred and worked with ventilated holes to suit the requirements of customers, and including the necessary connecting pieces. In order to show the applicability of the bars, a full-sized model of a

shop front has been set up on the premises of the company in Elder Street, E., and it will repay a visit. In addition, full details of the construction on a large scale are to be obtained, and the plates are examples of clear and definite



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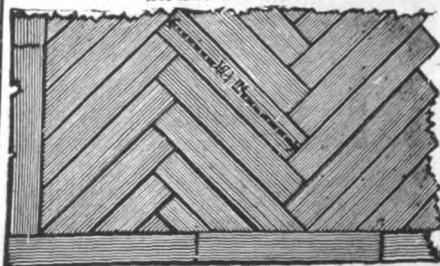
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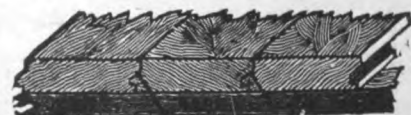
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working drawings. The elevations show that while the interior construction is simple and scientific, the exterior can be ornamented in a very pleasing manner with the aid of brass, tiles, carving, &c. A significant example of what is practicable is shown by the design of Herr Franz Behring, architect, Berlin, in which, by the aid of the Mannstädt bars, four floors have been constructed in a style which is original. The bars are numbered, and can be obtained from stock without loss of time. All the modern requirements of shopkeepers in provision for rolling blinds and shutters and other matters are cared for, and architects, part of whose practice consists of commercial buildings, will do well to become acquainted with the sections of Messrs. Bonten, for which they claim with reason the qualities of lightness, strength, indestructibility and elegant appearance.

### THE NEW CENTRAL CRIMINAL COURT.

On Friday, the 21st inst., some members of the Civil and Mechanical Engineers' Society and their friends visited the New Central Criminal Court, Old Bailey, for the purpose of inspecting the heating, ventilating and lighting installations, and the building generally (by kind permission of Mr. James Bell, town clerk). The party was conducted round the building by the clerk of works (Mr. Scales), who pointed out the various features of interest and courteously afforded all the requisite information appertaining to the building and its decoration. The beautiful marblework, as well as the woodwork in Austrian oak, met with much commendation, and after the tour of inspection to the various courts and offices, which were found to be complete in every respect, a descent was made, under the guidance of the engineer-in-chief, to the boiler-house and the regions underground, where the mysteries appertaining to the heating and ventilation were fully elucidated. The "Plenum" system of ventilation has been adopted throughout, and the arrangements for heating are all that could be desired, while the lighting installation of the Linolite Co., amounting to some 800 lights, which give a soft and beautiful effect, is equally to be commended.

Before leaving the building a hearty vote of thanks was accorded to the clerk of works for his services in connection

with the visit, and in reply he said that it had afforded him much pleasure to conduct around the building so interested and appreciative an assembly.

### PLANNING OF SCHOOLS.

The education committee of the London County Council have prepared the following report:—

We have considered the question of the general principles to be adopted in planning public elementary schools, regard being had to securing (i.) that the most economical and effective use is made of the accommodation provided in the schools, and (ii.) that the buildings shall be planned to the greatest possible advantage from an educational standpoint.

In the course of our deliberations we have been impressed with the fact that it is wasteful to provide at a cost of about 20*l.* per head on an average a large number of places in classrooms which, from an educational point of view, ought not to be, and, as a matter of fact, are not being fully used. We have been furnished with exhaustive reports upon the organisation of schools of various types and sizes.

In dealing with plans of new schools and enlargements of existing schools, it is necessary to bear in mind the actual number of additional places required in order to show that there is a place for every child likely to be in attendance at any one time, and also to secure that the number of places provided in each school can be distributed among the several classes consistently with a definite number of children passing annually through them during the range of age of compulsory attendance.

There are two obvious considerations which affect the maximum and minimum dimensions of classrooms, namely—

(i.) The maximum number of pupils with whom a teacher can satisfactorily deal. This number varies with different teachers.

(ii.) The consideration that the rooms are designed for class teaching, as distinguished from individual coaching, and if the class is too small the stimulus and consequent enthusiasm which is derived from numbers will be absent.

The minimum dimensions of a class determined by this second consideration are unfortunately considerably below those which a due regard to economy must enforce in con-

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nection with the design of public elementary schools. The consideration may itself, therefore, be left out of account, motives of economy pointing to the necessity for designing the majority of the classrooms for the maximum of accommodation consistent with the capacity of the average teacher.

In this connection the inspector of the Board of Education, when reporting upon a secondary school, has stated that "so long as classes exceed 25 or 30 in number, so long will the methods in use continue to be those which are associated with the handling of large and unwieldy classes in public elementary schools, in which the individual is lost in a crowd."

We consider that the time has arrived when the Council should definitely fix 40 as the limit of accommodation for a classroom in the senior departments of schools to be erected by the Council in future, this being the maximum number of children who, in our opinion ought to be taught at one time by any teacher of average capacity. This is the number to which both the late authority and the Council have endeavoured to work for some years past, and each recent school has been built to contain two or more 40 rooms in a department.

In a two or three-storey school the corresponding classrooms in the infants' department will provide accommodation, as a rule, for forty-eight children, but in a school in which the departments are built in separate blocks there will be no such necessary relation between the accommodation of the classrooms in the infants' departments and those in the senior school.

In considering the matter from an architectural point of view we have received valuable assistance from the architect (education), who has given us the result of his long experience—extending over a period of thirty-four years—in designing public elementary schools in the county under the late authority, and has also furnished us with a report showing the changes which have taken place from time to time in the method of planning school accommodation. He has also submitted to us sketch plans and estimates for the types and sizes of buildings which are most likely to be required in future. These plans will be laid upon the table for the inspection of members.

Scheme "C" represents a school to provide accommo-

dation for 840 children, viz. 270 boys, 270 girls and 300 infants. In each of the senior departments there are five classrooms, each to accommodate 40 children and two classrooms each to accommodate 35.

Scheme "D" shows a school affording accommodation for 968 children, viz. 310 boys, 310 girls and 348 infants, and each of the senior departments consists of six rooms each to accommodate 40, and two rooms each to accommodate 35.

Scheme "E" represents a school to accommodate 1,224 children, viz. 390 boys, 390 girls and 444 infants, and contains in each of the senior departments eight rooms each to accommodate 40, and two rooms each to accommodate 35.

The rooms in the infants' department of each of the above-mentioned types of schools will, in the event of brick division walls being provided, afford accommodation as follows:—In the rooms corresponding to the rooms for 40 in the senior departments, 48 children each, and in the remaining rooms, which will be available for babies, 30 children each.

As regards schools of the three-storey type, the size of the rooms in the infants' department on the ground floor is determined by that of the rooms on the floor above, and the accommodation works out at about 9 square feet a place by reason of the fact that smaller desks are used, and consequently an additional row can be placed. In our opinion, however, this method of calculating the accommodation of such classrooms is unsound in principle. The only true basis of the accommodation of a classroom appears to us to be the number of children who can properly be seated, sufficient allowance being made for teachers' desk, blackboards, &c., and if 10 feet super. is a proper allowance in the senior departments of public elementary schools, we do not think that less space should be provided in the infants' departments. Indeed, but for the heavy additional expenditure which would be involved, we would have recommended the Council to adopt the same basis of calculation in all departments.

We have referred more particularly to three-storey buildings, as this is the type of school which has been erected in the majority of instances in the past, but it should be pointed out that as the need for new schools in the future is likely to be greater in the suburbs than in the more densely

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populated parts of the county, it will probably be found possible to secure larger sites, thus more frequently enabling separate buildings of one or two storeys to be erected. The majority of schools built during the last four or five years, however, consist of one or two storeys, and the Board of Education have expressed their preference for this type of school to the type consisting of three storeys.

In connection with the general question we have been considering the possibility of providing partitions instead of permanent structural brick division walls between the classrooms, in case it should be thought desirable at any future time either to alter the shape or reduce the size of the classrooms, such an arrangement could be carried out without incurring much expense, and we have approved a plan showing how it would be possible to obtain such elasticity in working.

The subjoined statement shows the estimated cost of erecting on suitable sites three-storey schools with accommodation as follows—

(i.) School for 840 places, estimated cost, main building only, 8,824*l.*; estimated cost a place, main building only, 10*l.* 10*s.* 1*d.*

(ii.) School for 968 places, estimated cost, main building only, 13,120*l.*; estimated cost a place, main building only, 13*l.* 11*s.*

(iii.) School for 1,224 places, estimated cost, main building only, 15,128*l.*; estimated cost a place, main building only, 12*l.* 7*s.* 2*d.*

The difference in cost between (i.), (ii.) and (iii.) is caused by the provision of two staircases in (i.) and four in (ii.) and (iii.), necessitated by the requirements of the Board of Education.

We think it right to point out that the proposed rearrangement of structure will, in the case of most of the new schools, involve an addition to the staff of the school, consequent upon the lesser numbers of children which will be taught in one room. We cannot give any exact estimate, as the number must depend upon the plan finally adopted in each school. Any additional expenditure in respect of staff thus incurred will be nevertheless more than compensated for by the better teaching which will be given to the children, by reason of a lesser number being taught in the separate class. We recommend—

That as a general rule in public elementary schools to be erected in future no classroom in the senior departments be planned to accommodate more than 40 scholars, and no classroom in the infants' department for more than 48, except in particular cases in which, in the opinion of the education committee, there are circumstances which render any modification in the design or character of the building desirable.

### THE SAN FRANCISCO TESTS.

It seems reasonable to hope that out of the chaos of evidence (or guesswork) resulting from the San Francisco fire there will eventually come some valuable data. We believe, says the *American Architectural Review*, that by far the most reliable work has been done by the Structural Association of San Francisco, formed immediately after the catastrophe, whose membership is open to all persons concerned in the design, manufacture and use of structural and fire-resisting materials. It is interesting to note that they are to establish a fire-experiment station, similar to the one at Columbia University and at the Massachusetts Institute of Technology.

Mr. Theodore H. Skinner, architect, and member of the association, recently gave before the Technology Club of Boston a most valuable *résumé* of his investigations of the result of fire upon different structures, upon fireproofing of columns, of floors, &c.

His examinations showed that some things should not be used at all to fireproof steel columns. Expanded metal and plaster were absolutely useless, even where two coatings of metal and plaster, one outside the other, were used around columns.

In regard to terra-cotta:—Mr. Skinner states that practically all of that material in San Francisco was hard burned and very dense, and not able to expand without breaking. In many cases it broke off, leaving the column unprotected. In some cases the bad practice was followed of placing steam and water pipes within the covering of columns. The explosion of these overheated pipes blew off the covering and the column was left bare.

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Cinder concrete has undergone considerable questioning and examination in connection with the fire. Its immediate effect was to protect the columns well, but it became badly calcined in doing so, and can be cut with a knife. In one case there was a protection of 2 inches of Keen cement upon cast-iron columns. This protection did its work thoroughly, but likewise gave up its strength in so doing.

Stone concrete as column fireproofing, especially when used with spirally wound rod reinforcement, behaved well. It was demonstrated that this, as well as cinder concrete fireproofing, should be in direct contact with the column, without air space.

Brickwork behaved remarkably well when properly bonded. Where the bond was simply a metal tie the expansion of the face brick caused it to fall away from the backing or shear off.

Mr. Skinner's conclusions were, that it is possible to build a fireproof building if the common practice of using nine essentials and omitting one is avoided. All woodwork should be scrupulously ruled out by using metal trims, granolithic or terrazzo floors, &c. Sprinklers should be installed everywhere. Exterior openings should have shutters, metal sash-frames and wire glass—recent tests have shown the high efficiency of the latter. Interior flues, elevator-shafts, &c., should be cut off by wire glass. No pipes or wire ways should be allowed within columns or column coverings. Reinforced concrete beams should be protected by hung ceiling, and in floors care should be taken that the rods, in the process of making the floor, do not come close to the under side of the floor, where they would be wholly unprotected from heat. Tests of reinforced concrete floors, made in England, have shown that the rods frequently get trodden down while the floor is in process of making.

The catastrophe gave chance to study the action of rust upon rock concrete, cinder concrete, and upon protected steel. We quote the following from the report made by Mr. Luther Wagoner, C.E., and Mr. Skinner. This report appears in the issue of *Engineering News* for November 1, 1906, and is well worth careful reading:—

"The cinder concrete is somewhat porous with occasional voids, and also contains coal from dust up to lumps three-quarters of an inch in diameter. Rust spots occur in the concrete, and where such spots are in contact with the metal the

corrosion is severe. The rust spots are sometimes an inch across, quite soft and easily removed by the finger nail. Occasional splinters of wood occur in the concrete, which shows that the heat was not severe, as the wood is not charred. From the position of the floors it is certain that no water has reached the concrete since April 18, and that the corrosion was prior to the fire, but it appears to be more marked where floors have been exposed to the rains since the fire. The corrosion is irregular in amount. In some cases the expanded metal is only slightly rusted, and in places it is entirely destroyed; several places were noticed where a small semicircular patch had been removed from the edge of a metal strip; also at times it crossed the surface of the strip in a line, which suggests that it followed a surface crack in the metal. There seemed to be a tendency to corrosion at certain points in the diamond mesh, which would indicate that the metal had been strained in the process of setting and expanding, but there is not positive proof of this.

"The extent of the corrosion is great enough to seriously endanger the safety of the floors, and it is not probable that the floors would have supported their loads more than one to three years longer.

"*Causes of Corrosion.*—Various reasons for the corrosion of metal in cinder concrete have been given. Prominent among them is the belief that it is due to sulphur in the cinders. In order to corrode metal the sulphur must first oxidise to  $H_2SO_4$ , and if there is any notable amount of cement present it would be absorbed by the cement. It is not probable that sulphur can corrode metal unless it is either close to it or the concrete is very deficient in cement. . . .

"Slitting and expanding the metal sheets in manufacturing expanded metal may cause minute cracks upon the surface of the metal. If this be combined, as in the case here, with a thin slab of concrete, porous, and ranging in thickness from  $2\frac{1}{4}$  to  $4\frac{1}{2}$  inches, with the metal in many cases flush with the bottom of the slab, there is an ideal condition for the rusting of the metal. . . .

"The Bullock and Jones building, a ten-storey structure, had all its floors of rock concrete and expanded metal. During the repairs of the steel frame it was necessary to remove quite a number of floor-panels, and the metal was

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found in as good condition as when placed. The foreman who removed the floors told us that he had only observed two slightly rusted places, which rusting he thought had occurred prior to its being used in the floor."

### EVERYDAY ART.

IN a lecture before the Cosmopolitan Club Mr. R. Catterson Smith, head-master of the Birmingham Art School, said he was of opinion that the general public had no knowledge of the good or bad in art. They were led in thought and judgment by commercial exaggerations. When he took a walk through the streets to look into the shops to see what he would like to buy he found that there was nothing in his opinion worth buying. The highly-ornamented article was generally found to be of inferior work. The only pieces of silver which were worth having were copies of old ones, and copies could never approach the original. They might get pieces of jewellery which were good artistically, but they would not get them from the jewellery trade. He had never yet seen the pieces of trade jewellery which he should consider works of art. Real works of art were at present only for the rich, but he believed that the whole mass of the people would get them under a different condition of things. The public, however, did not demand good art, they simply asked for cheap things. Everything that was conducive to good art was eliminated, and most of the manufacturers were aware of the fact. If one wished to produce good art one must not be pressed for time or space. It was helpful to the craftsman if he was given some inkling as to the purpose for which the article he made was intended. If they wished to do good work they must be at white heat all the time, anxious for accuracy to the millionth part, not of a mathematical but of a spiritual inch. The average man was unable to distinguish the difference between machine-wrought and hand-worked silver; in fact, he was afraid that the average man preferred the machine-wrought article. The general public did not know how to ask for good art. Notwithstanding the number of art galleries and museums which were in their midst, they wandered about them without guides, admiring good, bad and indifferent, and many examples of utterly bad art were chosen by the

committees of art galleries. The Nettlefold Vase trophy exhibited in the Birmingham Art Gallery was a purely mechanical article, and certainly anyone admiring it was degraded in artistic sensibility. What people admired were the sensational pictures in the galleries or the works of artists who happened to be fashionable. The art schools of the country have in past years been conducted on entirely wrong lines, as many of them were even now. He considered that insufficient room was given to art in the general scheme of education, and he did not see the remedy for this in the art schools. Only one hour a week was given to the teaching of art in the schools, and that hour was at the wrong time; the chief of the instruction was given by teachers who taught what was mostly book knowledge and art ignorance, just sufficient to enable young ladies to talk nicely on art subjects. He would like to see in every centre a system of art instruction by expert lecturers, and demonstrations should be given by teachers selected by an experienced committee, and those teachers should be thoroughly capable of pointing out what was good and what was bad. There should be lectures at least once a month and an open discussion should follow.

### THE L.C.C. AND CONCRETE BLOCKS.

THE housing of the working classes committee of the London County Council, having bricks manufactured on the Norbury estate, propose to manufacture concrete blocks and slabs from burnt ballast and the broken materials left from the brick burning. The concrete blocks will be required for use in the construction of retaining walls, &c., and the concrete slabs will be used for the internal walls of the cottages. The supply of red bricks made or in course of manufacture will only be sufficient for about one-half of the cottages shortly to be erected on Section B, and it is proposed to continue the manufacture of red bricks in small quantities in accordance with the demands of the estate. Only a small portion of the plant will be required in the manufacture of red bricks, and the men employed in connection with the operations above referred to will also be engaged in the care of the remaining machinery and plant during the time it is lying idle. As it is not proposed to resume the making of bricks on a large scale for some time

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to come, the 10 horse-power double-cylinder portable engine is to be disposed of if a satisfactory offer can be obtained, as it will depreciate in value when not in use. The expenditure during the season 1906-7 for the purposes above-mentioned is estimated not to exceed 1,200*l*.

The Council authorised expenditure not exceeding 4,000*l*. in respect of brickmaking operations during the season 1905-6, and the total expenditure which will ultimately be incurred under those votes is estimated at 3,870*l*. About 2,942,000 stock bricks and 180,000 red bricks have been made during the season, the bricks being of very good quality and the cost of manufacture low. As a larger number of bricks had been manufactured than could be immediately utilised for the erection of cottages on the estate, the committee are prepared to accept any favourable offer that might be received for the purchase of some of the bricks. An offer has been received for the purchase of two clamps, together containing about 900,000 bricks, which for present purposes may be regarded as surplus stock. This offer shows a surplus over the cost of production for the season, but the accounts have not yet been audited by the comptroller. Subject to a satisfactory arrangement as to the removal of the bricks, they propose to accept the offer.

#### CENTRING FOR CONCRETE BUILDINGS.\*

EVERY one at all conversant with the cost of reinforced concrete work knows only too well the disproportionate amount due to centring. In very heavy foundation work this proportion may not be excessive, but in some buildings of reinforced concrete the labour cost of installing and removing the wooden false work, together with the cost of the material itself, has made up 50 per cent. of the entire expenditure.

The cost of the centring material itself is heavy, and, when wood is considered, is growing heavier almost month by month. This is due to the constant and rapid increase in the prices of timber and lumber of all kinds which has taken place during the past few months.

\* From a paper by Mr. E. P. Goodrich, Am.Soc.C.E., read before a meeting of the Association of American Portland Cement Manufacturers and published in the *American Architect*.

The first plan which comes to mind, looking toward the economising of centring material, is to make repeated use of each piece. This can readily be accomplished where a building is largely a repetition from floor to floor or from bay to bay. But unless the structure is very large, a considerable time is lost through the necessary delays experienced while waiting for the concrete to set before the centres can be removed. This is the case, however, only where the concrete is handled in a wet state.

Consideration of these points led to the adoption for a series of one-storey buildings of the method already described, *i.e.* casting on the ground the columns, beams, girders and roof slabs, and of erecting them as structural steel is handled. For the moulds for columns cast on one side only three pieces are needed in place of four, if the column is moulded vertically. This effects a saving of 25 per cent. for column centring material. Further, little or none of the costly bolting or bracing is needed when the concrete has a depth of but a few inches, as is all that is necessary if the columns are cast on the side. Another advantage found with these column forms, which is also shared by the beam and girder forms under this method, is the fact that the side boards can be removed after twenty-four or at the most forty-eight hours, and used again two or three times during the intervals in which they must be left in place if the work is done in the usual way. This alone effects a 50 per cent. saving of material, as only the narrow bottom pieces are needed in any great numbers. In the special buildings described a much greater saving was effected in the centring for the roof slabs in the following manner:—The ground floor (which consisted of concrete) was installed as soon as the girders and beams had been erected. On this flat surface ordinary smooth paraffined building-paper was spread, and the roof slabs marked out by narrow strips of wood of a width just equal to the thickness of the desired slabs. The reinforcing rods were then placed as required, and the cinder concrete spread to fill the moulds. In this way the regular floor formed the major part of the slab moulds, and the cost of centring material in this instance was almost nothing. (The ground floor might better have been laid before the slabs were moulded, the roof slabs cast as above described, and the large members set up on top of the slabs.) A further saving in

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this material was effected by this "dry" method of construction, through the obviating of the necessity of using the almost innumerable vertical supports which serve to uphold the centres when the whole floor or roof surface must be built up in wood so as to form moulds into which the wet concrete is poured. These various savings effected in the material for centring cut its cost on the particular structure in question to less than 25 per cent. of what it would have been had the other method been employed.

In another building in which the "wet" method was used a saving of centring material was effected in the following manner:—It was deemed best in this particular building to erect brick walls. It was then suggested that the brickwork be built first and that proper recesses and flue-like openings be built into the walls. Thus by using much fewer boards these recesses could be transformed into moulds into which the wet concrete could be poured. This concrete could be properly reinforced for the columns for the support of the building. In a similar way the beams and girders which were designed to come wholly or in part within the walls had the brickwork so built as to form a part of the bottom and at least one side of the forms.

An indirect method of saving centring material is to devise methods whereby a lesser amount originally purchased can be used more times and thus reduce the relative cost. One such device was employed with marked success on several large buildings, and the floor moulds for all parts except the girders were good enough for the whole of another building after having been used six or seven times in the first one. Instead of making the moulds for the beams in the form of boxes open on the top, and providing thin, easily damaged mould boards for the slab bottoms, the idea was reversed and slab bottoms were combined with the beam side pieces so as to make a box with its open side downwards. This box was supported on cleats fastened to the lower outside edges of the girder boxes. Besides indirectly saving centring material, these boxes readily lend themselves to use as cores to effect a material saving of concrete, as has been mentioned above.

The cost of timber for centring is advancing so rapidly that the use of other materials is coming into greater and greater prominence. The use made of the brick wall described above could as readily be adapted to walls made

of concrete blocks, whether the latter were cast *in situ* or on the ground and hoisted and placed "in the dry." If the price of lumber advances much higher it will be possible to make core-boxes of sheet-metal instead of wood, but in all essential respects like those mentioned above. There are on the market several patented systems of moulding concrete walls with wet concrete by making use of small metal moulds. The great disadvantage with most of them is the small size of the moulds employed, which thus increase the labour incident to the placing of only small quantities of concrete at any one point. After an investigation of these systems a slightly different idea was worked out with regard to the column moulds. Column forms built in accordance with this idea were used very successfully on two large buildings. Cinder-concrete shells  $1\frac{1}{2}$  inch in thickness were cast in proper moulds. These shells were piled up and properly wedged into position, and served as the moulds into which was poured the concrete for the columns. High carbon steel-wire spirals were used for the column reinforcement, and these spirals were worked into the cinder-shells so that no extra reinforcing was needed after the shells were put in place. Sheet-iron, bent into drums of the proper dimensions for the columns, formed the outsides of the moulds for casting the cinder shells, and it was found most economical to employ for the inside cylinder moulds expanded-metal lath. The sheet-iron for the outside mould gave the outside of the cinder cylinders a smooth exterior surface (when the concrete was properly tamped), while the metal lath was fine enough in texture to prevent the concrete from running through its meshes more than enough to provide a perfect bond between the cinder shell and the concrete matrix of the completed columns. The process of preparing the shells was as follows:—A collapsible drum was constructed, upon which was first wound the wire for the reinforcement. Outside of this was wrapped the lath, which was then fastened to the wire reinforcement by wire clips in the same manner in which metal lath is fastened together and to ordinary metal studding. The wire-and-lath cylinders were then placed inside the sheet-metal moulds and cinder concrete tamped between, to form the cinder shell. The metal sheets were held in proper shape and position by light wooden frames, built to the necessary shape and so

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bolted as to be easily removed. These forms and the metal sheets used for the outsides of the moulds were removed after twenty-four hours and used for other moulds, the plat-forms on which the cinder shells were cast being the only parts which it was necessary to leave untouched for longer periods. In this way the costs for the moulds for the cinder shells were reduced to a minimum and, since the sheet-metal could be easily lapped to any extent, the same sheets served to make shells of all diameters, from the largest to the smallest, and were still available at the end of the job.

These cinder shells have many advantages:—

(a) They form a fireproofing for the concrete columns, which are manifestly the most vulnerable parts of all concrete structures.

(b) They do away with all column centring.

(c) They carry the spiral column reinforcing in a manner very easily handled and with perfect certainty of no possibility of displacement.

(d) They are capable of erection with comparatively unskilled labour.

(e) They require forms for their manufacture which are of the simplest and, because of the possibility of repeated use, are of the cheapest construction.

(f) Since round columns are the most efficient per square inch of effective area, they provide the strongest column with a given area.

(g) That portion of the concrete column which is not designed to carry any load is of poor quality material, thus making a column of slightly cheaper cost.

Turning now to the item of labour on the fabrication of centring, three points are potent in effecting economies:—

(a) Have as much work as possible done in regular shops so that considerable use can be made of machinery. By this means, too, piecework can be employed with the resulting economies. For one building the core boxes described above were constructed in a planing mill, and were delivered ready for erection. The wire-and-lath cylinders used in the cinder shells were similarly fabricated, and it is this same means which makes it possible to fabricate so cheaply the beam reinforcement in the somewhat complicated truss forms which are most effective.

(b) Have as much work as possible so arranged that it

can be executed by comparatively unskilled labour. The boxes described above were almost entirely handled and placed at the building by common labour, thus effecting a great economy over the usual methods, by which labour conditions required the employment of high-priced skilled labour for working wood.

(c) Obviate as far as possible the use of the saw and the hammer. The first can be done by purchasing all material cut to sketch and by making it a cause of discharge to cut a piece of lumber. The hammer and nails should be replaced by bolts and a wrench.

The last item also goes far towards reducing the cost of removing the centring. Where the cinder shells were used there was no expenditure for removing column forms, and it was nearly a minimum where the "dry" method was employed. Of course, all builders use oil to coat the centres. A liberal use of this material greatly protects the wood against being damaged by its alternate wetting and drying. It also tends to give a good surface to the concrete, but, best of all, it largely reduces the costs of removing the centres.

Great care should be taken in the design of all centring to make it as readily erected and removed as possible. It is believed that fully as much time can be profitably devoted in the office to the careful design of the centring for a job as to the design of the reinforcement. As to the latter it is believed that each beam and other member should be as carefully analysed as are complicated plate-girders. Regular strain-sheets should be prepared and preserved for record, and all elements carefully investigated. Another point for careful study in the office is that of reducing to a minimum the number of types of beam reinforcement to be used on a building. This item is even more important than in the design of structural steelwork, where it is made a cardinal point. Reinforcement and centring should be made interchangeable from bay to bay and from floor to floor, as far as possible. Very often a design can be altered so that this can be effected with great economic advantage and with little or no loss of architectural or other feature.

Many of these points are only too obvious, but they have been included here in an endeavour to bring together as far as possible, in a short article, the most important points which tend toward economy, efficiency and excellence.



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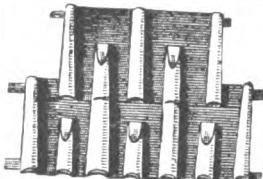
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